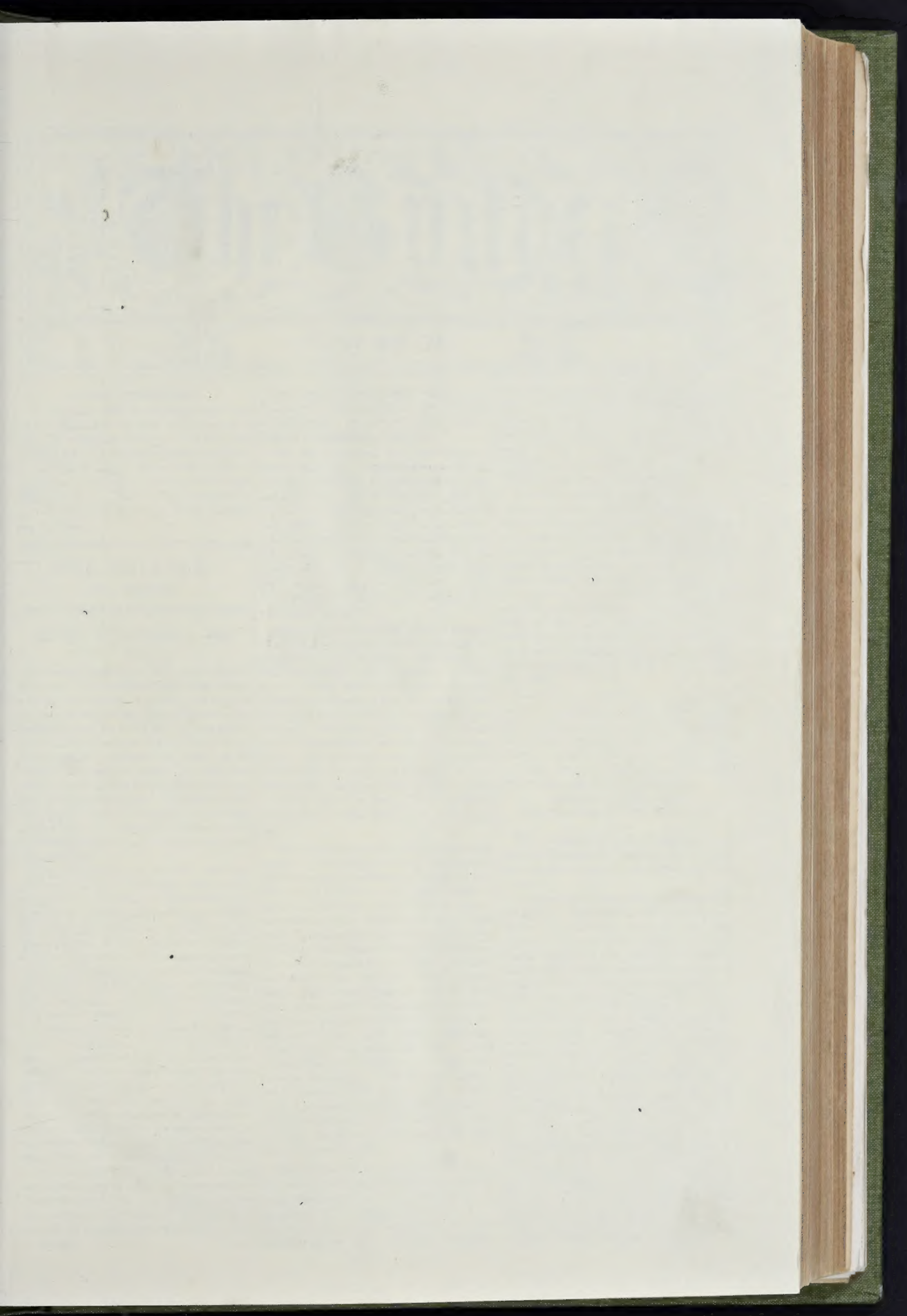


THE J. PAUL GETTY MUSEUM LIBRARY











# The Builder.

VOLUME II.

## TO OUR SUBSCRIBERS.

*In compliance with the wishes of very many of our Subscribers, we have had prepared a cover for binding the copies of THE BUILDER for those who may be desirous of preserving them in uniform Volumes. These may be had on application at the office, at the price of Two Shillings; or our Publisher will undertake to get sets bound at a charge of Three Shillings per Volume.*

## THE BUILDER,

NO. XLVIII.

SATURDAY, JANUARY 6, 1844.

WITH the opening year, we may be expected to announce our future intended course of proceeding; and although only a child of a year's growth, and as may be supposed by some, still swaddled about, yet would we, like the swathed Horus of the Etesian-wind-filled Nile, if not worshipped as of mythological power, yet be deemed an infant of athletic promise, and perhaps ere long, like the giant babe of Irish faery-land, able to discuss with unbroken teeth such puerile baken-meats as may have been seasoned by a few grid-irons, worked up amid their component leaven, or by other like gentle condiments.

Long, long before our birth-day, had complaint been made of the urgent necessity on the part of the professions of architecture and building, of a sound, just, and cleanly vehicle for reviews, correspondence, and papers upon those subjects. We hope to see our columns become such a vehicle. We are sure the prince with the noble, the architect with the workman, alike appreciates the value of all practical matters relating to architecture and engineering; and by opening our pages according to this standard, we think the gentleman will not disdain to contribute, nor the workman be afraid to appear there in print. Hitherto the periodical literature of architecture has been lightly deemed of; for its comparatively confined circulation has not returned the outlay requisite for the employment of high talent: hence it has assumed a lowliness of style, a coarseness of diction, a kind of *any-thing-arian* conscience; and, if it needed rightful vigour, it has made up by nerve of reproachful tongue for its puny-mindedness; from this cause almost every architect of ability has hung aloof, and has taken no part in it, conscious that he could not join therein without reaping a certain portion of disrepute.

But from the measures which we have taken for the avoidance of scandal in the literature of architecture, we trust an altered state of things will immediately commence.

We are determined that the balance of justice shall hang conspicuously over all our columns: facts shall be recorded, but no distorted opinions shall be ventured; good and natural taste shall be asserted; practical soundness shall everywhere drive out speculative pretence; genius we are determined to foster; but neither the malignant cunning of a depraved mind, nor the pithless or unballasted flights of an imagination sublimated or distilled through the alembic of insanity, shall ever have place with us.

Our reviews of new works shall, to the best of our ability, record their beauties and commend their good maxims; and where we shall have occasion of disapproval, we trust that in putting the student upon his guard against pernicious doctrines, we shall not, like the copper-smith, be ambitious of finishing off our work with marks of the hammer. Under such a determination we hope surely that authors and publishers feeling confidence in our fairness, will early send us copies of their productions, accompanied by such wood blocks as may be proper for giving our subscribers a just idea of the value of the works so reviewed by us.

And we make promise that in commencing a series of retrospective reviews of literary and graphic works on architecture, we shall direct the mind of the student to a ready course of technical knowledge, and lead him at once to the cream of those vast stores of information which lie scattered in the many volumes of our noble art. Finding more trouble in the search for and correct re-printing of one page of old literature than in the writing of ten of original matter, we trust that whenever we quote from other works, this will not be esteemed as occurring from plagiaristic idleness, but from the desire of not doing again, perhaps badly, that which has already been done well, and of leaving the due honour to the first who broached the subject. And we invite all who are acquainted with curious and valuable works and graphic illustrations of architecture, to favour us with a knowledge of them, in order that their merits may be duly known throughout the scientific world.

With regard to the correspondence which will in future be admitted in our pages, we beg to say we desire to be select, select as to its propriety. If a workman address us or any correspondent, his address may have as much propriety as that of the finished gentleman;

born with equal cleanliness, one needs not to differ from the other in the essential quality of propriety, though they may in the degree of particular learning—the operative man being most learned in operative knowledge, and the gentleman-born holding the superiority in book-learning and speculative science.

Upon the subject of papers relating to architecture, both constructive and decorative, we have the brightest promise. Assistance of a very superior kind will be given to us; and but few months, or even weeks, will be required for marshalling our forces. Through society finding our integrity of purpose, we have every prospect of the portfolios of the antiquary, the architect, and the scientific and practical man, being opened; and we little doubt that from their vast stores, we shall have the power of selecting those gems of art and science after which the zealous of our profession thirst.

Declaring thus openly our sentiments and intentions, we have an assured hope that our views will be approved of by most of our readers, and will be seconded earnestly by very many of them holding rank in architecture, engineering, practical science, biography, archaeology, topography, and the fine arts generally.

## CLEANLINESS AMONG THE POOR.

THE *Edinburgh Weekly Chronicle* thus graphically describes the difficulties that lie in the way of personal cleanliness among the poorer classes:—

“Bathing is at once a luxury, and a remedy for disease. One would think it a very easy matter to get the body immersed in hot, cold, or tepid water, and so it ought to be, but as matters stand, it is very difficult; so difficult, indeed, that it is practised only by few, and by these but seldom. In the summer season, no doubt, many bathe in the sea and in rivers but, in general only a few plunges in the year are enjoyed in this way by such as enjoy the advantage at all. The great bulk of the population go unwashed, hands and face excepted, from year's end to year's end. And no wonder; think of the obstacles! A man begrimed with toil, or greasy with accumulated perspiration, feeling a desire to have a clean skin, begins to think of how he may accomplish the simple process of getting himself washed. Pent up by his occupation in the midst of a town, perhaps miles away from the sea, or any stream affording a sufficient depth of water, he can only on rare occasions find time to go the necessary distance. And when he does so, his difficulties are not at an end. He finds that the river banks are claimed as private property, and he is prohibited, under heavy penalties, from setting foot there. He may seek the sounding shore,” and snap his fingers at landed proprietors. There are no



white boards prohibiting trespassers, and threatening prosecution—no spring guns and man traps within the tide mark of the sea. But there he finds other obstacles and annoyances. He does not choose to violate decency by denuding himself in sight of others, particularly females, and yet it is difficult for him to find a secluded spot, or to catch a moment in which there is not somebody in the way. Patiently does he loiter along the beach or rest him on

“ ‘A gluttony stane,

Green wi’ the dew o’ the jaupin’ main,’  
in the hopes of seeing the coast clear of strollers, but in vain. One troop of ladies, or of ‘bairns’ women’ with flocks of children, succeeds another almost without intermission, and he may wait hours before he finds an interval in which no gentle parasol-bearer or little gatherer of shells is within eye shot. At length, the wished-for opportunity occurs. Hurriedly and apprehensively, like one about to commit some horrid crime, does he strip and get into the water. But ten to one but he has half a mile to wade among stones and seaweed before he can get deeper than the knee; and long before he gets into deep water, his feet are bleeding—his legs gartered with tangle, and his teeth chattering with cold. The ablution performed—out he comes faster than he went in, in spite of stones and seaweed—but, perhaps, only to find that his clothes have been floated away or stolen, or to shock and put to flight some of the fair proude-nadders.

“Such are a few of the *disagreeables* of sea-bathing for the million. No doubt, bathing-boxes are to be had at some favoured spots, from which a plunge can be effected comfortably and decently, but they are not to be found at every man’s door, nor is the use of them to be had at a price which poor people can often afford to pay.

“If the difficulties of cold-bathing are great, what must we say of warm-bathing? Why, so far is the luxury of the warm-bath out of reach of the working-classes, that we are convinced two-thirds of them toil from the cradle to the grave without ever enjoying it. It is a costly luxury, the price in private establishments being usually from a shilling to half-a-crown, and few mechanics can afford to part even with a shilling as often as the bath would do them good. As to attempting to procure the warm-bath at home, it is never thought of, except when disease makes it necessary, and for the sufficient reason that it is not an easy matter to accomplish. A small-limbed child may be bathed without much trouble—bathing a little squalling; and many a cold, we believe, is cured in this way among the children of the poorer classes; but when full-grown people are to be immersed under the domestic roof, what a job it is! A birth in the poor man’s house is nothing to it. How the children stare at the mysterious preparations! The largest tub is brought out—all the pots and kettles are put in requisition, and anxious precaution taken against deluging the floor. Then, the preparations being completed, and the gaping urchins sent off, the operation commences. But it is easier commenced than finished. Perhaps a six-foot man has to get himself crammed into a tub, already nearly full of half-scalding water, and not big enough, at any rate, to hold half his bulk, though he should coil himself up like a serpent. Then, what splashing, what knocking of knees and elbows, till John Meiklejohn jumps out, partly unwetted and partly par-boiled—declaring he will never again try the hot-bath at home, though his rheumatism should stick to him all his days. The mistress, too, declares, that so long as there is any virtue in doctors’ drugs, she will have no more such doings in her house; and to crown the whole, the tenant of the house below comes up, and complains that she has had a *spate* of water sent down on her.”

The following observations are from the *Aberdeen Herald*:—

“To obviate the former class of these difficulties, which exist in this town as well as in Edinburgh, and to put an end to what people residing or walking near the Wellington-bridge must regard as a nuisance—open bathing by grown-up lads,—it may be necessary for the Bathing Committee, after effecting their primary object, to make some arrangement for

a swimming-bath in the river. An awning or shed, with sideboards, and a bottom sunk to the proper depth, is all that is necessary, and the admission might be by season tickets, sold at a cheap rate. Perhaps, some individual might be induced to get up such a bath as a private speculation. Besides promoting decency, it would be exceedingly advantageous in affording boys and young men a *safe* opportunity of learning the useful and healthy art of swimming.

“Some objections have, we understand, been taken to the use of engine-water for the hot baths, and indeed, to the plan of having baths in different parts of the city. It is argued that the engine-water will not be procured at the times when it is most required—and that, *perhaps*, the saving of expense, is, after all, not worth considering. These objections, we have no doubt, will be duly weighed by the Committee; but for our own part, we are inclined to think that they are not very insuperable. Taking into account the immense quantity of hot water that is thrown out from some of the public works, and the high temperature at which the boilers must be kept up till the very moment of stopping, it will not be difficult, we think, to make arrangements for the convenience of all classes. The water can easily be tested, and its purity established beyond the cavils of ignorance or prejudice; and as to the saving of expense, we believe it will be found, on inquiry, to be so very great as to shew that the scheme of cheap baths—baths at a penny or twopenny—are impracticable unless engine-water be used.

“The objections to the plan of having the baths in different quarters of the city are exceedingly futile, and must not be listened to. It is said that, keeping up separate establishments will entail too much expense, and that one grand place in the centre of the city would be both more attractive and more economical. We do not admit the truth of either assertions. Each establishment—if there is to be more than one—will be large enough to give ample employment to an old couple or two in cleaning out the baths, washing towels, &c.; and, if a certain amount of work has to be done, there will be little more expense in doing it at two, three, or four places, than at one. Then, again, we have no faith in the attractiveness of a large central establishment. The novelty of the thing might cause a run to it for a time, but it would fall off, and the people would sink into their old Mrs. McClarty notions of staying away, because ‘they could not be fished to go to a distance.’ It is utility and not show that we want in our public baths; and we are anxious to bring them as near as possible to every man’s door, and make the rate of charge exceedingly low, so that no one may have a shadow of excuse for not using them. There is an ample sea-beach here for bathing in the summer, but how many, even of the middle and upper classes, neglect to avail themselves of it, just because ‘they cannot be fished’ to go so far.”

#### MOON’S PATENT CHIMNEYS.

At this season, when the fire-side is so essential to comfort, a notice of any improvement in the construction of chimneys may not be considered out of place.

We have recently observed the enrolment of a patent taken out by Mr. Moon for flues of a circular form, and although we are perfectly aware that the same form has been patented many times before our publication was in existence, we do not think that any other plans have embraced the important principle of bonding in the materials with the general work, a desideratum of such importance, that the absence of such mode of construction has been fatal to the general adoption of the subjects of previous patents.

We consider the matter of so much consequence, that we have exemplified it by the annexed illustrations of the main features of the patent, in which it will be observed that although bricks of various forms are requisite for effecting the improvement, yet we believe they

will be found simplified to the greatest possible extent.

It is evident that in the construction of ordinary rectangular flues there are no fixed principles used in forming their most important parts, viz. their throats and gatherings. It is universally known that flues are mostly worked 14 in. by 9 in., with a half-brick division between flue and flue, but at their diversions or gatherings the flues are mostly crippled and diminished, whereas in the method set forth these irregularities are entirely obviated, as every flue is so perfectly complete in itself that in a series of flues, each may be carried up or taken down without interference with, or injury to, any adjacent flue.

Mr. Moon seems to have considered the whole subject-matter of chimneys, and has applied remedies for their present numerous defects; he has commenced (as all should) at the foundation; he gives us a bar of a peculiar formation, in fact it is an iron girder upon a small scale, this bar is furnished with hooks for a soot cloth, and has dowels to receive two bearing-bars which are also provided with hooks for a soot bag; these bearing-bars are destined to receive the moulded throat-lumps, which form the contraction with a most perfect and gradual receptacle for the smoke on its first emission, very different from the present gatherings, which are in most instances extremely irregular and leave far too much space for cold air; on these throat lumps commences a cylindrical flue, each course of which is formed of four bricks consisting of bonders and stretchers alternately, by which is effected a most perfect union with the general work, as well as a diminution in the number of vertical joints, for the bonding courses are without any external vertical joint. Now as the present old description of flue requires seven bricks to each course, it will be seen that the number of bricks used in Mr. Moon’s flues is numerically only four-sevenths as many, and we may add that the old form could only be tolerated as allowing just sufficient space for the poor sweeper to exercise his miserable and degraded occupation; but, thanks to a more enlightened age, such a provision is no longer necessary. The best form for strength and emission of smoke is now the principal object.

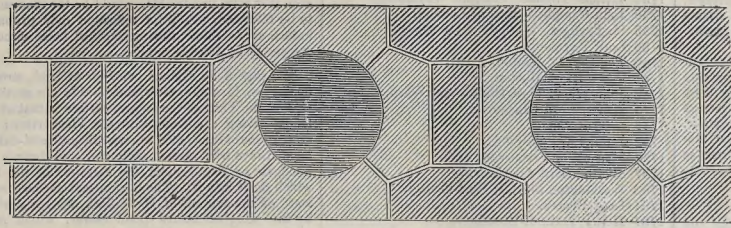
We have now arrived with Mr. Moon as high as the chimney-shaft, and to this adjunct of a building, so important both with respect to appearance and safety from effects of wind, we find much consideration has been given; instead of connecting the flues, by which a large surface is presented to the wind, every flue of the shaft is perfectly distinct, so as to allow the wind to pass freely between shaft and shaft, the forms of which are various.

We have shewn in the engravings those which may be thought desirable; they are in their plans, or horizontal sections, octagonal, hexagonal and circular, while some of them are of a square form, with their angles merely taken off. It may be observed that the hexagonal plan require only three bricks to a course, or twelve bricks to a lineal foot in altitude, the present rectangular flue requiring twenty-eight bricks, which shews sufficient practical advantage, independently of external form. In addition to all these numerous advantages, Mr. Moon has constructed a metallic cap, and if it effect the objects for which it is designed, those who think proper to avail themselves of its use will have no smoky chimneys in future. This cap differs entirely from every other kind now in use; it will not present an unsightly appearance either in its application to new or to old shafts; the substantial material of which it is made will render it free from the objections arising from the great reverberation of sound so generally complained of, and which so frequently compels the removal of the present unsubstantial and unsightly contrivances made of thin sheets of iron, zinc, or tin, in the shape of funnels, cowls, and other external addenda to chimneys, none of which can be very suitably added to buildings, and which, from their fragile nature, often need renewal, attended by considerable expense and inconvenience, besides the frequency of the removal of such contrivances by the action of wind or by sweeping-machines.

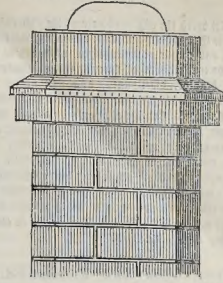
This subject being one of considerable importance in building, we shall on a future occasion again recur to it.



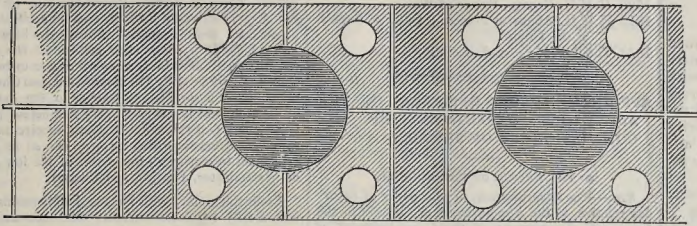
MOON'S PATENT CHIMNEYS.



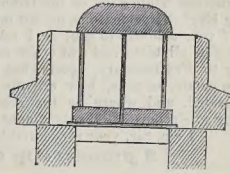
Bond Bricks.



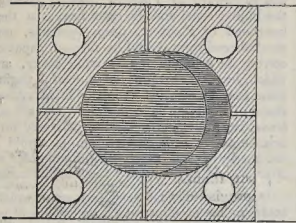
Shaft and Cap.



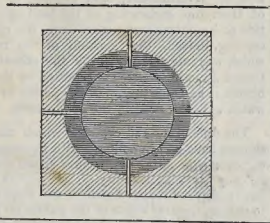
Stretcher Bricks.



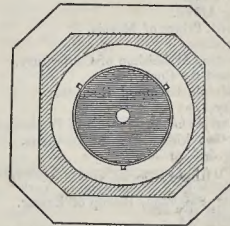
Section of Cap, Ring, and Domical Top.



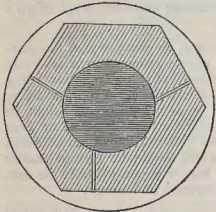
Gathering Bricks.



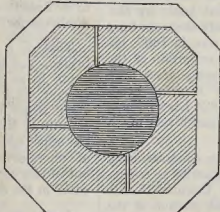
Connecting Bricks.



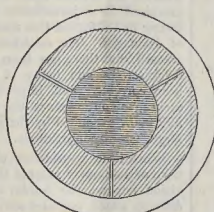
Plan of Chimney Cap, &c.



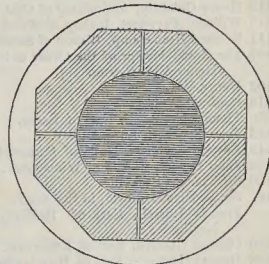
Hexagonal Shaft.



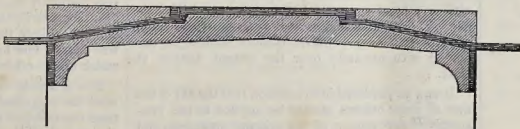
Shaft Brick.



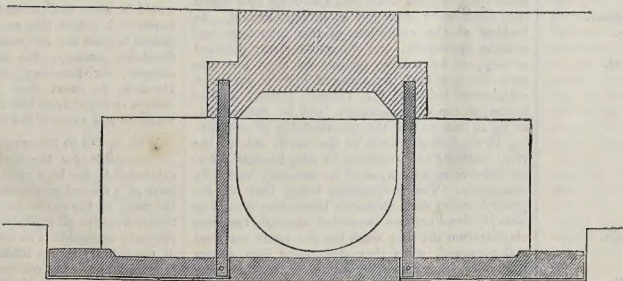
Circular Shaft.



Octagonal Shaft.



Back of Chimney-bar.



Plan of Chimney-bar and Bearing-bars.



## FREEMASONRY.

"Vix heret the stiple of nature, the understandinge of the myghte that goe hereyn; and its sondre interchinges, sonderleche, and skille of rectengings, of insights and metengies, and the true manere of foretengings al thynges for mannes use; heaile, bueingies, and buillengies of all kyntes, and al oþer thynges that make gode to manne." \* \*

"Maconnes heaile almes, on euerie tyme, from tyme to tyme, communicatide to mankynde sache of þer secrettes as generallieche myghte be usefulle; they heaile þe kept backe sache alleine as shulde be hartfulle yff they comd þan eyle þaundes. Maconnes lobe eider oþer myghtlyt, and yf may not oþerwise be: for gode manne and true, kennginge eider oþer to be such, doeth alwayms lobe the more as thay be more gode."—From a Manuscript in the hand-writing of King Henry the Sixth.

MEETING OF THE EPIPHANY-CHAPTER OF THE FREEMASONS OF THE CHURCH, will take place on Tuesday, the 9th January, at eight o'clock in the evening.

## TO THE EDITOR OF "THE BUILDER."

SIR,—Having just met with the subjoined very minute detailed list of the Grand-masters of the English Freemasons, permit me through one of your columns to ask, as I take a great interest in all historical and other matters relating to Freemasonry, upon what authority such a catalogue rests, how are the dates authenticated, and where lie the records confirming so circumstantial a document?

I am, Sir, your very humble servant,  
A Freemason of the Church.

- A.D.  
597 Austin the Monk.  
680 Bennet, Abbot of Wirral.  
858 St. Swithin.  
872 King Alfred.  
900 Ethred, Prince of Mercia.  
928 Athelstane.  
957 Dunstan, Archbishop of Canterbury.  
1041 Edward the Confessor.  
1066 Gundolph, Bishop of Rochester.  
1100 Henry I.  
1135 Gilbert de Clare, Marquis of Pembroke.  
1155 The Grand Master of the Templars.  
1159 Peter de Colechurch.  
1216 Peter de Rupibus, Bishop of Winchester.  
1272 Walter Giffard, Archbishop of York.  
1307 Walter Stapleton, Bishop of Exeter.  
1327 Edward III.  
1357 William à Wykeham, Bishop of Winchester.  
1375 Simon Langham, Abbot of Westminster.  
1377 William à Wykeham, again.  
1400 Thomas Fitz Allen, Earl of Surrey.  
1413 Henry Chicheley, Archbishop of Canterbury.  
1443 William Waynflete, Bishop of Winchester.  
1471 Richard Beauchamp, Bishop of Salisbury.  
1500 The Grand Master of the Order of St. John.  
Henry VII. Patron.  
1502 Henry VII.  
1515 Cardinal Wolsey.  
1530 Thomas Cromwell, Earl of Essex.  
1543 John Touchett, Duke of Audley.  
1549 Edward Seymour, Duke of Somerset.  
1552 John Poynt, Bishop of Winchester.  
1560 Sir Thomas Sackville.  
1567 Sir Thomas Gresham, in the South.  
— Francis Russell, Earl of Bedford, in the North.  
1580 Charles Howard, Earl of Effingham.  
1588 George Hastings, Earl of Huntingdon.  
1603 King James I., Patron.  
— Inigo Jones, Grand Master.  
1618 William Herbert, Earl of Pembroke.  
1625 King Charles I.  
1630 Henry Danvers, Earl of Danby.  
1633 Thomas Howard, Earl of Arundel.  
1635 Francis Russell, Earl of Bedford.  
1636 Inigo Jones, again.  
1643 Henry Jernyn, Earl of St. Albans.  
1666 Thomas Savage, Duke of Rivers.  
1674 George Villiers, Duke of Buckingham.  
1679 Henry Bennett, Earl of Arlington.  
1685 Sir Christopher Wren.  
1698 Charles Lenox, Duke of Richmond.  
— Sir Christopher Wren, again.  
1717 John Sayer, Esq.  
1718 George Payne, Esq.  
1719 Dr. Desaguliers.  
1720 George Payne, Esq., again.  
1721 John, Duke of Montagu.  
1722 Philip, Duke of Wharton.  
1723 The Duke of Buccleugh.  
1724 The Duke of Richmond.  
1725 The Earl of Abercorn.  
1726 William O'Brien, Earl of Inchiquin.  
1727 Lord Coleraine.  
1728 Lord Kingston.  
1729 Thomas Howard, Duke of Norfolk.  
1731 Lord Lovel.

A.D.

- 1732 Anthony Brown, Viscount Montacute.  
1733 The Earl of Strathmore.  
1734 The Earl of Crawford.  
1735 Thomas Thynne, Viscount Weymouth.  
1736 John Campbell, Earl of Loudon.  
1738 H. Bridges, Marquis of Carnarvon.  
1739 Lord Raymond.  
1740 The Earl of Kinton.  
1741 The Earl of Morton.  
1742 John Ward, Lord Dudley and Ward.  
1745 James, Lord Cranstown.  
1747 Lord Byron.  
1752 John, Lord Caryfort.  
1754 Marquis of Carnarvon, again.  
1757 Sholto, Lord Aberdour.  
1762 Washington Shirley, Earl Ferrers.  
1764 Lord Blancy.  
1767 Henry, Duke of Beaufort.  
1772 Robert Edward, Lord Petre.  
1777 George, Duke of Manchester.  
1782 H.R.H. Frederick, Duke of Cumberland.  
1790 H.R.H. George, Prince of Wales.  
1813 H.R.H. Augustus Frederic, Duke of Sussex, at the Union.  
1843 The Earl of Zetland, Acting.

## APPOINTMENT OF OFFICERS IN THE SURVEYORS' DEPARTMENT OF THE COMMISSIONERS OF SEWERS.

## TO THE EDITOR OF THE BUILDER.

SIR,—The advertisement in your paper of Saturday relative to the Appointment of Officers in the Surveyors' Department of the Commissioners of Sewers, &c., induces me to trouble you with a few observations.

You are perhaps not aware that the Commission for Westminster, &c., extends to the parish of Hampton, embracing all the land affected by the tide or by outrageous waters from the uplands, excepting, indeed, that portion of the river Brent which was interfered with by the execution of the Grand Junction Canal as permitted by the Act establishing the Company, and the parish of Chiswick, which is not noticed in the commission.

The difficulties and expense which the commissioners have had to contend with in consequence of the extension of the town, have arisen from the deficiency or impossibility of the powers to prevent improperly constructed sewers, and from inattention to the prospective wants of the public on ground yet unbuild upon. Previously to the year 1806, there only one surveyor, with no clerks of the works or other assistance; there was no descriptive plan shewing the district upon which the commissioners exercised their jurisdiction till that made by Mr. Potter in 1816, and this shewed only the main lines of drainages. The establishment was, in 1807, increased, and there has been a vast extension of the brick sewers, and many of the watercourses have been corrected and improved by inverted brick arches, the output since the year 1824 has exceeded 500,000L. expended by the public, and a very much larger sum by individuals.

When it is considered that the commissioners have of late never exerted their authority or supervision beyond the border of the Counties Creek district, which includes only a small portion of the parish of Fulham, and hardly any of Hammersmith, it must be admitted that the additional officers advertised for are essentially requisite, and that the attainments of a practical architect, versed in engineering, are called for, as well as those of an honest clerk of the works, whose labours should be extended with assiduity over the distant district at least.

It may be pardonable to mention that the aid of the first of these officers should be applied to the prospective improvement of the existing sewerages, and in calculations as to the future demands of the whole of the district now surveyed by the commissioners, those lying beyond them, and also those into which the commission does not at present extend. In looking at the condition of this populous and wealthy metropolis, and its noble river, polluted as they are by sewage waters, we must not cast away the hope that the views of one of our most enlightened builders, Mr. Thomas Cubitt, and of several of the commissioners, will be entertained, so far at least as that the practicability of conducting all the sewage waters of the north side of the river eastward and westward by deep tunnels, without interfering with it, shall be seriously and fully considered. The proposition being that all the present sewers shall discharge themselves into deep under-ground courses tunnelled through the blue clay stratum till they reach the flat lands eastward and westward, when they shall issue into deeper reservoirs, from which, by engine work, they may be elevated so as to be capable of distribution for agricultural purposes, and the redundancy, if any,

carried forward, so far as not to be likely to contaminate the waters.

It may be supposed that this plan is too visionary to be carried into execution, and that the expense, even if it were practicable, would be too enormous to be tolerated. A little reflection may probably induce us to think that neither of these circumstances really attends the idea.

The superficially drained, whether of land, streets, or houses, is easily ascertained. On the northern side of the Thames the largest surface is that of the lands having a current into the Fleet river; the dimensions of the arched sewer at Blackfriars' bridge have always been found adequate, and there is no floodgate or flap against the entrance of the tide which flows into it. The next largest surface, eastward of the summit of Hyde-park, &c., is drained by the King's Scholars' pond Sewer, which is of moderate capacity and unequal current, and issuing into the Thames, being ponded up every tide. Let us suppose that this last-mentioned sewer is intercepted where it crosses Piccadilly, and by some judicious contrivance made to pass its contents into a new deep sewer tunnelled through the blue clay, and which deep sewer shall receive all the other sewers it shall meet in its eastward course to be continued under Piccadilly, the Haymarket, and Charing-cross, where it shall be, at least as to the extrados of its arch, not less than twenty feet below lowest water-mark; at this point it should receive another sewer constructed in some proper line so as to be calculated to convey all the waters of the low lands of Westminster, Pimlico, and Chelsea.

From this point, with increased dimensions, but with a duly regulated current, this main and tunnelled sewer should proceed eastward, still through the blue clay, parallel to the river, avoiding St. Paul's, and whether under houses or not, to Aldgate, thence under Whitechapel-road to Mile-end, and so onward to Plaistow Meads, passing under the Poplar canal and the river Lea. In the neighbourhood of Plaistow, deep, spacious, and substantial reservoirs should be formed, capable of receiving the contents of this main sewer, and from which, by the operation of powerful engines, the same may be elevated and distributed either in the shape of liquid or as compressed manure upon the lands, the liquid portion being delivered into channels formed at such an elevation as would irrigate the meadows and at length communicate with the river, should any surplus water remain unused.

It is conceived that the branch sewer which would enter at Charing Cross would be capable of relieving all the district east of the Counties Creek, lying below high water, and perhaps be equal to take a portion of the Counties Creek sewer and of the Ranelagh in the event of an overflow, which the sewer about to be described as running westward could afford a discharge for, viz.

That of a new sewer, to commence at Knightsbridge, and thence to run westward, at a moderate depth below the surface, but still with an increasing current, till it reached some selected spot, probably about Brook Green, whence its contents might be capable of distribution over the low lands, or even the upper agricultural lands northward and westward of the reservoirs, which should be formed similar but of less capacity than those described to be executed in the neighbourhood of Plaistow.

A map has been prepared by Messrs. Milner and Braithwaite, the engineers, shewing all the deep wells in the vicinity of the metropolis, and which very distinctly describes the strata which would be to be intersected by the formation of these sewers, and of course facilitate the operation by the information it will afford, and by the avoidance of the reservoirs which are in existence.

It is a matter of tolerably easy calculation, as to what the magnitude of these sewers, and as to what their currents, as they proceed, should be, for it is obvious that if the blue clay is everywhere deep enough to admit of a rapid current, the amplitude of the sewer itself may be less in proportion than it would be were the current sluggish; information, however, is not at this moment at hand, but the matter is open for the commissioners of the four divisions, namely, the commissioners for Westminster, for Finsbury, the City, and the Tower Hamlets, to exert their faculties, and for their officers to enter upon the consideration of the importance and value of the improvement.

With regard to the expense, the present moment is favourable for the borrowing of money, as is evidenced by the high price of the public funds. An issue of a special parliamentary loan, secured upon the rates of the above-mentioned metropolitan districts, would in all probability be cheerfully met, the property assessable is so much. Besides, the labour of the country is now little employed, and nothing is required but what our national resources furnish. The property of individuals and the public comfort will be so greatly benefited by the plan, that an



annual tax will be amply available to discharge the amount borrowed in annual payments, as that of the Bayswater Tunnel Sewer has been, until the whole loan shall vanish, leaving London in possession of *cloaca maxima* superior in extent and importance to the boasted constructions of Rome.

#### AN OLD COMMISSIONER FOR WESTMINSTER.

The Bayswater Tunnel Sewer is about half a mile, say 2,640 feet, it cost 6,300*l.*, or about 2*l.* 8*s.* 4*d.* per foot; the eastern line of sewer may be computed at eight miles, or say 43,040 feet, which at 10*l.* per foot would be 430,400*l.*; the double of this sum will doubtless effect the object of a perfect drainage without issue into the Thames, except as above attempted to be described.

#### INTERMENTS IN TOWNS.

It appears that Mr. Chadwick, the secretary of the Poor Law Commissioners, has, at the request of Sir James Graham, been inquiring into the subject of interments in towns, and the report upon the matter has this week been published. From this we conclude that the Government contemplate some legislative measure with a view to mitigate those evils which unquestionably exist, and remove the danger which results from the dead and the living being crowded together within a few yards of each other, as in most towns of consequence is found to be the practice. There is no doubt, as Mr. Chadwick states, that emanations from human remains are likely to produce fatal diseases, and depress the general health of those exposed to them. This has been shown repeatedly by high medical authority. Instances of proof have been again and again pointed out; and it is impossible to tell to what extent disease and death have been spread abroad from the system of burial in the edifices in which hundreds weekly, perhaps daily, assemble—from the practice of using in tombs in which openings are left, wooden coffins only, which necessarily in a few years decay, and the air is impregnated with unhealthy effluvia—and from the constant up-turning of the soil, which, in a populous parish and a church-yard of limited extent, is little more than one mass of human remains. Besides, not only is the health of the people injured, but their feelings are often shocked, as we have lately heard in several disgusting instances in the metropolis, by the unavoidable disturbance of the sanctuary of the dead, long ere they have lost the marks and traces of humanity by crumbling again to their native dust. On these grounds, and looking to the importance and intricacy of the subject, the interests that may be brought into conflict, and the difficulties which have generally met private companies in the attempts to remedy the evils, we agree with Mr. Chadwick, that “the practice of interments in towns in burial-places amidst the habitations of the living, and the practice of interment in churches, ought for the future, and without any exception of places or acceptance of persons, to be entirely prohibited;” and that instead of the work being left to private associations, national cemeteries of a suitable description “ought to be provided and maintained.”

The mode in which it is proposed to effect this object is by providing for the expense of establishing national cemeteries by means of loans to be spread over a period of years; the burial fees and existing duties being collected and formed into a general fund, from which these loans should be repaid, and the compensation drawn which may be awarded to interests disturbed by the new arrangement. This seems practicable and fair, and thus far we are disposed to acquiesce in the plan.

But then come suggestions, some of which we are sure are repugnant to the general feeling of the community, and others are unnecessary and unjust. Here is one—

“That for the avoidance of the pain and moral and physical evil arising from the prolonged retention of the body in the rooms occupied by the living, and at the same time to carry out such arrangements as may remove the painful apprehensions of premature interments, institutions of houses for the immediate reception, and respectful and appropriate care of the dead, under superior and responsible officers, should be provided in every town for the use of all the classes of the community.”

If it be meant by this that on the death of a person the body shall be laid hold of by a

government officer, and *snatched* away from the sorrowing survivors to be deposited in a dead-house, under the care of parties whom the relatives neither appointed nor can control, then we say it is astonishing how any man could seriously propose such a violation of the settled habits and natural feelings of the people. An awful sanctity surrounds every thing connected with the dead; and those who have lost some cherished object—a child, a wife, a husband, or a father—know with what melancholy tenderness they have day by day visited and watched the loved remains till they were reluctantly yielded to the grave. This may be a weak feeling, but it is interwoven with the finest sensibilities of our nature, and we are quite sure that Sir James Graham will not attempt to violate it, by asking Parliament to enforce a regulation upon the whole community, which would only be justifiable, if justifiable at all, in extreme cases of cholera and fever.

Not content with interfering with the feelings of the people, Mr. Chadwick proposes to cut up root and branch the trade of the undertakers. He next suggests—

“That for the abatement of oppressive charges for funeral materials, decorations, and services, provision should be made (in conformity with successful examples abroad), by the officers having charge of the national cemeteries, for the supply of the requisite materials and services, securing to all classes, but especially to the poor, the means of respectable interment, at reduced and moderate prices, suitable to the station of the deceased and condition of the survivors.”

It is calculated that in England nearly five millions is paid annually for funerals. All this Mr. Chadwick proposes to take out of the regular currents of trade, and give to his officers of the cemeteries, thus seriously and unjustly injuring a large and most respectable class of tradesmen, amongst whom the natural course of competition prevents that “extortion” which is alleged as the ground of interference.

We regret that these and other objectionable propositions should be linked to the report, because they will excite a feeling against an alteration which is much needed, and if well and discreetly made, would be widely beneficial. It was a matter which required to be treated with great caution and delicacy; and to connect with it matters which would be regarded as an outrage on the living and an impertinent interference with trade, was most unnecessary and impolitic.

#### SCIENCE IN LANCASHIRE.

THE northern counties of England have been much noted for men of mathematical ability and general scientific information: even among the humbler classes of society the science of mathematics, and in particular that of pure geometry, seems to have been cultivated with the greatest success. The following extract which appears in the *Manchester Courier* of the 9th December, from a letter on this subject by George Harvey, Esq., F.R.S., to the British Association on its first meeting at York, will be read with interest.

“It was my intention,” says Mr. Harvey, “had I been enabled to enjoy the privilege of attending at York, to have drawn the attention of the meeting to the very remarkable circumstance of the geometrical analysis of the ancients having been cultivated with eminent success in the northern counties of England, and particularly in Lancashire. The proofs of this may be gathered from a variety of periodical works devoted almost exclusively to this lofty and abstract pursuit. I have now before me several beautiful specimens of the geometry of the Greeks, produced by me in what, for distinction sake, we call the inferior conditions of life. The phenomenon (for such it truly is) has long appeared to me a remarkable one and deserving of an attentive consideration. Playfair, in one of his admirable papers in the *Edinburgh Review*, expressed a fear that the increasing taste for analytical science would at length drive the ancient geometry from its favoured retreat in the British Isles; but at the time he made this despond-

ing remark, the professor seemed not to be aware, that there existed a devoted band of men in the north, resolutely bound to the pure and ancient forms of geometry, who, in the midst of the tumults of steam-engines, cultivated it with unyielding ardour, preserved the sacred fire under circumstances which seem, from their nature, most calculated to extinguish it. In many modern publications, and occasionally in the senate-house, problems proposed to the candidates for honours at Cambridge, questions are to be met with derived from this humble but honourable source. The true cause of this remarkable phenomenon I have not been able clearly to trace. A taste for pure geometry, something like that for entomology among the weavers of Spitalfields, may have been transmitted from father to son; but who was the distinguished individual first to create it, in the peculiar race of men here adverted to, seems not to be known. Surrounded by machinery, with the rich elements of mechanics in their most attractive forms, we should have imagined that a taste for mechanical combinations would have exclusively prevailed; and that inquiries locked up in the deep and to them unapproachable recesses of Plato, Pappus, Apollonius, and Euclid, would have met with but few cultivators. On the contrary, Porisms and Loci, sections of ratio and of space, inclinations and tangencies,—subjects confined among the ancients to the very greatest minds,—were here familiar to men whose condition in life was, to say the least, most unpropitious for the successful prosecution of such elevated and profound pursuits.”

In consequence of the poverty of several individuals of this humble class, residing in the neighbourhood of Manchester, who have distinguished themselves by their devotion to science, a meeting of persons favourable to the formation of a society for the relief and encouragement of scientific men in humble life, was lately held in that town under the presidency of the mayor, and was attended by many influential gentlemen. Resolutions for the formation and support of such a society were adopted, and the proceedings, which were reported in the *Manchester Courier*, of the 9th Dec., are of considerable interest.

Among other remarkable cases mentioned at the meeting are those of James Crowther, of Salford, formerly a weaver, who has distinguished himself as a botanist, and John Butterworth, of Haggate, near Royton, also formerly a weaver, who has acquired much celebrity in the neighbourhood by his successful cultivation of several branches of the mathematics, and especially that of pure geometry. These men are now, in their old age, much distressed by poverty and sickness. Many interesting details were given in the course of the meeting respecting their scientific pursuits and progress. It appears that Butterworth, from the commencement of the 19th century up to the present time, has been a regular contributor to several of the mathematical publications of the day. Hundreds of his solutions have been inserted in the *Ladies' and Gentlemen's Diaries*, in the *Mathematical Companion*, and in *Leybourn's Repository*, in which may be found the names of many of the most eminent mathematicians of the present day. It is to be hoped that in this university a few may be disposed to render assistance to these humble cultivators of science.

**TUNNELING THE TYNE.**—An ingenious plan has been suggested of crossing the Tyne by passing through a tunnel under the river, on the principle of the centrifugal railway. The carriages would descend by their own gravity into the tunnel from one side, and rise up on the other by the momentum acquired in the descent. It is proposed to construct the tunnel of metallic tubing, and lay it just within the bed of the river, so as not to form an obstacle to the navigation; the tunnel to be constructed of such a bore, as to obviate the possibility of the carriages getting misplaced in their passage. Railway carriages and vehicles of all kinds, as well as passengers, would thus be safely and rapidly transferred from one side to the other. It is considered, that with the present low price of iron, three tunnels might be cheaply constructed, all starting from the station of the Brandling Junction Railway, one proceeding in the direction of Nevill-street, the other in that of the Castle-garth, and the third going towards the station of the Newcastle and North-Shields Railway.—*Newcastle Journal*.





THE DUTCH CHURCH, AUSTIN FRIARS.

This church stands upon the spot where in 1252 Humfrey Bohun, Earl of Hereford and Essex, built at his proper cost a church and conventual buildings for the reception of a superior and brethren of the order of Augustine friars. Hence it obtained its title of "The Augustine Priory of London;" and the site and vicinity of that religious establishment still are, and probably will continue to be, known by the appellation of Austin Friars. The history of the friarial institution in question is in complexion and events similar to those of the more celebrated abbeys; it had during the interim between the dissolution and surrender (30th Henry VIII.) greatly extended its possessions, and had become to the citizens an object of especial veneration and regard, its prior having the rank and privileges of an alderman, and joining as such on public occasions and processions, with the single distinction of his civic costume being made in fashion to assimilate with his ecclesiastical vestments. After the surrender, the site, buildings, and lands, or the greater part of them (for we shall see presently there must have been some reservation with respect to a portion of the church itself), were granted to William Powlett, or Paulet, afterwards created Earl of Wilts and Marquis of Winchester. Great and Little Winchester-streets, in the city of London, and several others in that immediate neighbourhood, are built on the ground which formed the gardens of the first Lord Winchester, originally those of the Augustine Priory.

From the early date referred to there has been a church upon this spot, for although Paulet converted the greater part of the building to domestic uses, there was still a portion

of the older church reserved for public worship. The first Lord Winchester appears to have proceeded cautiously, if not reluctantly, in the work of demolition; but his son and successor, with less compunction, sold for 100*l.* the sacred pavement, and nearly the whole of the fine old monuments which covered the host of illustrious dead with whose remains the church and cloisters were crowded; and he further, for its price, stripped the roofs of their leaden covering, replacing it by tiles. The citizens feeling themselves outraged by this procedure, turned their attention to the preservation of the church, and in a petition, still extant, dated August 4th, 1600, signed by the mayor and principal civic residents, they solicited the Marquis of Winchester to atone in some measure by subscribing 50*l.* or 60*l.* towards repairing the remaining fabric, but this was refused. Hence, it seems the forbearance of Lord Winchester from altogether rasing the fabric was not voluntary, the Crown having, it would also appear, a reserved power over part of the ancient church; and this was eventually exercised by granting permission to the Dutch congregation in London to use it for their meeting and "preaching place." During the short reign of Edward VI., the grant was confirmed by letters patent, in which it is denominated a free gift, for the use of those of the Dutch or German nations who had fled hither on account of religion. This immunity has always been respected and acknowledged by the succeeding monarchs, and in the hands of the descendants of this respectable body, now much augmented by widely-extended and more stable commercial relations, it still remains.

It is an old custom for the Dutch congregation to present an address to each Bishop of London and Lord Mayor, upon their installation; and upon such occasions the party ad-

ressed receives the more substantial compliment of a piece of plate.

We shall in another number recur to this interesting subject, and shall illustrate it, as well by engravings as by an architectural description of the church in its existing state.

#### ON BREAST-SUMMERS IN BUILDING;

*How Abuse in the Frequent Use of them has Increased in Modern Times; Of their Inconvenience; Some Thoughts and Suggestions for Preventing the Evils Resulting from the Use of them; and Some Further Suggestions for Superceding on many Occasions the Use of them altogether.*

VIEWED as a principle of construction, the use of breast-summers is wholly inadmissible: for the superincumbent weight upheld by them acts upon them by direct cross-strain, a test to which no materials whatever should be put in a building formed upon a correct principle of construction.

It has been stated that from the shrinkage of the wood, the brickwork over a breast-summer usually cracks, falls, and becomes disjointed. But it must be admitted, that sometimes, though this be the case, a timber breast-summer is not itself defective further than happens from its shrinkage and yielding; for its fibrous nature imparts to it such toughness, that it will rarely break: but the inconvenience of leading to the disruption and distortion of the superincumbent wall is sufficient cause for its rejection.

At the present day it is in vain to argue with a trader, that his house of business would appear more respectable and elegant were it made with a due regard both to real strength and to strength of appearance: seeking only to expose his goods, and to undersell his neighbour, he little cares whether the fabric of his house be injured, or whether it be made in itself mean, provided his darling object be attained.

To such an extent is the description of house-breaking caused by cutting away the bottoms of houses for the imaginary necessary



purposes of trade, that many a trader not worth a shilling, will involve himself to the extent of several hundreds of pounds in putting in a breast-summer, and destroying all the stability of a good house, for the reinstatement of the damage to which he would be unable to pay.

Besides the shrinkage and deflexure of wood breast-summers, their liability to rot and to burn must be added; and if they be made of cast-iron, though they will not shrink or rot, yet when fire happens, they are (though said to be fire-proof) still more disastrous and less certain than those which are of wood.

Breast-summers of stone could hardly under any circumstances be relied upon.

The growth of the evil admission of breast-summers, of wood or of iron, has even lately extended largely into public buildings; hence we see the backs of porticos, raised upon high basements, fractured and sinking; and we observe them in many other situations, where a Wren, or other constructor who never lost sight of science, would have shuddered to use them.

The inconveniences resulting from the fracture of brickwork over breast-summers, for a long while caused the author very serious trouble: in all the examples where he used them, he had the timber cambered considerably, so as to counteract any of the effects of ordinary sinking; but this did not prevent fracture of the walling over the ends of the timber: it was a long while before it occurred to him, that this destructive effect was caused almost wholly by the shrinkage of the timber.

In forty instances where he used timber window-heads over the windows of printing-offices and manufactories, he found thirty-two instances of fracture: but in all these instances the posts between the windows were framed in one length from one window-head to another, and were braced or trussed between, so that though the brickwork became fractured outwardly, after the flaws were carefully stopped, no further inconvenience was suffered: in some of these instances it is true that the fracture was scarcely discernible; but the author has seen instances of heavy timber window-heads tier above tier, which have collectively so shrunk, that the brickwork over the upper windows sunk and fractured two and a half inches.

Influenced by the injury and disfigurement caused to brickwork by the shrinkage of breast-summers, the author has lately thought of a method of counteracting it: it is simply to slant off the ends of a timber breast-summer or of a window-head, as much as the quantity which



*a-b.* Breast-summer or window-head of timber.  
*c-d.* Part of ditto slanted off.  
*e-f.* A plate, or several bars of wrought-iron, laid upon the slanted part of the timber, and resting also upon the brick pier.  
*g-h.* Part of the brick-work, which throughout the whole height of the work is to be laid to the same slope as the timber. The slant must increase with the height and number of the breast-summers or window-heads: otherwise the upper timbers will sink more than the allowance.

Note. The slant must increase with the height and number of the breast-summers or window-heads: otherwise the upper timbers will sink more than the allowance.



The object of this seeming malformation is, that when the wood has shrunk to its smallest dimensions, the top of the breast-summer or window-head may be exactly level with the top of the pier; and the iron upon which part of the brickwork will be supported having moved like a floating bridge with the fall of the tide,

will also become level, leaving a small triangular crevice between it and the end of the timber, which, when shrinkage has ceased, may be stopped by a wedge: and thus the shrinkage of timber will cause the courses of the brickwork to settle level, instead of causing them to fracture, sink, and become distorted.

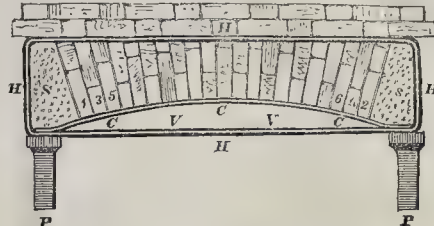
But as the author conceives that the use of breast-summers is scarcely honourable in architecture, under any circumstances, and under any form, and of any materials, he recommends the discarding of them altogether upon every pos-

sible occasion; there can rarely be any plea for the use of them besides absolute necessity, or the modern false taste of supporting a heavy upward mass of fabric upon scarcely any thing apparent.

The author has lately used, for the reception of walls which could only admit supports at their ends, a kind of breast-summers (or rather arches) composed of brickwork, with stone abutments, and the whole contained within two long hoops of wrought-iron: and this has proved successful; for provided the hoops be



Section.



Elevation.

*P. P. &c.* Story-posts of iron to be first let into the old brick-work.

*H.* Hoop of wrought-iron, welded completely and inserted in the brick-work, no more of the old work being removed than will be sufficient to admit the iron. When the hoop is inserted on one side of the wall, a second similar hoop is to be cut out for and inserted on the other side of the wall.

*C. &c.* Cradle-bars of wrought-iron which are to be cut out for and inserted within the hoops.

*S.* Skew-back of stone which is next to be inserted within the hoops.

*s.* Another skew-back of stone which is next to be inserted within the hoops.

*1, 2, 3, 4, 5, 6, &c.* The order in which the old brick-work is to be gradually removed, and to be replaced by a well-bonded arch of brick-work set in Parker's cement.

*V. &c.* Vacancy which may be eventually left between the hoops and the cradle-bars.

The old work between the story-posts is not to be removed till after all the other processes are complete.

If this mode be adopted in new work, much of the trouble and caution will be unnecessary.

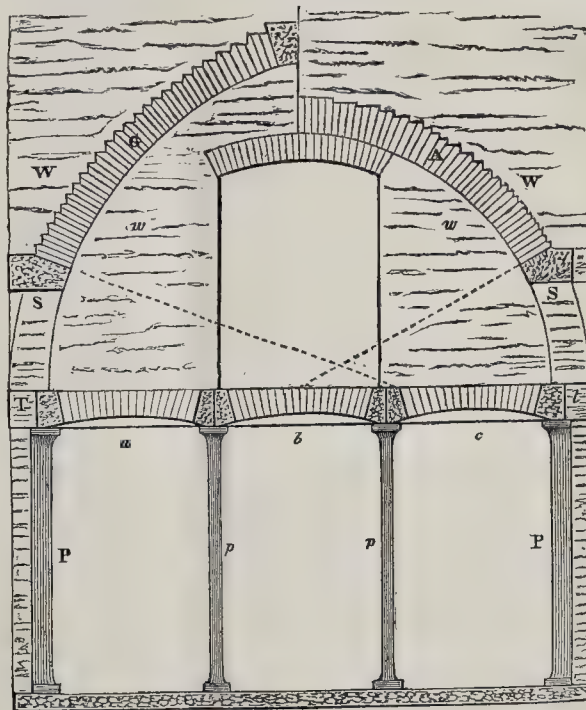
The two hoops should be pitched over, to prevent corrosion: and some cross ties may be used, in order to prevent the two hoops from moving further apart.

completely welded together, and be sufficiently strong, and the arch be bonded so closely as to admit of no settlement, neither expansion nor sinking to any sensible degree can take place: this trial proving successful, he has since employed the same means in an old building; whereby much of the trouble, expense, and inconvenience of shoring were saved. In adopting this method in old buildings, success will

depend upon the care and address with which the work is performed.\*

The author also suggests the following

\* The author lately adopted this mode successfully at the premises of Messrs. Rivington, St. Paul's Churchyard, London; part of a back-front was to be removed, and though this was so ruinous as to be almost ready to fall, the new work was inserted with only the use of half the usual quantity of shoring: and the operation caused no damage whatever to the work above.



*P. P.* Story-posts of iron to be first inserted.

*S.* A Skew-back of stone to be in succession inserted.

*A.* Arch which is to be formed piecemeal, only a small part of the old work being removed at once.

*G.* Gothic arch, which may on some occasions be preferred to the one last described.

*W. w. &c.* The old wall upon which the arch is to be first marked out, and into which the arch is to be afterwards set.

*p. p.* Minor story-posts of iron, which may be afterwards inserted if required.

*a. b. c.* Arched work instead of a breast-summer formed as described in § 542.

*T. t.* Wrought-iron tie, to prevent the arch and the story-posts from expanding.



method, which he believes may with good success be adopted upon many occasions, both in new and in old buildings; and he intends to put it into practice upon an early occasion: this is by supporting all the chief super-incumbent weight by a strong arch of brickwork, or of masonry, semi-circular or Gothic as the case may require (but the latter always if the work is to be covered with stucco, and is in old buildings); in this, as in the last-described method, shoring is nearly if not entirely superseded; and if address and care be used, no fracture will occur. The mode to be adopted, is first to fix the story-posts of iron; then to proceed to mark out the great arch, which may be inserted bit by bit (without endangering the fabric), till the whole is complete.\* The tie across may be made very light, according to circumstances, and sometimes so as merely to be sufficient to hold the story-posts from being driven apart; and in lieu of a breast-summer, may be inserted one or several such assemblages of work as are described in § 542. —From *Decline of Excellence in the Structure and Science of Modern English Building*. By Alfred Bartholomew, Esq., F.S.A., Architect, Professor of Carpentry to the Free-Masons of the Church.

#### WESTMINSTER BRIDGE.

The *Times* newspaper has published the subjoined remarks upon this structure:—

The late state of Westminster-bridge has excited, not without reason, a good deal of interest in the public. That interest has almost terminated in alarm and the apprehension of the destruction of the edifice, from the rumours that have arisen about what is going on, and the somewhat tremendous appearance of the excavations into the very body of the fabric, which have been partly seen through the boarding by which the footpath is confined, and at the ends of the boarding at those points where the foot passengers cross from one side of the foot pavement of the bridge to the other. To attach blame to any person or persons to whom the reparation of the bridge has been entrusted, would be invidious, and, as far as we can at present judge, unjust. It would require a very complete knowledge of engineering and of the science of bridge-building, together with a very minute inspection of all that has been done and is still being done at this bridge, to enable any one to give a decisive opinion of the labours of Messrs. Walker and Burges; and it would be a piece of very impertinent presumption on the part of anybody not practically and intimately acquainted with all the details and difficulties of the proceedings and processes either to condemn or praise. As far as we can form an opinion, these gentlemen have done all in their power to remedy the defects of a bridge, which, we believe, it is admitted was from the time of its original construction by Labeleye, nearly 100 years ago, understood to be defective in its foundation, or at least so balanced on its foundation, as to be extremely susceptible of danger from any alterations in the bed of the river, or from any cause by which an alteration could be effected upon its pressure. The report presented by Messrs. Walker and Burges to the Speaker of the House of Commons last summer, and which is reprinted below, will explain what it was the business of these gentlemen to perform, and also some other matters by which the public may partly judge of what will be the state and appearance of the bridge when the repairs shall be complete, and the whole of what has been proposed carried out.

In the mean time, a few words as to what was, until Saturday last, the state and situation of that part of the bridge by which the alarm has been caused will be of interest. The pier, called, we believe, the "seventeen-feet east pier," has been repaired and widened. Its pressure on the bed of the river was found to be at the rate of five tons and a half to a square foot, and it was found that the timbers of the original caisson, which were very much decayed, had been on the edges of the stone work of the pier forced out of their horizontal position, and bent and broken upwards by the enormous weight. The engineers, amongst

other means to remedy this defect, enclosed the whole of the lower portion of the pier with sheet piling, driven seven feet into the clay of the bed of the river, and made watertight by the closeness of the piles one to the other. Between the piles and the pier stone-work closely cemented was introduced, and the work was submitted to the judgment of those who were considered competent to form an opinion, and who gave an opinion that the means adopted were the best that were available. Nevertheless, the pier began or continued to sink, and danger was apprehended for the fate of the arch which it supported. The plan adopted to prevent such a catastrophe, and which it is hoped will prove effectual, was this:—the pavement of the bridge was taken up, and the immense mass of Kentish rag-stone, cement, &c., composing a concrete, and weighing upon the pier 2,400 tons, was removed from the spandril of the arch. Since this has been done, the pier has remained firm, and the settling of the foundation appears to have ceased. The concrete has since been removed from the spandrils of all the arches, and, in the place of a solid mass, brick arches have been substituted between the spandrils, by which nearly a third of the weight of the bridge will be removed, and the consequent pressure of the piers on the clay bed of the river relieved. The enormous weight of the balustrades and the heavy recesses will be removed, by which a further reduction of weight will be obtained, and the future projected ornamental alterations facilitated. This will, of course, be a work of some time; but if the bridge be ultimately rendered secure and more slightly than at present, nobody will be much inclined to find fault with what is a temporary yet necessary obstruction to passengers.

The following is the

"REPORT TO THE SPEAKER, BY MESSRS. WALKER AND BURGESS, ON THE ALTERATIONS PROPOSED BY MR. BARRY.

Sir,—As that portion of Mr. Barry's report to his Royal Highness Prince Albert (on the decorations, additions, and local improvements connected with the new Houses of Parliament) which refers to Westminster-bridge may naturally lead to the opinion that our plans, made under the direction of the bridge Commissioners, were confined to the repairing and extending of the foundations, for our superintendence of which he kindly compliments us; we consider it therefore a duty to prevent such a mistake, by stating, that the designs, estimates, and the original contract with Mr. Cubitt, included the repair of every part of the bridge, the 'removal of the present steep and dangerous activities,' and the 'lowering of the parapet and road-way to the lowest possible level' that appeared at the time to be consistent with the safety of the present arches. The second contract with Mr. Cubitt is for lengthening the piers, which are being carried to above high-water level, to receive arches for widening the bridge 12 feet. It will then be of the same width as London-bridge. All, in fact, that we have done to Blackfriars-bridge is designed and contracted for\* to be done to this bridge, with the very important addition of the preparation for widening. The steepest part of Westminster-bridge roadway will, when the designs are executed, be as easy as that of Blackfriars-bridge. That which rises 1 in 14 will be reduced to 1 in 24, and even this rise will be for only a limited length.

"To secure the foundations, which were in danger of being undermined by the scour consequent on the removal of Old London-bridge, has been the first object. The supposed difficulty of doing so effectually was increased by the opinion entertained by Labeleye, the original engineer, and others since his time, that, owing to quicksands, coffer-dams could not be applied; and the Commissioners have been desirous of removing all doubt on this point before proceeding with the spandrils, roadway, or parapet. Five out of the seven coffer-dams have been built; so far, we have been completely successful: and while the water was excluded, all the work which was required in repairing and lengthening the piers to above high-water has been done; 7 out of the 13 arches have also been repaired, as the coffer-dams gave facility for the scaffolding necessary for doing this. Thus far, therefore,

\* As the Commissioners have power to suspend or supersede the contract in respect of any works not commenced."

our design proposed to, and approved by, the Commissioners, corresponds with, and has anticipated, Mr. Barry's; but the idea of taking down the present semi-circular, for the purpose of substituting pointed arches upon the same foundations, is not ours; and we beg to state shortly why we do not concur in the expediency of this proposal.

"Mr. Barry's first argument for this change is, 'that the pointed arch will enable the road to be lowered, by materially reducing the thickness of the crown of the arches within what is considered necessary for arches of a circular form.' Now, we consider that the whole thickness of the stone-work and covering of the present centre arch may be reduced to about seven feet, which is the same thickness as Mr. Barry's ribs, arch, and covering, measured upon his section; so that, even supposing the principle he states, of the pointed arch requiring less thickness than the circular arch, to be correct, he obtains no reduction in thickness, and only lowers the roadway, by lowering the soffit of the arch. The generally approved theory of arches is, however, directly at variance with Mr. Barry's. In *Pruitt's Mathematical Principles of Mechanical Philosophy*—considered a standard work, and, as we are informed, a text-book at Cambridge—the theory is so clearly explained, that we give it in his own words:—'A pointed arch,' he says, 'must have a great pressure on its crown, to prevent its falling, because it may be considered as consisting of two extreme portions of a very large circular arch brought together, so that the pressure on the crown must at least equal the pressure of the portion of the circular arch which is removed. Flying buttresses always have a great pressure upon their highest part. The pointed arch will sustain almost any weight on its crown, provided the lower stones do not give way, and, consequently, the Gothic arch is stronger for lofty buildings than the circular; but the circular arch is far better adapted than the Gothic arch for bridges, since the pressure of weights passing over may act upon any part of the arch, not only on the crown.' Mr. Whewell comes, in different words, to the same conclusion; and the same can be deduced from Atwood, though not so clearly expressed. These are no mean authorities; indeed, we do not know an exception in any author, British or foreign, to the opinion, that the pointed arch requires a greater thickness of material at the crown than the circular arch to keep it from rising; and if so, the substitution of the pointed arch should, in place of allowing a reduction, demand an addition to the least thickness required for the present arches. Add to theory, the experience of every modern engineer of this or other countries, as shown in their bridges of any considerable size: for we are not aware of any example of a pointed arch for a bridge of any magnitude in the works of Smeaton, Rennie, Telford, Perronet, or indeed of any other.

"Mr. Barry's second argument for substituting the pointed arch, is 'the elevation of its springing above the level of high-water, by which the water-way of the bridge will be the same at all times of tide, in place of being contracted by the present spandrils at high-water nearly equal to 1-20th of its sectional area, occasioning currents, with a fall, and sometimes danger to craft in passing through the bridge under the influence of high winds.' Mr. Barry appears here to have stated 'sectional area,' when he must have meant 'width or chord'; for we find that in the section of his scheme, the contraction of the middle arch by the spandrils is about 1-20th of the width at the level of Trinity high water; but as the contraction is only a few feet in depth before the arch falls into the vertical line of the pier, the diminution of sectional area is not 1-20th, nor more than 1-120th, and this at high water only; and even this small diminution is in effect reduced practically to nothing as respects the current, when it is considered that the greatest velocity does not take place until half ebb, by which time the water has sunk below the level of the spandril. It is, we think, therefore evident, that the proposed alteration will not produce any useful effect upon the currents or the falls. When the bed of the river under the arches is lowered (which also is a part of the contract), and the coffer-dams removed, the present current through the bridge will be materially lessened. Some

\* The author has several times adopted the method above stated of inserting an arch in an old wall without shoring, and he has done so lately at his own residence. Since writing the above, he has been told that the same method was pursued in an alteration to a new church by the Regent's Park, London; but this method, so simple and obvious, he never heard of before he practised it himself.



practical good would be effected by the higher point of springing of the pointed arches, in giving more head-room for craft near to the piers; and as the Westminster-bridge arches have less space for navigation than any of the fourcity bridges, any increase of accommodation is desirable; unfortunately, however, while an addition is thus made for one-fourth of the width of the arch near the springing, a portion is taken away from the height of the remaining three-fourths, nearest the crown, where it is of the greatest importance; this diminution varies from 18 inches to 30 inches, so that the centre arch will not then have more height for navigation than the two arches adjoining the centre arch now have; and when we inform you that at high water of good tides the centre arch is the only one which some of the steamers can conveniently pass under, we think you will allow with us, that the proposed lowering will, in such cases, be rather a practical evil, as it will take from the convenience of what is now the least convenient bridge for navigation, to say nothing of the liability to the ribs being injured by masts and chimneys striking them.

"The 'artistic' point of view is the last insisted on by Mr. Barry; and on this, what we may say is with a due respect to his better judgment and taste in matters of architecture. The contract with Mr. Cubitt does not alter the present elevation below the crown of the arches; but, as you are aware, we have long since suggested that a new elevation for the bridge after the Norman style would be a great improvement. In this, however, we would not propose to reduce the magnitude of the features of the bridge, considering, that simple boldness and strength are essential qualities in a bridge over the river Thames, in London; and if so, that it is scarcely fair to reduce the parts of the bridge because those of the elegant florid edifice which is now being erected near it, are small. For palace architecture, the latter may be the best, and we do not venture an opinion as to the effect of Mr. Barry's great work, in which our professional employment was confined to the construction of the cofferdam and the river wall; but for a bridge, particularly in a city, with constant and heavy rough trade under and over it, the style of architecture ought, we conceive, to be more masculine. May not the new Houses be better displayed thus, than by accordance of style? The beauty of the detail of the new Houses is very great; the length 800 feet, without at present any striking feature or variety, also great; but we submit, whether an additional 800 feet of according composition and style, of still lower elevation, would not rather tend to render the ensemble dull and flat than effective? The style of the new buildings must stop somewhere. Can it do so better than at the bridge, which, as we have already said, appears to require a character different from the Houses of Parliament? If both faces of the arches are proposed by Mr. Barry to be alike, would there not be a want of accordance between the north face of the bridge and the buildings and mansions near to it, which there is, we presume, no intention of altering? Is a continuance of the same style required for so great a length as the Houses and the bridge together, although the 'pointed' may be the prevailing character of the building? Does not precedent reply to this in the negative, and prove it, by the fact that the periods of the original erection and of the additions that have from time to time been made to some of our finest buildings may be discovered by the style; the Saxon, the Norman, the pointed, and varieties of each being found in the same building, and yet the ensemble not inharmonious. We hope, therefore, that the superstructure of the bridge, though it may be different in style from the Houses of Parliament, may not be discordant.

"Westminster-bridge has been where it is, and as it is, for a century; it was there when the designs for the new Houses were made, and we never heard that to pull down Westminster-bridge to nearly low water was to be a necessary accompaniment to the adoption of any of the designs. If you and the other Commissioners had known that such alterations were contemplated, you would not, we are sure, have allowed the works to have proceeded as they have done, until nearly two-thirds of the whole to above high water had been completed, including the renewal or repair of the arch stones.

"We may name here an objection to the

form which Mr. Barry has proposed for the arches, as tending to lessen the stability of the bridge. Labely considered that by adopting the semi-circular arch, which presses vertically upon its piers, each pier might be considered an abutment, so that if one arch were to give way, the piers would support all the others. From the greater height at which the proposed pointed arches spring from the piers, and their greater lateral pressure or thrust upon the piers, the above would not be the case. On the contrary, the failure of one arch would, we conceive, cause the destruction of all the piers and arches. This consideration is not to be disregarded in a bridge the piers of which have been so badly founded, that to support them has been a constant expense, and is at this moment a source of considerable anxiety, although the works we have in hand, if as successful as hitherto, will render the piers much more secure than they have ever been; we hope perfectly so.

"On the whole, therefore, we have reason to be pleased that Mr. Barry approves the various improvements in the bridge which the Commissioners have contemplated, and with one exception, contracted for. The only addition he makes to them is the substitution of the pointed arch, which, for the reasons stated, we cannot advise. We agree to the advantage, in point of taste and utility, of keeping the roadway of the bridge low; we have designed doing this as far as can be done, having regard to the funds of the Commissioners, and therefore without disturbing the present arches. There is a way by which the height of the roadway might be reduced below what either Mr. Barry or we have yet proposed, at one-fourth of the expense of his plan (which would, we think, much exceed his estimate), and without lowering the soffit of the arch, or diminishing in any way the convenience of navigation; but we avoid entering upon, or committing ourselves to this, until we have considered the subject more in detail, and understand it to be the wish of the Commissioners that we should do so; for the works we have already recommended may go as far as their unassisted funds would justify.

"We have the honour to be, Sir,

"Your obedient servants,

"WALKER and BURGESS.

"The Right Hon. Charles S. Lefevre,  
Speaker of the House of Commons,  
Chairman of the Commissioners of  
Westminster-bridge."

In our next number we shall give Mr. Barry's reply, and shall ourselves make some observations to the purpose.

#### THE TOWER OF LONDON.

EXTENSIVE alterations and improvements are to be made at the Tower, which was recently visited by the Duke of Wellington in his capacity of its chief officer, or constable, preparatory to their commencement. His Grace made a minute survey of the buildings and localities, attended by Captain Erlington. The two archways contiguous to the Salt Tower, at the eastern extremity, near the St. Catherine's Dock, and the houses extending in a northerly direction opposite to what are called the Irish barracks, are to be pulled down, in order to widen the thoroughfare for foot passengers and carriages. The tenements to the westward, now occupied by some of the warders and resident clerks of the Ordnance Department, and which are situate in the rear of the Small Armoury, are likewise to be razed. On their site are to be erected barracks of sufficient magnitude to accommodate one thousand men; the Map Tower is to be converted into officers' barracks. The Beauchamp Tower, or State Prison, which is at present the mess-room of the officers of the battalion of Guards on Tower duty, is to constitute the new Small Armoury, to be placed in charge of the warders, and to be opened to the public. The men's barracks will form the northern side of a new square, and face the White Tower; the eastern side will consist of the officers' barracks in rear of the Irish barracks. The intervening space is to be made into an esplanade for the recreation of the troops. The moat having been drained and levelled to low water mark, is to be planted with trees and evergreens (which latter are to be trained up the walls of the fortress to conceal them from the eye), and used for pleasure grounds and the occasional exercise of the men.

#### THE NEW ROYAL EXCHANGE.

THE following are said to be the heads of the information contained in the last report sent in by Mr. Tite, the architect of the new Royal Exchange, to the Joint Grand Committee for Gresham Affairs:—

It states that, with respect to the external works, the grasshopper vane, repaired and regilt, was deposited in its place on the 8th of December last; that the tower was completed to the cleaning down of the stonework, a process which will be effected as the scaffold is being removed. At the west façade the columns and architraves of the great Venetian windows have been set, and the carved shields and festoons over the opening and over the whole of the central arch have been finished.

As to the internal works, the report touches first upon the basement, and states that the vaults over the basement have been completed, with the exception of an arch which is to be formed under the staircase leading to Lloyd's. In the London Assurance portion of the building, on the one-pair floor, the whole of the fire-proof arches have been turned, and the joists and partitions in the western end are in their places. In other parts the plates are laid. On the two-pair floor the joists have been laid all through. The roof has been nearly completed, both plumbers' and slaters' work being almost wholly finished.

In the Royal Exchange ground-floor the fire-proof arches have been turned throughout, and the joists and partitions have been nearly all deposited in their places. In the two-pair floor the joists have been all laid and the quartering is in a forward state. The leadwork to the roof of the portico has been within a third completed, and this department will require very little more labour generally.

In the unappropriated room on the one-pair floor the fire-proof arches have been completed as well as the joists and partitions. In the two-pair floor similar progress has been made.

In Lloyd's room on the one-pair floor all the fire-proof arches have been turned. The reading-room and other rooms on each side of the tower remain in the same condition in which they were represented to be at the time the last report was made. In the roof the plumbers' and slaters' work is throughout exceedingly forward, and but little remains to complete that portion of the work.

With regard to the sculpture, Mr. Tite expresses his satisfaction at being able to report that every figure has been transferred from the model to the stone, and that a month's labour will complete the work, so as that it will be ready for hoisting within that period. When the sculpture shall have reached its appropriate position, the finishing touches will be given to it by the sculptor. Judging from its present advanced state, the architect entertains no hesitation in assuring the committee, that if necessary, it could all be in its place and completely finished within two months from the stated date.

The dials and hands of the clock have been prepared, and will be placed as soon as the scaffold has been sufficiently removed to enable the men to place them with safety. The machinery of the clock is very nearly completed, and the only thing remaining unsettled is the arrangement with respect to the actual tunes of the chimes. Upon that subject Mr. Tite had consulted Professor Taylor, the Gresham Lecturer on music, and he hoped that before the next meeting of the committee he should be prepared to report the result. The moulds for some of the bells have been prepared, and in the course of a month several of the bells will be cast. Mr. Tite concludes with congratulating the committee, at the close of the third year of the work, on the generally favourable state of the seasons throughout the whole period. The mildness of last winter, and the unusually fine spring, which followed, were greatly in favour of building operations, and though the early part of the summer was wet, yet since August up to the present time scarcely a day has been lost by interruption from the weather. He could see nothing at present, unless some unusually severe weather should occur after Christmas, to prevent the realization of his hopes that the contract would be completed within the time originally agreed upon.



## FIRES IN LONDON, 1843.

At a meeting of the directors of the principal insurance companies composing the committee of the London Fire Establishment, which was held at the chief station in Watling-street, Mr. Braidwood, the superintendent of the brigade force, made his annual report of the fires that have occurred in the metropolis and its suburbs during the past year. The report, which is extremely voluminous and interesting, commences by stating that the fires in 1843 as compared with the previous year have decreased by twenty; the average, however, for the last ten years shews an increase of 62. The number of fires and alarms which have happened from January 1 to December 31, 1843, at which the engines of the establishment have been called into operation, amounts to 901. It further mentions that the fires by which premises were totally destroyed numbers 29, buildings considerably damaged 231, ditto slightly 469, chimneys 83, and false alarms 79. Total 901. It also appears that large fires, providentially, have not been so extensive and numerous as those that have occurred in previous years. Mr. Braidwood observes, that the following were attended with the most serious loss of property:—On the night of the 16th January, the two large floor-cloth manufactories of Messrs. J. Rolfs and Gunstone, situated in the Old Kent-road, were totally consumed, together with two dwelling-houses. It will be recollected that some surprise was manifested at the great height which the fire attained, which he attributes to the factories being almost entirely composed of wood, and the great delay that arose in getting a supply of water after several of the engines had arrived. The next took place on the 10th of July at Mark's, the extensive marine-store dealers, in Leicester-place, Greenwich, and the great fire at Topping's Wharf, on the morning of the 19th of the same month, which, it will be remembered, destroyed four warehouses, besides St. Olave's Church, and Watson's Telegraph. The extent of this conflagration he accounts for by the fire breaking out in an oil warehouse having no party-walls, and an inefficiency of water. It will be recollected, that the church was sacrificed in order to preserve property which otherwise would have been destroyed to the amount of 400,000*l*. The report thus details the fires that occurred:—"At the turpentine distillery, Rotherhithe, in January; at the Golden Lion, Bexley-heath, in June; on the 16th of July, at Pinchin and Johnson's oil-works, St. Georges-in-the-East; at Newberry's the chymist's, in Fetter-lane, where five lives were lost, on the 19th of August; the three that followed in rapid succession on the night of the 14th and morning of the 15th of September, at Limehouse, Wapping, and Westminster; the fatal fire in St. Martin's-court in October—three lives lost; and, lastly, those at the candle manufactory in Paradise-street Lambeth, and Bramah's engineering factory at Pimlico, during the last month." Of the 29 large fires which are noticed at the commencement of the report, the number of buildings consumed thereby amounts to 40. Further on it mentions the different trades at which fires have occurred and their causes. There are a great number of them, however, marked unknown, and it is too strongly believed that the principal part of them have been occasioned by incendiaries. 280 in private houses, chiefly caused by bed and window-curtains igniting through neglect of domestics, 59 lodging-houses, 30 licensed victuallers, 23 coffee-shops, 20 woollen and silk mercers, 23 sale shops, 20 cabinet-makers, 5 public buildings, 10 bakers, 7 lucifer manufactories, and three ships. A large number, however, are described to have originated in offices, sheds, &c. The chief causes are stated to be carelessness of servants, and defects in stoves and flues. The number of fires that have taken place since the formation of the establishment in 1832 up to the present time amounts to 6,523. The report then concludes by observing that the most valuable assistance has been, on all occasions, rendered by the police at the above conflagrations.

**KERWORTH.**—The spire of the beautiful church at this town having been recently repaired, the newly-gilded vane was placed upon its summit on Monday last. The height of the spire is fifty-three yards.—*Nottingham Journal*.

## DR. SOUTHEY'S MONUMENT.

In consequence of a desire which has been generally expressed that a public testimony of respect to the late poet laureate should be placed in the church of Crosthwaite, near Keswick, in which parish he had spent the greater portion of his life, a meeting was held at Keswick, on the 31st of last October, when various resolutions, for the purpose of carrying the above purpose into effect, were unanimously agreed to. The first of these resolutions was, "That in accordance with what appears to be a general wish, a tablet, with a medallion of Mr. Southey, in white marble, be adopted as the monument to be erected; and that Wm. Wordsworth, Esq., poet laureate, be requested to write the inscription."

With this request Mr. Wordsworth cheerfully complied, and having been favoured with a copy of the inscription, we lay it before our readers, for their gratification:—

"Sacred to the memory of Robert Southey, whose Mortal Remains are interred in the neighbouring Churchyard. He was born at Bristol, October 4, 1774, and died after a residence of nearly 40 years at Greta Hall, in this parish, March 21, 1843.

"Ye torrents, foaming down the rocky steeps,  
Ye lakes, wherein the spirit of water sleeps,  
Ye vales and hills, whose beauty hither drew  
The poet's steps, and fixed him here on you  
His eyes have closed; and ye, loved books, no more

Shall Southey feed upon your precious lore,  
To works that ne'er shall forfeit their renown,  
Adding immortal labours of his own:  
Whether he traced historic truth with zeal  
For the state's guidance, or the Church's weal;  
Or fancy, disciplined by studious art,  
Informed his pen, or wisdom of the heart,  
Or judgments sanctioned in the patriot's mind  
By reverence for the rights of all mankind;  
Large were his aims, yet in no human breast  
Could private feelings find a holier nest.

His joys, his griefs, have vanished like a cloud  
From Skiddaw's top; but he to Heaven was  
vowed

Through a long life, and calmed by Christian  
faith

In his pure soul the fear of change and death."

## OXFORD SUMMER CIRCUIT.

EVANS V. OAKLEY, AND OTHERS.

**SALON, Aug. 10.**—A surveyor of highways is not authorized to pull down fences erected within fifteen feet of the centre of the road, unless they be erected also on the highway.

It appeared from the evidence that the close in question was situate in the township of Stoney Stretton, on a road leading from Edge to Westbury. The road was a mere county lane, almost covered with grass. Parallel with, and adjoining the road, was a strip of waste ground lying three-quarters of a yard above the level of the highway, and bounded on the other side by a fence which divided the wastes from the other land belonging to the plaintiff. About eighteen years ago, this strip of waste land was made the subject of negotiation between the parish and the plaintiff, and it was actually enclosed and used as the parish pound for three years, but no conveyance was ever executed, as the money agreed upon was not paid. Subsequently, therefore, the plaintiff took possession of the land—pulled down the pound, and erected on the waste land a fence of posts and rails for the purpose of separating it from the road, having at the same time thrown down the fence which had previously divided the waste from his adjoining field. It was admitted that for sixty years back the waste was not known as a road on which people had travelled. Opposite to the place in question, the road was fourteen or fifteen feet wide, which was rather under than the average breadth of the whole road. The width of the part enclosed was seventeen feet. The defendant Oakley was surveyor of the highways, and by his direction, the other defendant, one Phillips, pulled down the fences which the plaintiff had erected on the waste.

On behalf of the plaintiff it was urged that the surveyor was only required to maintain a waste of twenty feet for the cartway when the ground between the fences including it would permit; and submitted, that as the fence pulled down by the defendants was not erected on the highway, although within ten feet of its centre, the provisions of the statute did not

apply.—*Lowen v. Kay* 4 b. & c., p. 3, was precisely in point. There the question arose upon the 64th sec. of the statute 13 Geo. 3, c. 78, the provisions of which were almost identical with the terms of the 69th section of the present Highway Act, and the Court of B. R. held that unless the fence were on the highway, the party erecting it is not guilty of any offence against the statute, nor was the surveyor authorized to remove it.

Maude, J.—I cannot distinguish this case from *Lowen v. Kay*. Two things must concur to bring a fence erected under circumstances like the present within the provisions of the statute. The fence must be within fifteen feet of the centre of the road, and it must be erected on the carriage highway.—*J. P.* p. 660.

Verdict for the plaintiff, with damages and costs against the surveyor.

## CHURCH EXTENSION.

A MEETING of the Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels was held at their chambers in St. Martin's-place on Monday last, the Lord Bishop of London in the chair. There were also present the Lord Bishop of Llandaff, Sir R. H. Inglis, baronet, M.P.; the Revs. Dr. Spry, H. H. Norris, J. Jennings, and B. Harrison; Messrs. N. Connop, J. S. Salt, Benjamin Harrison, S. B. Brooke, Wm. Davis, E. L. Badeley, &c. The reports of the sub-committee having been read, the board examined the cases referred to their consideration, and finally voted grants of money towards building additional churches or chapels at New Swindon, Wilts, the principal station of the Great Western Railway; at Norland, in the parish of Kensington, Middlesex; at West Hide, in the parish of Rickmansworth, Herts; and at Yeovil, Somerset; also towards enlarging and rebuilding existing churches at Bevingdon, Herts, and St. Alkmund's, Derby; also towards enlarging and otherwise increasing the accommodation in the churches of Burlescombe, Devon, and Stoke Golding, Leicestershire. The population of these parishes is 43,231 persons, and the accommodation now provided in nine churches is 7,467 seats (being for less than one-sixth of the whole number), including 1,955 free seats, or one free sitting for 22 persons. The additional church room to be obtained by the execution of the works in aid of which grants are now voted by the society is 3,916 sittings, 2,716 of which will be free. One of the parishes assisted has, at present, church accommodation for less than one-sixth of its population, which is 17,000 souls; another, with 9,000 inhabitants, possesses a church room for about one-twentieth of that number; and a third, with a population of 7,000 persons, can accommodate barely one-sixth. The requisite certificates of the completion of five additional churches, of the rebuilding, with enlargement, reseating, &c., of three other churches, were examined and approved, and orders were issued for the trustees to pay over to the treasurer the sum granted by the society in each case, in order that he may remit the same to the respective applicants. The population of these 13 places is 26,875 persons, and, before it was determined that the works now completed should be executed, the church accommodation provided in these parishes was 5,854 sittings, including 1,367 free seats. One of the parishes, with a population of upwards of 6,000 persons, had accommodation for about one-ninth of the number, and five others, each with a population of about 2,500 persons, possessed church room for from one-fourth to one-eighth. With the aid of the society's grants 3,015 additional seats are now provided at these places, 2,523 of which are free. Since the last meeting, the committee have received intimation that applications will be made for their assistance towards the erection of churches in six populous parishes, and towards rebuilding, enlarging, and otherwise increasing the accommodation in the churches of seven other places, as soon as the requisite plans, specifications, and other documents can be prepared for their inspection. In addition to which, the plans, &c., relating to six applications are now under the consideration of the sub-committee, preparatory to their being referred (if approved) to the general board.



## THE CHURCH OF THE HOLY TRINITY.

The following letter has been addressed to the editor of the *Hull Packet* :—

"Sir,—As a lover of ecclesiastical architecture, it was with feelings of regret that I saw mentioned in your columns the present dilapidated state of the church of the Holy Trinity, Hull.

"Nothing, surely, can be a greater sign of the religious degeneracy of our times, than the almost universal neglect into which our churches had fallen previous to the great movement which has of late been made in favour of Christian architecture. Those glorious structures (beautifully styled by Coleridge "Petrefactions of our religion") which, in their faded magnificence, bear testimony to the faithfulness of former generations, in raising temples worthy the honour of the High and Holy One who inhabiteth eternity, exclaim no less eloquently, through the decay into which they have wilfully been permitted to fall, against the faithlessness of this degenerate age.

"It is, therefore, with feelings of no common interest that I would congratulate the inhabitants of Hull on the noble efforts they are making towards the restoration of the church of the Holy Trinity (knowing, as I do, the architectural merit it possesses) to its pristine beauty. But, at the same time, I would wish to remind them that, although the flame of church-building zeal—but lately so nearly extinguished—has in some measure been rekindled, there is, it is to be much regretted, much of zeal without knowledge abroad among us. Without wishing to dispute the talent and ability of the architects they have selected, I would merely suggest the advantage of subjecting their plan for the approval of one of the architectural societies, either the Yorkshire or Cambridge Camden Society. Thus acting upon the principle that 'in the multitude of counsellors there is safety,' they would be sure of procuring the best advice this age could afford them in the restoration of their church; at the same time ensuring that sacramentality of design which is the distinguishing mark of true Christian architecture.

The design of Messrs. Lockwood and Allom, which I saw in this year's exhibition at the Royal Academy, appeared to me highly commendable; but I cannot conceive, whoever the chosen architect may be, that he could fairly scruple to offer his plan for the criticisms of an architectural society. Wishing the good people of Hull success in their pious undertaking, and thanking you for the space I have occupied in your columns,

I remain, Sir, your obedient servant,  
AN ECCLESIOLOGIST.

London, Dec. 19, 1843.

CHANGE OF VALUE IN AGRICULTURAL AND MANUFACTURING PRODUCE.—A quantity of agricultural produce which, in 1694 was worth £100, would, at the present price, be worth £243; while a quantity of manufactured goods, which, in 1694, was worth £100, would now only be worth £40—so that a quantity of agricultural produce which, in 1694, would have exchanged for £100 value of manufactures, would, at the present relative value, command the same quantity that would, at that period, have sold for £600. Or, a quantity of manufactures which, in 1694, would have exchanged for £100 value of agricultural produce, would, at the present relative value, command only the quantity which would then have been worth £16. 9s. 2d. It may be curious and interesting to examine a few of the articles separately.

Butter and cheese have risen in price during that period 193 per cent.  
Corn, flour, &c., have risen 161 per cent.  
Cows have risen in price 209 per cent.  
Horses have risen in price 267 per cent.  
Wool has risen in price 169 per cent.  
While cotton manufactures have fallen in price during that period 73 per cent.  
Coals have fallen in price 60 per cent.  
Iron and steel have fallen in price 45 per cent.  
Linen manufactures have fallen in price 36 per cent.

And, what is very curious, while wool has risen 169 per cent., woollen manufactures have fallen 10 per cent. in price. It must be remarked that these calculations are in no way disturbed by any changes in the value of money during the interval; for, whatever change in this respect has taken place, refers as much to one class of articles as to the other. The comparison is equally true, whatever changes have taken place in the value of our currency.

## Correspondence.

"To whatever extent the physical strength and probable duration of the working man's life are diminished by noxious agencies, to the same extent so much productive power is lost; and in the case of destitute widowhood and orphanage, burdens are created, and cast either on the industrious survivors belonging to the family, or on the contributors to the poor's rates, during the whole period of the failure of such ability."—Mr. Chadwick, in *Gen. Law Rept.*

## TO THE EDITOR OF THE BUILDER.

SIR,—Although the doctrine of the Poor Law Commissioners is not always to be received as gospel, I think no one can dispute the truth of the above remark, and as it appears to bear upon a subject I have long wished to see brought prominently before the public, and which is noticed in p. 513 of *THE BUILDER* (viz. Public Baths), I have thought proper to prefix it to these remarks, hoping that you will persevere in impressing upon the minds of "our pastors and masters" the necessity for such establishments until public baths are to be found throughout the length and breadth of the land.

In your article on Public Baths, I see that the working men of Edinburgh and of the metropolis are seeking to provide baths, but upon what principle is not stated. It seems therefore in this respect, as in most others, the working bees, alias the great multitude, are to be the pioneers in all that tends to improve the condition of the human race. From the present state of things one would almost imagine cleanliness and healthfulness to be a crime in all except those of patrician blood. The unwashed may certainly walk soberly and steadily in fresh health-giving fields and breathe the pure air provided alike for rich and poor (that is, if he can find time to do so, and then he must beware of trespassing and have the fear of the law before his eyes); he must be very careful not to refresh his dust-begrimed and toil-worn limbs in a bath prepared for him and to which he is invited by nature, for he has been most probably forewarned by a large board painted in staring characters that "all persons fishing or bathing in this water will be prosecuted as the law directs." Now, Sir, it appears to me that if the laws and decencies of civilized life, ownership of the soil, &c. forbid the free use of those blessings provided by a God of Love for all his creatures, that they ought surely to provide an equivalent for the benefits of which they deprive them. This, I conceive, society fails of doing so long as any and every man has not an opportunity of effecting something more towards cleanliness and healthfulness (which are nearly allied) than by mere face-washing perhaps once a week, which I am sorry to see is the case too frequently in our manufacturing towns; and even in those towns where swimming-baths are provided, they are in the hands of private speculators, who of course require payment from all those who may be disposed to bathe, such sum being much more than a large majority of people can afford to pay oftener than once a week.

People who can only avail themselves of the bath once a week, soon learn to do without it altogether. Now it either is or is not the duty of a government to be watchful as to every thing that may tend to the benefit or injury of those placed under its charge. That it is the duty of our rulers thus "to be found watching," I cannot, I think, be denied, and if the truth of Mr. Chadwick's remarks be admitted, I beg to submit that the question of public baths and gymnasia is one which ought to engage the most serious attention of those placed in authority over us. What, I would ask (in connection with proper bathing places), can be better calculated to raise up

"A bold peasantry, their country's pride," than the setting apart of a few acres of land as gymnasia, not only in every large town, where there should be several, but in every village? here all kinds of athletic games should be encouraged, and prizes might be given occasionally as at our agricultural meetings. The nations of old appear in their most high and palmy days to have been aware of the great advantages and happiness which a healthy high-spirited nation, not enervated by luxury, so derives. It was in the gymnasia of the Greeks when Greece was Greece, that the young were instructed in the arts of peace and war, and in all accomplishments calculated to make them useful citizens, and we are told that "as long as they were protected by the state, the sciences and the arts were cultivated with great zeal." The baths of Diocletian, Titus, Agrippa, Nero, Domitian, and others, bear testimony as to the great care taken by the ancient Romans to provide both for the minds and body of even the *populace*. They are described as having staid among extensive gardens and walks containing large balls for swimming and bathing, some for conversation, others for various athletic and manly exercises, some for the declamation of poets,

lectures of philosophers, &c., and for every species of polite and manly amusement. The *Therma* were, at an immense expense, constructed chiefly for the use of the plebeian class. "For, supposing each cell of Diocletian's baths large enough to contain six people, yet even at that moderate computation 18,000 persons might be bathing at the same time."

Even the savage tribes of America, as we are informed by Messrs. Lewis and Clarke, make use of the vapour-bath, which they greatly esteem for all kinds of disease. Where must the labouring poor in England go for a vapour-bath? Now, Sir, it appears to me that the great mass of the people should not only have opportunities of healthful exercise, but should also be induced to make use of them. In order to this, might not every town containing above a certain number of inhabitants, say 5,000, be compelled to provide bathing accommodation for a certain proportion of its population free of charge? in connection with which there might be private baths, for which remuneration might be required; these, as bathing became general, would probably pay the expenses required in keeping up the public swimming-baths. Many different modes of carrying out the principle might be suggested, and trusting that some of your correspondents, who are much more capable than myself of doing so, will take up the subject.—Yours, Leamington, December 23, 1843. NORMAN.

## LONDON, ITS SIZE AND POPULATION.

SIR,—Perhaps there is no way of really giving the mind a full comprehension of the size of any place better than the comparing such a place with others well known.

Most persons are acquainted with some of the following towns and cities, viz., Lincoln, Warwick, Dover, Boston, Winchester, Salisbury, Colchester, Yarmouth, Durham, Gloucester, Ipswich, Stafford, Hereford, Rochester, Doncaster, Carlisle, Canterbury, Wakefield, Hertford, Bedford, Bridgewater, Chesterfield, Darlington, Cirencester, Bury St. Edmunds, Devizes, Dartmouth, Beverley, and Grantham. Now we all know what a vast overgrown town is Manchester, but perhaps few would suppose that the whole of the population of the above cities and towns would be required to make another Manchester. If to the foregoing places, the last excepted, be added Gainsborough, Peterborough, Dartford, Huntingdon, Shaftsbury, Ely, Stamford, and Lichfield (so gigantic has been the stride which the metropolis has made between the years 1831 and 1841, that a population equal to the thirty-seven towns named above has been joined to it within that short period, during which time London has increased nearly 400,000. If this calculation be extended, by adding to these thirty-seven towns the following great and important places, viz. Liverpool, Bristol, Birmingham, Nottingham, Newcastle, Brighton, Bath, Leicester, Cambridge, Chester, Halifax, Derby, Huddersfield, Norwich, Northampton, York, Exeter, Lancaster, Worcester, Ramsgate, Plymouth, Scarborough, Taunton, Leamington, Newark, Mansfield, Whitby, Kidderminster, Sheffield, Tunbridge, Leeds, and Shrewsbury, making altogether sixty-nine of the principle cities and towns of England; yet so immense, so almost inconceivable is the population of the metropolis, that the whole of these places joined together would not make another London, for these sixty-nine towns make 1,873,189, when added together, whilst the metropolis alone is 1,873,676, leaving an overplus of 487 souls in favour of London. It would also require 534 towns as large as Huntingdon to make another metropolis.

So rapid is the growth of this queen of cities, that a population equal to that of Salisbury is added to its numbers every three months, but so overwhelmingly large is this Leviathan of towns, that this constant and progressive increase (stounding as the fact may appear) is scarcely perceived, for it is almost like throwing a bucket of water into the ocean. Such is London—the city of the world.

N.B.—These calculations are based upon the last census. J. R. W.

16, Norton-street, 1st Jan. 1844.

## SWISS COTTAGES V. NORMAN.

SIR,—Your correspondent, "Norman," very justly calls the attention of your readers in general to the design for a Swiss cottage, given in page 471 of *THE BUILDER*, from the pencil of "P. T." After quoting from an article in the *Architectural Magazine* on the subject of Swiss cottages by Karle Phusin, and comparing the description therein given with the design of "P. T." and making a few remarks on the discrepancy of the two authorities; he concludes by expressing a hope that some of your readers, who have had opportunities of judging of the comparative correctness of Karle Phusin's description and of "P. T.'s" design, will favour him by giving judgment in the case. I have waited with all patience and respect the



appearance of a letter in your columns from some one of your correspondents more worthy of attention than myself on the subject, but as I do not find that such letter has as yet appeared, I will beg your patience for a few moments to the following remarks, which are drawn from notes made during a summer's pilgrimage through the greater part of Switzerland; which pilgrimage was made as much with the view of visiting the rustic cottages and chalets of the boors, as of beholding the vast natural beauties of this most interesting country.

I passed much of my time in observing the peculiar construction of their roofs, and the clever mode of framing their houses generally; and certainly, in my judgment, the design of "P. T." as much resembles a Swiss cottage, as the towering *chaco* of a Belgian officer resembles the hat of a cardinal, the only resemblance in either case being that they are intended to answer the same purpose. In the case of the design *versus* the Swiss cottage, each is intended as an habitation for man; and in the hat case, each is intended as a covering for the head of man,—*mais à nos montons*.

The roofs of (genuine) Swiss cottages are invariably extremely flat, with their eaves projecting in the proportion of one-fifth or even one-fourth of the entire height of the walls. The walls are frequently of stone or rubble-work to the height of the lower story, above which they are formed of 2 or 3 inch plank fastened by spikes to the uprights of the partition, and are dovetailed together at the angles of the building. The principals of the roof rest on the story-posts, which are framed and doweled into them. The parts of the principals projecting with the eaves are strutted with grotesque brackets to the joists of the floor below, which project in the form of corbels to receive their thrust. Thus, when the tie-beam is fixed, the whole building from the first-floor inclusive forms a truss, or rather a mass of trusses. One reason for the great strength given to these roofs is, that the winter winds blow very violently in these districts, as also the fall of snow is extremely great in that season. Now, in the first place to meet the first difficulty, namely, the probable *enlèvement* of the roof, huge stones are placed on planks on the outside of the tiles, to give as much resistance as possible to the lifting power of the winds; and secondly, as the snow rests on the roofs to the thickness of many feet, the weight thereof, added to that of the stones before mentioned, makes it imperative that great strength should be studied in the formation of the roofs, to prevent the crushing powers of the combined weight.

I am, Sir, your constant reader,

BAUMEISTER.

Norwich, December 30, 1843.

#### THE LEICESTER MEMORIAL.

SIR,—It is most desirable that in all competitions of a public character, honour, plain-dealing, and impartiality in the judges should generate and justify perfect confidence amongst the competitors. These premises being conceded, can all be true that I have heard on the subject of the proceedings in the matter of this memorial?

Can it be true, that, although Wednesday, the 20th ult., was named in the advertisement as the last day for the reception of designs, some one or more were actually received and allowed to be in time on Friday or Saturday, the 22nd or 23rd? If so, is this fair towards those, who, like myself, were much pressed for time, and hurried to complete our plans within the time prescribed?

Can it be true that one of the candidates (or perhaps more) personally paraded his designs to many of his friends amongst the subscribers and committee? If so, what secrecy or safeguard is there in the mottoes? It would be more straightforward at once to throw the matter open, and let the luckiest canvasser carry the day, than to induce those who either cannot, or will not, exert such undue influence, to enter into the lists with those who can and will.

Can it be true that a room has been taken in Norwich, in which all the designs have been arranged for public exhibition previous to the decision of the committee? If so, is it keeping good faith with those competitors who sent in their designs to a committee? I, for one, should decidedly object to such an exhibition at any time had I been consulted, and more especially to its taking place previously to the decision, and therefore subject to the "pressure from without" of private friendship.

Can it be true that a certain design having been injured in the journey, the designer and an assistant artist have been allowed to restore and beautify it in the very room where all the designs have been set out for exhibition? If so, whose design may they not, at least in part, adopt?

If these things be true, and I do not suggest them unadvisedly, what man of character would in future engage in competitions where superior talent is not his only rival? and if irregularity is to ride paramount, and rules to be set at naught, what con-

fidence can any have in the honour, integrity, or impartiality of a committee who infringe the rules which they themselves have framed, and by which they are pledged to the public to abide?

Should my suppositions be false, I shall look anxiously for some denial of them in your columns, since it is a matter of much interest to many.

Trusting that you will give insertion to this letter, I remain, Sir, your constant subscriber and well-wisher,

A COMPETITOR.

London, January 1, 1844.

#### VALUATION OF PROPERTY.

SIR,—If it lies in your power, I shall esteem it as a great favour if you will furnish me (through the medium of your valuable publication) with a little information on the correct system to be pursued in the valuation of property, both leasehold and freehold. From the nature of my profession, I am sometimes called upon to give a valuation of property, and I must confess to you, that although up to the present time I have managed the matter pretty well, I am by no means satisfied with my present knowledge on the subject of valuation. I have oftentimes inquired of those who from their age and the nature of their calling, I took it for granted knew all about it, but I found to my surprise, when I put the question to them, that they knew little more than myself. I found that their system, if it may be so called, amounted to little more than what is called a good guess. If you know of any publication which fully enters into the detail of the matter (you will see by this remark that I do not want merely a set of tables calculated in a way no one knows except the person who framed them), I shall be glad to purchase it; if you do not, perhaps yourself, or some of your talented correspondents, will be so kind as to throw a little light upon the subject. I have no apology to make for troubling you with this letter other than this, that I have read your truly interesting and valuable publication from its commencement. Wishing you much success now that we have entered upon another year, I remain,

Your obedient servant,

Birmingham, Jan. 1, 1844.

J. C. S.

[The subject of valuation is in a great measure kept secret by those engaged in profitable practice: Inwood's tables are those most used in London. To be a good valuer requires great experience and local knowledge, an intimate acquaintance with *interest*, reversions, leaseholds, and all the diversified cases which come before such a practitioner; the rental, real or estimated, is the foundation-work of every such calculation; then follows the discretion in assuming a per-centage of returns; and the number of years' purchase, whether for the ground, the buildings, or reversionary interest, or improvements, must depend upon circumstances, and can only be learned by practice and ability—out of one valuation many questions often arise, and no rule can be given.—Ed.]

#### CARPENTERS' AND JOINERS' WORK.

SIR,—As one of many who would wish to have a work of general information on carpenters' and joiners' work, those that are already published being very expensive, I would suggest to the proprietors of *THE BUILDER* whether it would not fully answer their purpose to get up such a work, as good and as cheap as possible, to be issued weekly. The want of it is greatly felt by the majority of the trade, and the small portion of work that falls to the lot of too many (I am sorry to say), myself among the number, renders it impossible to provide ourselves with one.

Several of my acquaintance have regretted that you have not issued an engraved frontispiece to the first volume of *THE BUILDER*; we would willingly pay sixpence if it could be got up for so small a sum.

I would also wish to ask if there is any possibility of obtaining work through the advertising columns of *THE BUILDER*, as unless I thought there was a good prospect of it, I could not afford to do so.

Heartily wishing you all the success possible for your very excellent *BUILDER*,

I remain, Sir, yours, &c.,

N. H.

[We recommend the works of Tredgold and Nicholson, and do not think them more expensive than any workman may easily procure. Many who have advertised in our columns have reaped speedy benefit.—Ed.]

SIR,—Will you have the kindness to inform me in your next whether there is any duty on building materials used in building or making additions to a church or burial-ground.

I remain, Sir, yours, obediently,

AN INQUIRER.

[The government return the duty upon the materials used in the building of new churches

under her Majesty's Commissioners, but such duty forms a portion of the Commissioners' fund, and is not usually given up to the undertakers of any separate work, though sometimes upon petition to the Treasury, it has been so remitted, as in the case of St. Pancras New Church.—Ed.]

SIR,—Will you have the goodness to inform me in your next number where very fine steel pens may be obtained for the purpose of sketching profiles of cornices, capitals of columns, and other fine work in architectural drawing. crow-quills being too thick, and being also very troublesome on account of requiring continually to be mended.

I am, Sir, your obedient servant,

JOHN WADGE.

77, Great Russell-street, Dec. 30, 1843.

[We have been so much troubled ourselves for some time past by not obtaining either drawing-pencils or sketching-pens to our mind, that gladly would we be ourselves informed where those indispensable implements of superior quality are to be obtained.—Ed.]

SIR,—I shall feel obliged if you can inform me in your next *BUILDER* what the difference of price is between brickwork and that of ashler or freestone in or near London.

I am, Sir, yours very truly,

Liverpool, 2nd Dec. 1843.

J. M.

[This question cannot be answered without it is accompanied by an account of the descriptions of the kinds of brick and stone which would be paralleled with each other.—Ed.]

#### Miscellaneous.

STATUTES FOR THE CITY OF LONDON.—The bronze equestrian statue of the Duke of Wellington, to be placed opposite to the entrance to the new Royal Exchange, is proceeding rapidly towards completion, under the direction of Mr. Weeks (the successor to the late Sir F. Chantrey), to whom it is intrusted. The statue of William IV., from the design of S. Nixon, to be placed at the junction of Gracechurch-street and King William-street, will be shortly raised upon its pedestal. The figure is colossal, being upwards of 14 feet in height. It is executed in Devonshire granite, and will cost when completed £2,000, which sum was voted by the corporation of the city of London for that purpose. His Majesty is represented in the costume of a high admiral. Upon the pedestal (a round one), is sculptured a wreath of laurel, in the centre of which an appropriate inscription will be engraved. A statue by Nixon is likewise in a forward state, of John Carpenter, the town clerk in the reign of Henry VI., founder of the City of London Schools, and executor to the celebrated Richard Whittington. This statue is six feet high, and will be executed in Roek Abbey stone, similar to that used by Bailey, Rossi, Westmacott, and others, for the friezes and pediments in front of Buckingham Palace. It is to be placed upon the first landing of the City of London Schools, and exactly opposite the principal entrance. There is further, in the same *atelier*, in active preparation, a statue of Sir John Crosby, to be placed in Crosby Hall, Bishopgate-street. The model exhibits the knight in the "winged" armour of the period, examples of which may be met with in the Tower, &c., and of this particular suit at the tomb of the knight himself, in the church of St. Helen's, close by the hall of which he was the possessor.

LEAMINGTON CHURCH.—Notwithstanding the result of the Vestry meeting held some days since, and at which a rate towards the erection of an enlarged Bell Tower was disapproved of by a section of the parishioners, we are led to understand that so strong a feeling in favour of that object is prevalent amongst the friends of the Church, in this town and neighbourhood, that the required sum of £700 will be raised without difficulty by voluntary contributions. We really hope that the expectations which certain sanguine promoters of the good work have formed in this respect may be fully realized previous to our next publication.—*Leamington Courier*.

NORMAN TOWER, BURY ST. EDMUNDS.—We have much pleasure in announcing that his Royal Highness Prince Albert has been pleased to direct his name to be added to the subscription list for the restoration of the Norman Tower, for the sum of £20. Lord Manners, too, has expressed his anxious desire for the preservation of this fine edifice, and sent a donation of £20.—*Bury Post*.



## TO OUR SUBSCRIBERS.

In compliance with the wishes of very many of our Subscribers, we have had prepared a cover for binding the copies of THE BUILDER for those who may be desirous of preserving them in uniform Volumes. These may be had on application at the office, at the price of Two Shillings; or our Publisher will undertake to get sets bound at a charge of Three Shillings per Volume.

# The Builder.

NO. XLIX.

SATURDAY, JANUARY 13, 1844.



BEFORE we proceed further in the year, we take the opportunity of directing the attention of our correspondents to the nature of the co-operation on their part which we should most

esteem. We need hardly repeat that the vitality of "THE BUILDER" depends upon its being *entirely practical*. We do not desire to have our pages occupied by wire-drawn arguments upon alleged taste, the truth whereof no one can determine, and which, after all, however spiritual they may seem, are nothing but the operation of peculiar and grosser appetite for quarrelling about trifles for which the greater part of mankind have fortunately no relish.

Our endeavour is to be useful, and we desire to be usefully supported, believing firmly that such conduct on our part will be as well received by the learned as by the practical man; for both these classes dislike equally impertinent or useless disquisitions, which not only in their composition consume time, but, what is still worse, consume reprehensibly the time of many readers, the aggregate of which profitably employed might produce works of art, charity, and saleable value. We have inadvertently admitted in our columns one or two communications of this kind, and we find the better spirit of our correspondents, who desire writing of a higher character, has been somewhat offended thereby; we shall therefore take especial care to prevent a repetition of the occurrence.

We desire to be informed of, and to convey to our readers, all useful inventions on architectural construction; drawings and descriptions of such subjects will always be acceptable to us.

Papers upon discoveries of architectural antiquities we shall ever welcome.

All manner of good delineations, of genuine architectural ornaments, will also be highly prized; but we hope that in order to render of sterling value the publication of such representations, they will always be accompanied by such accurate plans, sections, profiles, and other details, as will enable workmen to reproduce them with exactness.

And we recommend for the furtherance of architectural practical science, that compliance be given by our correspondents as far as possible to the following regulation of the "*Freemasons of the Church*," viz.:—

"That in all delineations from existing buildings, the artists and contributors are requested to represent exactly the jointing of the masonry and other materials, and all other marks, indications, and pe-

culiarities of construction; and also to represent and describe all marks of failure or decay; to describe accurately the nature of the materials; and also to obtain from documents, and from the neighbouring clergy and other competent persons, all information relative to the origin, decay, repair, and other historical particulars connected with the subjects delineated: and it is recommended and hoped that all who shall favour the interests of the college, will put themselves in correspondence with such antiquaries, keepers of records, and others, as can furnish them with the requisite information."

And further,

"That the college adopt in admeasurements a duodecimal numeration, and that the words '*feet*' and '*inches*' be written in full, or their contractions *ft.* and *ins.*; or that over feet be set the mark (°) over inches the mark (') and over twelfths of inches the mark (")"

We shall on another and early occasion give some additional directions of the same *Freemasons*, for a modified heraldic mode of representing in prints and cameo drawings, by various positions of lines, &c., the colours of stained glass, mosaics, and other subjects, a compliance with which we shall beg to recommend, as an easy and certain mode of imparting to workmen the most intricate patterns of party-coloured designs, without the expense of colouring such patterns.

We should also gladly be the vehicle of conveyance to our subscribers, of accurate information relative to local stone-quarries, and building materials generally; and it would give us great pleasure, if we could obtain a monthly supply of the prices of the various merchantable articles which are used in architecture.

## NEW ROMAN CATHOLIC CHAPEL AT LAMBETH.

This building, which is situated adjoining the Westminster road, opposite the Blind Asylum and Bethlehem Hospital, is progressing. The foundation-stone was laid in April, 1840, on which occasion the church was dedicated to St. George, the tutelary saint of England. It is the largest edifice devoted to the Roman Catholic worship that has been constructed since the Reformation, when Henry VIII. destroyed and reduced the majority of the Roman Catholic establishments. Its external dimensions are 250 feet long by 84 feet broad. The height of the tower at the west end of the edifice is at present about 60 feet, but when completed its extreme elevation will, it is stated, be 330 feet above the ground level. The tower, which is of brick-work, with dressings of Caen stone, contains a belfry with space for a peal of eight bells. On each side of the tower are double belfry windows, ornamented with mitres and other decorations; and when funds shall so admit, the walls, it is stated, are to be ornamented by 100 statues of Romish saints and martyrs. The tower will be surmounted by a spire, terminated by a large cross. The interior height of the church, from floor to ceiling, is about 57 feet. The length of the nave in the clear is 160 feet, by 72 feet broad; the chancel is 40 feet long by 26 feet broad. Adjoining the chancel, on each side, are two small chapels for altars, over which are to be placed stained-glass windows. The chancel window measures 30 feet by 18 feet, and is to be filled with stained glass of various colours, containing a representation of the roost of Jesse, or the genealogy of Christ, the gift of the Earl of Shrewsbury, and will cost 500*l.* The chapel contains in all 28 windows. The roof is supported by two rows of stone pillars, consisting of eight in each row. The pillars are 18 feet in height, and will be finished by capitals carved with foliage. The floor of the nave and aisles will be covered with red and blue Staffordshire tiles, each tile measuring six inches square. The chancel and side chapels are to be paved with encaustic tiles cast in different shapes and of various colours. At the south-west corner of the south aisle will be placed a large baptismal font carved in Caen stone. The interior of the chapel is not ob-

structed by galleries; the only projections are the organ-loft and the two small galleries for the choir over the two side doorways at the east end. No pews or closed seats will be allowed, but open benches will be placed down the aisles constructed with low backs, so as to afford an unobstructed view of the interior. The seats will yield accommodation for 3,000 persons. The bare cost of erecting the chapel will be 20,000*l.*, but it is expected that a sum of 40,000*l.* will be necessary to complete all the contemplated works. At the east end of the chapel is a sacristy, and adjoining at the north-east corner are cloisters, which connect the edifice with a presbytery, containing a dining-room, and affording accommodation for several priests. Abutting on this is a convent for the Sisters of Mercy, and a school for 300 children. The convent is fitted up with kitchens, a refectory, dormitories, a small chapel with a belfry, and will furnish an abode for thirteen Sisters of Mercy. The convent, with its accompanying buildings, will cost 7,000*l.* A considerable time must elapse before the great tower and spire will be completed. The subscriptions towards this undertaking have, for the most part, been raised in the provinces through the exertions of the Rev. Mr. Doyle, who is the officiating priest. The Earl of Shrewsbury and the late Mr. Benjamin George Hodges have been the principal contributors. A considerable sum has also been subscribed by the poorer classes inhabiting the parish of St. George. The names of the King of Sardinia, the King of Bohemia, and other foreign potentates also appear in the list of contributors. A liberal donation is expected from Louis Philippe, the King of the French.

We are not particularly pleased with the architecture of this chapel and of its adjoining buildings: its exterior being composed principally of a coarse brown-coloured brick, with some admixture of dark stone, the whole pile has a dingy appearance: the effeminate late Edwardine architecture, the last branch of that which is denominated by Rickman "*Decorated*," has been chosen. Well-selected specimens of the architecture of this period have frequently very great elegancies, but the style is rather disagreeable than otherwise, when applied on a large scale, as in this case: the whole pile has an ill-proportioned squat appearance of seeming assimilation with the extended flat marsh upon which it is founded. Most of the windows of the chapel partake of this same character of extended squatness; and in vain do you even search for that lofty character, that heavenward carrying away of the mind which overcomes you while viewing such fabrics as Westminster Abbey. We approve, however, of the diversifying of the window-tracery, though some of the patterns which are adopted we think stiff and inelegant, as are some of those after which the pierced parapet is formed.

Many parts of this pile are *un-masonic*, as, for instance, its buttresses project very suddenly at their first or lower tablings, and have these tablings very flat. We shall not go now minutely into the philosophy of the subject, but content ourselves on the present occasion by saying this is unscientific and is without precedent, except in very inferior examples built by the unskilful, or in good examples which have been corrupted by being ignorantly restored. Again, we disapprove of the roof of this chapel as formed in violation of sound principles: but allowing it in its imperfect structure to partake, in some slight respect, of the nature of a vault, even here, in violation of prudence, the pinnacles remain for future addition; whereas the address of the genuine old freemasons was shewn by pinnacles and every other ounce weight of intended abutment, being fixed before vault or roof of any kind was erected; so that they contrived to do with half the abutment and half the strength of vaulting which moderns require. If the roof of the fabric stand firmly without the pinnacles, they are entirely useless in the design, and are therefore *un-masonic*, for no initiated freemason ever designed pinnacles and other great members of architecture which were not mechanically and constructively necessary. If, on the contrary, the pinnacles are essential to the architecture, no *initiated* mason would have been imprudent enough to have laid a stick of the roof-work before the top-stone of every pinnacle was set.

We also object to the metal-work surmount-



ing the eastern roofs of the chapel, as being alike had in superficial and constructive taste—in superficial taste, because it is mean and flimsy in appearance, not elegant in design, and having some resemblance to the *chevaux de frise* of a prison-wall—but in constructive taste, as being not only useless, but pernicious in operation, for, being of metal, its weight is considerable, and its mechanical effect is to expand the feet of the roof, already sufficiently suspicious: the eye connects this useless and disagreeable out-work with the bell-spire of the convent, which, though heavy enough for its size, being all covered with metal, nevertheless has a singularly thin, sharp-pointed, and unreal appearance.

We do not approve in a work pretending to architecture, that the conventual buildings should have many of their parts seemingly made ugly and irregular for self-willedness alone: the portions of the buildings which back upon the Westminster-road, one of the greatest thoroughfares in the world, seem to have been set up in this improper spirit. All the chimney-shafts of the domestic buildings, though not built without considerable expense, are short and inelegant, and are not in accordance with fine old exemplars; and, moreover, being in the neighbourhood of much loftier erections, are the more likely on that account to smoke.

We make these observations from the great pretensions of the work in question, that our Anglo-Catholic churches may be freed from some heresies of construction.

It is a singular circumstance that when the Anglo-Catholic church had been corrupted by heresy, the science of Anglo-Catholic architecture corrupted too. It is also a singular circumstance, that with the cleansed Anglo-Catholic church began the restoration of Anglo-Catholic architecture; and if its deep science could not revive all at once, the merit of revival rests with the Anglo-Catholics, whether in literature and graphic art, or in ecclesiastical work. Lately, indeed, with the Anglo-Romanists some of the outward decorative forms of Catholic architecture have been attempted and partially restored, but we shall be able, hereafter, to prove satisfactorily that none of the buildings of the Romanists have been reared after the genuine *masonic* art of our forefathers, for indeed they are all built in violation of the sublime secret science of the Freemasons, and compared with their works are all child's play. And there is also another remarkable fact, that of those of the modern Anglican church, who are become somewhat unruly, and are suspected of heresy, their architecture also is unsound and unworthy of the science of the age.

We have so much to say on these heads, that we shall take an early opportunity of entering into the subject fully.

#### INSTITUTION OF CIVIL ENGINEERS.

The first meeting of the season was held on Tuesday evening, the 9th inst. During the recess several alterations have been made in the rooms of the society; along the sides of the gallery have been placed some handsome cast-iron open-work shelves and brackets, cast and presented by Messrs. Ransome and May, of Ipswich, for supporting a series of busts of eminent engineers and scientific men. The theatre, which was formerly oppressively hot, and but dimly lighted, has now two gaslights placed near the ceiling, which throw a powerful light into all parts of the room. The products of combustion are carried off by the open-jointed telescopic tubes which have been applied by Professor Faraday to lighthouse lanterns, and were described by him at a meeting of the Institution last year. This system of lighting and ventilation, which was, we understand, designed by Mr. Manby, the secretary, appeared to be perfectly under control, and was very satisfactory in its effects. Several very interesting papers were read, and the meeting adjourned to January 16th, when it was announced that the annual meeting would be held for the election of the council and officers.

**DUTY ON MATERIALS.**—By a recent order of the Lords of the Treasury, foreign deals are allowed to be removed from the bonding premises, for the purpose of being sawn for exportation, under certain specific regulations.

#### LIST OF DISTRICT SURVEYORS.

[\* \* If any of the District Surveyors discover errors herein, their emendations are solicited, to the end a correct reprint hereof may be made as soon as possible.]

##### IN THE CITY OF LONDON.

###### North District.

Ward of Bassishaw .. ..	
— Bishopsgate within .. ..	
— Ditto without .. ..	
— Broad Street .. ..	James Mountague, Guildhall.
— Coleman-street .. ..	Appointed
— Cornhill .. ..	
— Cripplegate within .. ..	
— Ditto without .. ..	

###### West District.

St. Martin's-le-Grand .. ..	
Ward of Aldersgate within .. ..	
— Ditto without .. ..	
— Cheap .. ..	
— Farringdon without .. ..	
St. Bartholomew the Great .. ..	
— Ditto .. ..	
— The Less .. ..	
Inner Temple .. ..	John Stevens, No. 6, Cle-
Middle Temple within the .. ..	ment's Inn, Strand. Ap-
City .. ..	pointed 2nd May, 1843.
Sergeants'-Inn, Fleet-street .. ..	
— Ditto Chancery-lane .. ..	
Clifford's Inn .. ..	
Barnard's Inn .. ..	
Thavie's Inn .. ..	
Staple Inn within the City .. ..	
Furnival's Inn ditto .. ..	

###### South District.

Ward of Bread-street .. ..	
— Bridge .. ..	
— Candlewick .. ..	
— Castle Baynard .. ..	
— Cordwainers .. ..	
— Dowgate .. ..	George Smith, Frederick-
— Farringdon within .. ..	place, Old Jewry. Ap-
— Queenhithe .. ..	pointed
— Vintry .. ..	
— Walbrook .. ..	
Bridewell Precinct .. ..	

###### Eastern District.

Ward of Lime-street .. ..	
— Tower .. ..	Edmund Woodthorpe, 30,
— Aldgate .. ..	South Audley-street. Ap-
— Portsoken .. ..	pointed 12th May, 1843.
— Billingsgate .. ..	Jewin-street. Appointed
— Lambourne .. ..	May 4th, 1841.

##### IN THE CITY OF WESTMINSTER.

St. Margaret and St. John .. ..	William Pilkington, Scot-
the Evangelist .. ..	land-yard. Appointed
St. James's .. ..	James Gray Mayhew, 14, Ar-
	gyle-street. Appointed
St. George, Hanover-square .. ..	Edward Martin Foxhall, 18,
	South Audley-street. Ap-
	pointed 12th May, 1843.
St. Martin's-in-the-Fields .. ..	Henry Edward Kendall, Suf-
St. Ann's, Soho .. ..	folk-street, Pall-Mall East.
	Appointed
St. Paul's, Covent-garden .. ..	Edward Charles Hakewill,
St. Clement Dances, within .. ..	Craig's-court. Appointed
Westminster .. ..	January, 1843.
St. Mary-le-Strand ditto .. ..	Saml. Angell, Southampton-
St. Mary-le-Strand within .. ..	street. Appointed 14th
The Duchy of Lancaster .. ..	April, 1831.

##### IN THE HOLBORN DIVISION.

Saffron-hill Liberty .. ..	Saml. Angell, Southampton-
Hutton-garden Liberty .. ..	street. Appointed 14th
Fly Rents .. ..	April, 1831.
St. Andrew, Holborn, above .. ..	
the Bars .. ..	Late Donaldson, now vacant.
St. George the Martyr .. ..	
Rolls Liberty .. ..	
St. Giles-in-the-Fields .. ..	George Pownall, 7, Bedford-
St. George Bloomsbury .. ..	row. Appointed 16th Janu-
	ary, 1840.

St. Pancras .. ..	Henry Baker, 25, Grafton-
	street, Fitzroy-square. Ap-
	pointed 7th July, 1825.
Paddington .. ..	Gen. Gutch, Bridge-house,
	Harrow-road. Appointed
	12th May, 1825.
St. Mary-le-bone .. ..	John White, upper end of
	Devonshire-place, New-rd.
	Appointed 2nd July, 1807.

##### IN THE FINSBURY DIVISION.

St. Luke's, Old-street .. ..	Richard Cromwell Carpenter,
Glasshouse-yard Liberty .. ..	90, Guildford-street. Ap-
	pointed 4th April, 1837.
St. John and St. James, Clerk- .. ..	Robert Sibley, 39, Great
enwell .. ..	Ormond-street. Appointed
	16th April, 1829.
St. Sepulchre without .. ..	George Edwards, Duncan-
St. Mary, Islington .. ..	place, City-road. App-
	ointed 15th July, 1802.

##### IN THE KENSINGTON DIVISION.

St. Luke, Chelsea .. ..	Samuel Beuchcroft, Cadogan-
	place. Appointed 12th May,
	1825.

##### IN THE TOWER HAMLETS.

St. George's in the East .. ..	Henry J. Flower, 6, Cam-
St. Dotsiph, Aldgate without .. ..	bridge-terrace. Regent's
	park. Appointed 10th No-
	vember, 1835. Office, 23,
	Princes-square, and 14,
	North-buildings, Finsbury-
	Circus.
St. Leonard, Shoreditch .. ..	Matthew Wharton, 30, Spital-
Norton Folgate Liberty .. ..	square. Appointed 15th
	July, 1802.
St. Mary, Whitechapel .. ..	Wm. Grellier, 20, Worm-
	wood-street, Bishopsgate.
	Appointed 1st Nov. 1838.

##### IN THE TOWER HAMLETS—continued.

Tower Royalty .. ..	G. Redman, Lime-street,
	Leadenhall-st. App. 1843.
Christchurch, Spitalfields .. ..	Charles Hill, 6, Scot's-place,
St. Paul, Shadwell .. ..	Islington, and 4, Brick-
Mile-end New Town .. ..	lane, Spitalfields. Appoint-
	ed 16th January, 1816.
St. John, Wapping .. ..	J. Davies, Devonshire-square,
Hamlet of Ratcliff .. ..	pointed 11th July, 1839.
St. Katherine Precinct .. ..	
St. Anne's, Limehouse .. ..	Thomas Henry Wyatt, 75,
St. Ann's, Blackwall .. ..	Great Russell-street. Ap-
Mile-end Old Town .. ..	pointed 12th April, 1832.
Hackney, St. John .. ..	Late J. B. Bunning, now
	vacant.
Bethnal Green .. ..	J. H. Good, jun., 75, Hatton
St. Mary, Stratford, Bow .. ..	Garden. Appointed —
Poplar .. ..	To Bow, 1st Nov. 1838.
	To Poplar, 11th July, 1839.

##### IN SOUTHWARK AND SURREY.

St. John .. ..	Robt. Heeketh, 13, Arundel-
St. Olave .. ..	street, Strand. Appointed
St. Thomas .. ..	1842.
St. George .. ..	David Roper, jun., Stamford-
St. Saviour's .. ..	street, Blackfriars'-road.
Christchurch .. ..	Appointed
Bernondsey, St. Mary .. ..	William Crawford Stow, 122,
Rotherhithe, ditto .. ..	Long-lane, Bernondsey.
	Appointed July, 1843.
Lambeth, St. Mary, southern .. ..	William Rogers, 5, Pratt-
division .. ..	street, Lambeth. Appointed
	July, 1843.
Ditto, northern division .. ..	George Porter, Fort-place,
Newington, St. Mary .. ..	Bernondsey. Appointed
	July, 1843.

#### PROPOSED ENLARGEMENT OF SPRINGFIELD GAOL, NEAR CHELMSFORD.

At the Essex Quarter Sessions the report of the committee appointed to consider what alterations were necessary in the gaol at Springfield, was read. It detailed the various proceedings of the committee, and stated that at their request Mr. Hopper had attended them with a plan and estimate; Mr. Tower had produced a plan for rendering the old gaol more fit for prisoners, and Mr. Bowyer Smyth and Mr. Lewis had also produced plans. The committee deemed it inexpedient to incur any expense on the old gaol, or any expense in the alteration of Springfield gaol, unless it were made to accommodate 500, and Mr. Hopper produced a plan for that purpose. Major Jebb was consulted on it, and at the last meeting the committee resolved to recommend to the court the adoption of the plan marked A which was attached to the report. This plan provides for an alteration of two of the radii for the introduction of the separate system, provision for the debtors and females, and the consequent abolition of the old gaol, the removal of the governor's house, and the improvement of the chapel. The cost is estimated at 30,000*l*.

Mr. Disney said, he rose for the purpose of distinctly moving that the court should adopt this report and the plan attached to it, and carry them into effect as soon as they conveniently could. In April, 1843, the committee of visiting magistrates, at the instigation of the inspectors of gaols, took into their grave consideration the state of the prison, the buildings included, at Springfield, and they reported that—

"In obedience to the order of the court of the last quarter session, they have proceeded to consider the defects of the prison, as pointed out in the inspectors' reports, and have satisfied themselves of its insufficiency to provide for the number confined there, with due attention to the order and discipline of the prison; and in proof of the correctness of this opinion they beg to adduce the statement of Mr. Neale, the governor—viz. that on the 7th of February there were 318 prisoners, and only 218 single cells; that on the same day there were 20 prisoners standing in the body of the chapel on the floor; and that on another occasion, since the last quarter sessions—viz. the 14th of February—three hundred and



fifty-eight prisoners were in confinement in Springfield gaol."

The court received that report; there was a long and interesting discussion on it; and in July, 1843, they came to a resolution that such report was well founded. It was then resolved that the visiting magistrates of the several gaols, in order that on this great question there should be an enlarged investigation, and the whole of the other magistrates were invited to join them, should form an open committee, to revise that plan and carry it into effect, the necessity having been found. The court adopted the suggestion of a rev. baronet, that the plan should give way till this day—that they should take six months to consider the question; and the proposition was produced now for their consideration. The committee took great pains with the matter—they met many times, they had the attendance of Mr. Hopper and Major Jebb—several of the magistrates sent plans, so that the whole thing was well considered, and the plan finally adopted was this, by which two of the existing radii should be extended, that there should be parallel buildings on one side of each of these openings, and a vast hall in the middle, similar to the plan at Pentonville; that the chapel should be enlarged; that accommodation should be made for the debtors and for women; that there should be a walking yard, and that the separate system should be adopted. He thought they should first settle the question whether the separate system should be adopted or not; if they were to reject it, he considered they would fall into that which had so bad an effect on the moral habits of the country. There were gentlemen present who had given the money part of the question their attentive consideration, and they were prepared to tell them, that it would be beneficial even in the pecuniary effect attached to it. He should leave that to them; but he thought if they were to enlarge the gaol, and enlarge it they must, it should be done now. As to expense, if they shewed that the building would not exceed the sum talked of—if they shewed that for about 30,000*l.* they could have every class of prisoners under the same regulations, that they could have the debtors and women under better management and control, without injury to their health, it was not only then a duty incumbent on them to give the public, for whom they were trustees, the benefit of that system, but he thought they would also find it their duty for the credit of such a county as this. This plan was formed by their own surveyor to keep down the expense, under the assistance of Major Jebb, who took great pains to make out and save all that could be saved, so that the full and entire effect should be good and lasting. And they would be pleased to recollect that this was not a new system, but it was recommended by that great man, John Howard, who suggested that every man should be kept separate from the time he was taken till the time he was set at liberty. They had tried classification, which would not do; then the silent system, which was attended with a severity that never would be practised here. Therefore they must resort to the system of separation, which they might do with so much good effect. There was one thing connected with this so important, that they would excuse his making two or three observations on it. It had been the system to commit prisoners to the first gaol delivery, whether it were assizes or sessions, and this was done on the sound principle that men should be incarcerated as short a time as possible before trial. Now at the late special commission, the learned judge complained in Kent, that the magistrates of this county had done wrong in sending prisoners to be tried at the assize, instead of passing them over to the session; but he (Mr. D.) did not think that need affect their practice, because it was stated they meant to have a clause by which the judge at the special commission might try only those who were triable at the assize. Thus the magistrates might still commit as they did before.

Mr. W. Luard seconded the motion. Should the court adopt it, he was aware they would be laying a considerable burden on the rate-payers of the county, and he could only regret that they should be under that necessity. There were two points with which the court was acquainted—first, that it was the intention to remove the old gaol, and remove the debtors

and females to Springfield; and secondly, to make there such preparations as would enable them to carry out the separate system. To do that, the committee recommended that a plan should be laid before the court, which had been done, and he found the estimate would be about 30,000*l.*; Major Jebb said it might be done for less, and it was not likely it would exceed that. Now, he found that a farthing rate produced upwards of 1,000*l.*, and it would therefore require a rate of thirty farthings, or 7½*d.* to raise the amount proposed to be laid out. In point of fact the rate-payers for every 100*l.* would have to pay 2*s.* 1*d.* to every farthing rate that was raised. Whether it was desirable to do the whole of this at one time, or part now and part a year hence, would be for the court to consider. That part was desirable to be done immediately, he thought there could be no doubt; but as to the other part, the court would come to a decision and use their own judgment on it.

Mr. W. Cotton moved as an amendment to Mr. Disney's motion—

"That so much of the report as relates to the removal of the female prisoners and debtors to Springfield, and the enlargement of the gaol for that purpose,—the building of a governor's and chaplain's house, and the alteration of the centre building, be adopted, and the further consideration of the other recommendations in the report be postponed."

Mr. Leake begged to second the amendment.

The chairman then put Mr. Cotton's motion, when there appeared—

For it.....20

Against it.....16

Majority.....4

Mr. Cotton then moved that it be referred to the committee who had taken so much pains with the matter, to be carried out. (Cries of "No, no," from members of the committee.)

After some conversation, a committee, consisting of the visiting magistrates, the chairman of the session, the county members, Mr. Disney, Sir J. P. Wood, and Mr. Croft, was appointed to carry out the plan.

#### MONUMENT AT ST. REMI.

TO THE EDITOR OF "THE BUILDER."

SIR,—About a mile from the modern town of St. Remi, not far from Arles, in the South of France, stands the monument of which I herewith send a representation. It occupies a delightful situation at the foot of some fine limestone rocks of the principality of Baux, and the ground slopes from them into a fertile plain, which the eye entirely commands. The monument consists of a square plinth elevated on two stages, and supporting a pedestal filled with sculpture representing equestrian combats. Above these rises a square edifice with a three-quarter column at each angle, or perhaps rather more than three-quarters of the column are exposed. The architrave has hardly any projection before the face of the work, so that the columns standing out beyond it for half their diameter do not appear to contribute materially to its support.

This peculiarity was perhaps the result of judgment, and not of carelessness or ignorance, as it tends to preserve the general pyramidal form of the monument, and the effect of the whole monument is very fine, though thus singularly obtained. Above this division of the edifice is a circular temple of six columns, by a conical or funnel-shaped roof; within the peristylum are two statues, one male, the other female. Upon this ancient work of art is the inscription which follows, viz.: "SEXLMIVLEICF PARENTIBUS-SVEIS." But these letters do not help us to the date of the monument; they merely shew that the erection was an act of filial gratitude (*parentibus suis*). It probably belongs to the 2nd century. I should be glad to have from your correspondents further information on this interesting subject.

I am, Sir, your humble servant,  
AN AMATEUR.

York, Dec. 10th, 1843.



Monument at St. Remi.



## WESTMINSTER BRIDGE.

To the report which we inserted in our last number, we add Mr. Barry's reply and report, as under:—

"TO THE EDITOR OF THE 'TIMES.'"

"SIR,—As, in the statement respecting Westminster-bridge, inserted in your paper of Tuesday last, you have appended a report from Messrs. Walker and Burges to the Speaker of the House of Commons, animadverting upon the suggestions which I ventured to offer in a report to the Commissioners for the encouragement of the Fine Arts, relative to the propriety of rebuilding the superstructure of that bridge, I trust you will do me the justice to publish the subjoined letter, which I addressed to the Speaker in consequence.

"It may be proper to observe, that since those communications were made to the Speaker, it had become notorious that the system pursued by Messrs. Walker and Burges for securing the foundation of the piers has failed, and the bridge is consequently in such a critical state as to cause an order to be given by the Commissioners to suspend all further works for the present. From what I have seen of the recent alarming dislocations of the present structure, it is now, in my opinion, no longer a question as to the propriety of rebuilding the superstructure alone, but the entire bridge.

"Your early insertion of this communication will oblige, Sir, your obedient servant,

"Great George-street, Westminster,  
Dec. 28."

LETTER FROM MR. BARRY TO THE SPEAKER, IN ANSWER TO A REPORT OF MESSRS. WALKER AND BURGESS UPON THE PROPOSED ALTERATIONS.

32, Great George-street, July 10, 1843.

SIR,—As Messrs. Walker and Burges have thought proper to print and publish a letter, addressed to you as chairman of the Commissioners of Westminster-bridge, relative to the suggestions I ventured to offer for the improvement in that bridge, in a report which I made to the Fine Arts Commissioners, of the 22nd of February last, I feel called upon to address to you a few observations, for the information of the board over which you preside, chiefly with the view of removing several misconceptions which that letter is calculated to occasion.

Westminster-bridge has long been considered extremely inconvenient, as well as unsightly, and, from its proximity to the new Houses of Parliament, is generally felt to have a most injurious effect upon the appearance of that building. As a remedy for these defects, the main objects to be attained are obviously to lower the roadway, to increase the waterway and head-room under the arches, and to reduce the mass of the bridge to the greatest practicable extent. In order to accomplish these objects in the most effectual manner, it appears to me to be necessary to re-build the bridge; but as the Commissioners were incurring a large outlay in securing and extending the foundations, I recommended in my report above alluded to that the re-building should be confined to the superstructure.

Previously to noticing the several points of Messrs. Walker and Burges's letter, I would beg to observe that the suggestions contained in my report were offered merely as hints for the consideration of the Fine Arts Commissioners, and not as mature opinions founded upon a careful practical investigation with reference to execution, in which I stated most distinctly I did not wish to be engaged. I presumed that if the Fine Arts Commissioners deemed those suggestions worthy of attention, they would refer them to the Commissioners of the bridge, by whom they would be duly considered, and, if approved, carried into effect by their own officers.

I now proceed to notice the several observations of Messrs. Walker and Burges upon the suggestions contained in my report. With reference to those upon the relative properties of circular and pointed arches, and to the authorities which they quote in depreciation of the pointed arch as applied to bridge-building, I beg to state that the hypothesis in which those authorities are said to concur, namely, that a pointed arch requires a greater pressure than a circular arch at the crown, is at direct

variance with the opinion of Professor Mosely, of King's College, one of the highest authorities in such matters, who, in a letter to me upon that subject, states, "that a pointed arch does not necessarily require a great pressure, or indeed any pressure, upon its crown, to prevent it from falling, and that the reasoning upon which an opposite conclusion is founded in Messrs. Walker and Burges's report is erroneous." But theory and practice confirm me in the opinion which I have advanced in my report, that a pointed arch requires less thickness at the crown than is usually considered necessary for a circular arch. As, however, it might possibly be inferred from the observations of Messrs. Walker and Burges that the arch which I have proposed is not strong enough for its purpose, although they do not attempt to prove that such is the case, I have thought it right to enter into a careful investigation of its properties; from which I am fully convinced that I have not carried the principle which I have advocated far enough; and that, considering the insignificant span of even the largest of the proposed arches, it would be no great effort of engineering science to reduce the thickness of its crown to nearly one-half of what is proposed by Messrs. Walker and Burges; by which means the lowering of the roadway over the centre arch might be carried to the extent of six feet six inches, instead of three feet six inches, even without reducing the clear height of the centre arch as I have proposed, if such reduction were deemed to be an objection of any importance. In this opinion I am confirmed by the examples of numerous stone bridges, both in this and other countries, and also by the judgment of several eminent engineers and mathematicians of the present day.

With reference to the loss of waterway which I stated was occasioned by the haunches or spandrels of the present arches at high-water, I ought perhaps to have explained that I referred to such portion only of the waterway as is affected by those obstructions, which might, however, I think, have been inferred. With regard to the removal of these obstructions, I do not agree with Messrs. Walker and Burges in thinking that it would be unproductive of any useful effect upon the "currents and falls;" and I consider the arguments in support of their opinion to be fallacious, inasmuch as they are founded upon the assumed level of high-water according to Trinity standard; whereas the present ordinary spring tides, as they must be well aware, rise considerably above that level; on one extraordinary occasion recently as much as 3 feet 6 inches. That some practical good would be effected in giving more head-room for craft near to the piers, by raising the springings of the arches according to my suggestion, Messrs. Walker and Burges admit; and I conceive that this advantage alone ought to be a sufficient inducement to remove the present arches and to substitute others of more convenient form; but when it is considered that the opportunity would be thereby afforded of lowering the roadway to nearly double the extent proposed by Messrs. Walker and Burges, without producing the slightest injury to the navigation of the river, the advantage as regards the convenience of the public is so much enhanced, that the propriety of re-building the superstructure cannot, I think, be doubted. With respect to my proposition of lowering the centre arch 18 inches, which it appears Messrs. Walker and Burges consider will be "rather a practical evil," as affecting the navigation of the river, it is necessary that I should call your attention to the clear height of the middle openings of some of the bridges above Westminster-bridge, as they have done to those only which are below that bridge. While the clear height of the centre arch of Westminster-bridge is 26 feet above Trinity standard of high-water, the centre openings of the modern bridges at Vauxhall and Hammer-smith are of the respective heights of 25 feet 4 inches, and 16 feet 1 inch, to say nothing of those at Battersea and Putney-bridges, which are much less, but which I admit are extremely inconvenient. As the largest steamers which pass up the river are those which ply between London-bridge and Richmond, and as their funnels are jointed, so as to allow of their passing even under Putney-bridge, the height of the centre opening of which is only 11 feet 2 inches above high water, it cannot be ima-

gined that the lowering of the centre arch of Westminster-bridge to the extent which I have proposed can really be an objection of any importance as regards the navigation of the river, while the great object that would be thereby gained by a further depression of the roadway, to the extent of 18 inches, reducing its inclination to 1 in 40, instead of 1 in 24, as proposed by Messrs. Walker and Burges, would be of the greatest advantage to the traffic over the bridge, as well as to the effect of the new Houses of Parliament when viewed from it; a point, which I submit, ought not to be disregarded.

Messrs. Walker and Burges state in their letter, as an objection to the form of arch which I have proposed, that the failure of one arch would cause the destruction of all the piers and arches; a consideration which they say is not to be disregarded in a bridge the piers of which have been so badly founded, that to support them has been a constant expense, and is at this moment a source of considerable anxiety; although they further state that the works they have in hand, if as successful as hitherto, will render the piers much more secure than they have ever been, they hope perfectly so. The part of this objection which is founded upon the lateral thrust of arches will apply with equal force to all arches of a segmental or elliptical form, which are generally adopted in modern bridges, and even to semicircular arches, of the lateral thrust of which I will not affect to suppose Messrs. Walker and Burges to be ignorant, although in the allusion which they make to Labeyrie's opinion upon that subject, they leave it to be so inferred. With regard to the other part of the objection—namely, the failure of the foundations, it may surely be assumed that Messrs. Walker and Burges would not have recommended the very serious outlay which is now being incurred in securing them, if they conceived there was any risk whatever of their ultimate failure; but if a possible failure is, notwithstanding, to be taken into consideration, can a more powerful argument be advanced in favour of a new superstructure than that the weight upon the piers might thereby be reduced at least one-third?

To Messrs. Walker and Burges's design for a new superstructure I object, principally because it does not accomplish the main objects for which a new superstructure is, in my opinion, desirable, namely, the reduction of the mass of the bridge and the lowering of the roadway to the utmost practicable extent; neither does it afford any improvement whatever in respect of the navigation of the river; the accomplishment of which object is, in my opinion, of far greater importance, both for the sake of public convenience and architectural effect, than the style of architecture to be adopted.

As to the principles which Messrs. Walker and Burges consider should govern the nature of a design for a bridge over the Thames in London, I entirely disagree with them. I conceive that the height of the opposite shores and buildings upon them should mainly determine the æsthetical character of the design. If, as in Waterloo-bridge, where the shores are high, one being naturally so, and the other raised, and the roadway is level, where the superstructure of a great public building like Somerset-house is wholly above the level of the roadway, and where the bridge groups with the substructure of such an important building, the character of the design cannot be too bold and massive; but if, as at Westminster, where the shores are low, and the bridge must in consequence group with the superstructure of an extensive work like that of the new Houses of Parliament, and where the parapet must, in consequence of the height required for the centre arch, assume a curve line, which is an element rather of elegance than of boldness, the character of the bridge should be light and graceful.

Upon the taste of Messrs. Walker and Burges's design for a new superstructure in what they term the "Norman style," I forbear to offer any criticisms in detail, as the conditions which should be observed in a bridge are, in my opinion, wholly at variance with the essential characteristics of that style; nor do I consider it worth while to make any remarks upon their observations relative to points of taste, including those especially which refer to harmony and contrast between the bridge,



the new Houses of Parliament, and the neighbouring buildings, as they seem to me to furnish their own comment.

In conclusion, I beg to add that I still remain in the same opinion as I expressed in my report to the Fine Arts Commission, as to the necessity of a new superstructure to Westminster-bridge upon the principles therein advocated; and as a favourable opportunity is now afforded of carrying into effect that great public improvement, at an outlay moderate when compared with its importance, I trust the commissioners will not be indisposed to take my recommendation upon this subject into their most serious consideration.

I have the honour to be, Sir,

Your very obedient servant,

CHARLES BARRY.

The Right Hon. Charles S. Lefevre,  
Speaker of the House of Commons,  
Chairman of the Commissioners of  
Westminster-bridge.

P.S.—To show the effect of the further reduction of the height of the bridge, which I have stated in this letter to be practicable, and to exhibit several modifications of my original design, partly with a view to economy, I forward to you the accompanying drawing for the consideration of the board.

Want of space compels us to postpone till next week our own remarks.

## COLLIERY ENGINEERING—ITS RISE AND PROGRESS.

BY MATTHIAS DUNN, ESQ., C.E.

(Read at the Newcastle Mechanics' Institute.)

HAVING had the honour of being elected one of your vice-presidents, and having observed the great loss which the society sustains because of the want of scientific papers or lectures, whereby an impetus may be given, and the latent talent which exists among your body drawn out; I am induced to volunteer some observations upon the subject of colliery engineering, founded chiefly upon my own professional experience, both in this and other districts of the country, during the last forty years, coupled with traditionary and parole information as to the more early periods.

### FIRST ERA.

STATE OF THE COAL-TRADE AT THE CLOSE OF THE SEVENTEENTH CENTURY AND THE COMMENCEMENT OF THE EIGHTEENTH CENTURY.

The only districts in the north of England from whence coal was shipped at this period, were the rivers Tyne, Wear, and Blyth. In the year 1699, the Tyne had two-thirds of the whole trade, employing about four hundred keels, and vending 300,000 chaldrons per annum. The over-sea trade, it is said, employed 900,000 tons of shipping. Sunderland, during fifty years preceding—viz., from about 1654, had risen into considerable importance. The districts then yielding the principal supply of Tyne coal were Ravensworth, and the numerous collieries delivering into keels at Derwenthaugh—viz., Pontop Pike, Marley Hill, Tanfield Moor, Garesfield, Gibside, Axwell, Blaydon Main, and the neighbourhood of Winlaton. Further west again were Grand Lease, (Stella,) Chopwell, Hedley, Wylam, Throckley, Walbottle, Denton, Benwell, Fenham, &c., above bridge; and below bridge were Felling, Gateshead, Heworth, Byker, Jesmond, Heaton, St. Lawrence, Benton, &c.; Hedley Fell was working in 1727, the coal being led down to Stella; in 1755, Jesmond colliery was laid in—it was at that time drained by two pumping engines. The river Wear was supplied from the collieries of the Lambton and Tempest estates; the districts up Chester Burn, Chattershaugh, Fatfield, Birtley, &c., all delivered into keels in the neighbourhood—the staiths extending from Cox green to Chattershaugh. From the then state of the trade, it was necessary to hold, from time to time, large stocks of coals, and to be ready to give quick despatch, to suit tides and other emergencies; hence those extensive erections called staiths, many of which remain to the present day. The scale of keel

does on the Tyne was fixed in 1710 as follows:—A vessel above Ouseburn, per tide, 6s. 4d.; below Ouseburn, 6s. 8d.; Shawdon's Hole, 7s. 6d.; Saint Anthony's 7s. 8d.; Wincolme, 9s.; Jarrow and Howden, 11s. 8d.; Shields, 13s. 4d. The coals were all brought from above bridge, or from the shore near Newcastle. Notwithstanding the great distances from which the coals in those days were brought, the waggon-ways were all of wood, and even the wheels of the waggons were of the same material. The waggon-ways were constructed of a double tier of rails (the top one always of oak or beech, as best constituted to stand the alternations of wet and dry) and laid upon wooden sleepers, to which they were pinned with wood. These waggon-ways were most rudely constructed, being laid nearly according to the undulations of the surface; for the idea of inclined planes had not at this period entered into the head of man. In 1745 the cost of a yard of wooden-way was 4s. 2d.—viz., two yards of oak rails, 1s. 2d.; three sleepers, 2s. 6d.; pins, 1d.; laying, 3d.; filling and ballasting, 2d. The cost of a twenty-boll waggon in 1723 (then a good deal used) was 7l. 1s. 2d. The waggons were governed by convoys, bearing upon a single wheel; and, in order to prevent the wear of the wheels, which were extremely expensive to maintain, they were studded thick with nails, driven up to the heads; but the wear was proportionally great upon the breasts of the convoys, which was a source of great labour and expense; the breaking of the waggons down the many rude steepes was attended with continual loss of life, both to man and horse. Cast-iron rails for waggon-ways were introduced in 1767 at Colebrook Dale. In 1776, Mr. Curr invented his underground tramways. The coals were drawn from the mines by horse machines, called gins—the earliest construction (though, perhaps, it was an improvement on one still earlier) being called a cog and rang gin, the horse wheel being vertical and toothed; it turned a horizontal shaft, lying over the pit, to which the ropes were attached. This machine was then but of recent introduction, the more ebb pits being wrought by hand windlasses or jack-rolls. In 1746, the price of drawing by gins, with a sixteen-peck corf, for thirty fathoms, was 10d. per four tons and three-quarters, and 1d. for every five fathoms of additional depth. The whim-gin was an improvement upon the complex combination of the cog and rang, and has universally superseded it.

The drainage of the mines at the time we are speaking of mainly depended upon day-levels or adits; sometimes it was effected by means of horses and chain-pumps, and, in certain situations, where advantage could be taken of a running stream, or of water from a higher altitude, a water-wheel was employed—parts of Heaton and Jesmond, for instance, were won by means of a water-wheel, wrought by the stream of the adjoining burn. In 1690, Mr. Bald writes, that water-wheels and chains of buckets were commonly employed to drain collieries in Scotland. The axle of the wheel (he says) extended across the pit-mouth, and small wheels were fixed upon the axle, to receive endless chains of two or three tiers, which reached down to the coal; to these chains were attached a number of oblong wooden buckets or troughs, in horizontal position, which circulated continually with the chains, ascending on one side and descending on the other, alternately full and empty, discharging as they turned over the wheel on the great axletree. A smaller machine of the sort was occasionally worked by horses, as well as by windmills. The steam-engine for draining mines was introduced early in the last century; the first was erected at Oxclose, the second at Norwood, near Ravensworth, and the third at Byker, in 1714; in 1720, it had come into general use. It was invented or introduced by the son of a Swedish nobleman, who taught mathematics in Newcastle. The art of self-government was not then discovered; the engine was wrought by the alternate opening and shutting of cocks by an attendant; but about four years afterwards (in 1718) a person of the name of Beighton invented the means of producing the desired effect from the machine itself. These engines were on Newcomen's principle—an open-topped cylinder, the vacuum being created underneath the piston by injecting cold water into the cylinder, and

realizing an effective pressure of from 4lb. to 5lb. per inch on the safety-valve. Mr. W. Brown, of Throckley, a celebrated viewer of that day (according to a manuscript in my possession), was remarkably conspicuous in the introduction of the steam-engine to this colliery district; in 1756, upon getting the management of Throckley colliery, he built one there—then a great rarity; in 1757, one at Birtley North Side, one at Lambton, and one at Byker; in 1758, two at Walker, and one at Bell's Close; in 1759, one at Heworth; in 1760, two at Shire Moor, and one at Hartley; in 1762, one at Oxclose, one at Beamish, and one at Benwell (which had not only three boilers, but twenty-four inch wooden pumps formed of staves eighteen-inch diameter); in 1764, one at North Biddick, one at Low Fell, and three in Scotland—viz., one at Borrowstowness, one at Pittenween in Fifeshire, and one near Muselburgh; in 1766, one at Lambton; in 1772, one at Fatfield; in 1775, two at Willington, and one at Washington, with its house contrived to take in a second; in 1776, one at Felling. The present Allerden engine, at Ravensworth, was built about 1750, up to which period scarcely any pumps exceeded eight-inch or nine-inch diameter, and scarcely any engine had more than a single hay-stack boiler.

The coals in the early period of mining were invariably drawn in corves or baskets; the trams had broad wooden wheels; the tramways were constructed of three planks, the upper one forming an elevated ledge, for the guidance of the tram. Horses were as yet scarcely introduced under-ground; but when they were, the roads were constructed in the same manner as those above-ground, the rollers carrying two or three corves each. Screens were not at this time invented. All the produce of the mines was sold, save what was consumed by the engines and workmen. The first screen is said to have been introduced by Mr. W. Brown, at Willington Colliery, about the year 1740. The coal prices did not exceed 10s. per Newcastle chaldron; yet from the lowness of wages, and the cheapness of materials, collieries were productive of profit, and after the introduction of steam-engines, became objects of general attention. Hewers' wages were from 1s. 6d. to 1s. 10d. per day, and those of other workmen in proportion. In 1744, Friar's Goose coals sold for 11s. per chaldron, and the cost of a chaldron waggon was 9s. In 1745, the hewing price of Lumley Main coal was 1d. per peck, or 1s. 9d. per four tons and three-quarters—the twelve-peck corf was used, for the convenience of drawing with gins; the Byker Main coal (twenty-peck corf), 1s. 6d. per four tons and three-quarters—putting, 10d.

The art of ventilation was little known, especially the underground furnace; but the working of the coal was confined to the seams at shallow depths, and in which indammable air existed in any small degree; still, because of the ignorance of ventilation, explosions were frequently happening, even in those days, and gradually called into existence stube-tubes, ventilating furnaces, &c. In 1732 fire lamps or furnaces were first known at Fatfield Colliery, where many serious explosions took place. In 1756, the first air-tube was built at North Biddick Colliery, Mr. William Allison being then the viewer. The cost of boring in 1746 was 5s. per fathom for the first five fathoms, and 5s. per fathom extra every successive five fathoms; a three-inch hole cost 26l. for thirty-one fathoms. Blasting by gunpowder was then in its infancy—many pits and drifts having been executed simply by the hack and the wedge. Whilst the steam-engine was imperfectly understood, the collieries in operation were necessarily those whose seams were lying a short way from the surface, and not burdened with any considerable quantities of water—for the only pumps in use were bored from solid wood, and the diameter was consequently confined to eight or ten inches; the joints were spigot and faucet, and there was a difficulty in keeping them tight when the pressure exceeded twenty-five fathoms. As no means were devised of stopping backshaft water, the only relief that could be made available was by means of off-take drifts—the engine-pits being, where practicable, sunk convenient for such purposes. The coal keels or barges on the Tyne and Wear were nearly of the same construction as at present; but their rig, not only at the time first mentioned, but



for many years afterwards, consisted of a log-sail, and the coals were carried in bulk in the hold—not piled up, as at present, by means of timberings—the collier vessels being of much smaller burthen than at present, and their port-holes proportionably low. Round ropes were universal in the north of England—chains never having found the favour which they have enjoyed throughout Scotland, Wales, and other coal districts. Women were employed underground, but not generally, nor in great numbers; but about the pit-heaps and staiths much of the labour was performed by them, both in cleaning the coals, and barrowing them from the depôts or staiths into the keels; their standard price for such work was one penny to three-halfpence per ton.

During this epoch—it being considered that where the coal lay beyond the depth of sixty fathoms it was next to inaccessible—there was great eagerness to monopolise those districts lying within the known powers of winning. The "Grand Allies," consisting of the Ravensworth, Strathmore, and Wortley families, under the advice of their far-seeing agents, leased many of the available tracts of coal; but improvements of the steam-engine and application of cast-iron to the various purposes of mining, produced a new era, paving the way to the opening of those extensive and valuable collieries below Newcastle-bridge, in the Wallsend seam, and the deeper collieries upon the river Wear—whilst the monopolists were saddled with long and costly leases, of which they were not able to rid themselves for many years afterwards. Notwithstanding the limited powers of production then known, so confined was the application of coal to the purposes of life, that the trade could always be overdone, and the sale constantly demanded a similar artificial restriction to that which now prevails—for, even early in the seventeenth century, when not more than a dozen collieries supplied the Newcastle trade, the owners were obliged to buy each other out of the market, or use other expedients for curtailing the over supply. The winters were then much longer and more severe than now—a days—so that, for the period of six or eight weeks, about Christmas, every branch of the trade pits, keels, and ships all settled at rest—the people at the respective markets being obliged to lay in beforehand suitable stocks of coals whereupon to work during the winter months.

Previous to the year 1765, the art of ventilation had not progressed further than to produce a good current along the flank of the working places, leaving the internal parts of the waste in a state of stagnation, which often produced explosions. This mode of airing continued to be practised in the collieries of the river Wear long after the coursing system was adopted upon Tyne, being maintained at a much less expense—the additional charge being thought unnecessary. Mr. Spedding has been said to be the inventor of the coursing system, but according to a record in my possession, it was first put in practice at Walker Colliery, by Valentine Carter and W. Morris, who had been sent for from the river Wear after an explosion. They ventilated all the wastes by coursing the air alternately up and down a pair of boards; and the system was constantly pursued afterwards in the Tyne Collieries.

#### OF BEAUTY OF OUTLINE IN BUILDINGS.

*Of the Inferiority of the Moderns, compared in this respect with the Ancient Masters; and of the Inutility of Decoration, without Goodness of Outline.*

THAT for which the ancient masters are so eminently superior to the modern architects, is elegance of outline: almost every one of the old buildings, however exceptionable in point of details, has a grand, a neat, and a picturesque outline. The Gothic steeples of all countries, the dome of Saint Paul's, and the bell-towers of Wren, and numerous other old buildings, both in England and abroad, whether viewed from afar or near, all have almost universally an imposing and agreeable appearance; their considerate architects seem at once to have designed the elegant outward shell of the building so as to

contain amply all the internal requisites, without unsightly additions; or, if from any necessity enlargement of the pile afterwards became necessary, the picturesque massing and grouping together of the buildings were never lost sight of.

But what is the mode now pursued? In most instances very different. A debased exterior copy of some old building is made on a small scale, in base materials; this pretended economical crust, in nine cases out of ten, is discovered eventually to be neither high enough, long enough, nor broad enough, to contain properly all the accommodations and internal details of the building: hence are added the external incumbrances of lantern-lights, ugly dormers, chimneys, and other deforming excrescences, for which modern buildings are so celebrated.

Nature always contrives to place every necessary apparatus within the compass of the

general outline, but most modern buildings exhibit the same contrivance as birds would if their gables, being omitted within, were afterwards skewered upon their backs.

If a building at a distance appear ugly, it is in vain that it have delicate enrichments, and that it be composed of rich materials; it cannot please either the vulgar or the tasteful, nor can the scientific give it commendation.

The qualities of form and outline stand apart from all the petty quarrels about order and styles, by which unskilful professors have peetered and lowered a once noble art.

The most picturesque edifices of all countries have a wonderful similarity in their outline. The most perfect architectural composition is that which forms one immense pyramid of decoration consisting of many minor subservient pyramidal masses:—such are the celebrated Indo-moslem Tombs of Akbar at Secundra, Shere Sha at Sossoram, Humaion at Delhi, and the Taj Mahal at Agra: such are St. Paul's Cathedral, the steeples of St. Mary-le-bow, St. Bride's, and those of all the others of Wren's churches.



Bow Steeple.

St. Paul's Façade.

St. Bride's Steeple.

The same principle is to be found governing all Gothic steeples.



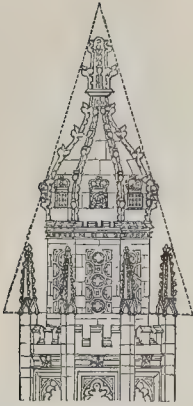
Salisbury Cathedral Façade.

St. Peter's, Caen.

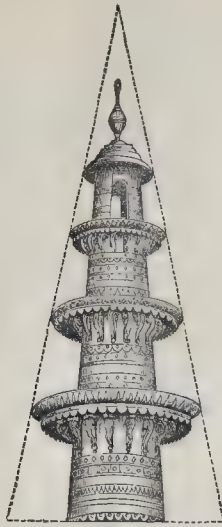
Façade of the Cathedral of Freiburg, in the Breisgau.



The same delicate and refined principle pervades Gothic turrets and Moslem minarets.

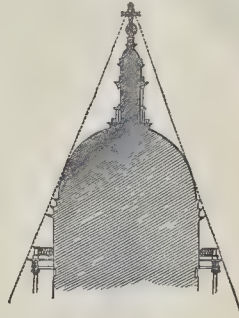


Four great angle Turrets of King's College Chapel, Cambridge.



Shaking Minarets of the Mosque at Ahmedabad.

large in diameter as their tambours, shew as little mastery of the picturesque as of construction, and, violating the principles of natural taste, have become so unpopular, as to have obtained for themselves the cognomen of "Pepper-boxes;" and the same title but too often applies to bad copies of the ogive domes of King's College Chapel, from their not being built with the graceful and spiring elegance of their prototypes.



Outline of St. Paul's Cupola.

The principle of the picturesque in architecture absolutely requires that if a mass have not a plain square outline, it should appear to be hewn out of an exact pyramidal or conical block.

The principle appears to have been first discovered in Egypt, and to have spread over all nations, from China to the farthest extremity of Europe.

The same principle pervades the Egyptian pyramid, the Egyptian needle, and those vast moles of masonry which ascend to an enormous elevation before the Egyptian temples: it pervades the Grecian and the Roman temple, the Athenian choragic monument, the pagoda of China, the mysterious edifices of Mexico, the temple of ancient Hindostan, the mosque and the tomb of the Moslem, and the Christian steeple.

The Greeks, whose several states were inconsiderable, and therefore incapable of raising such ample funds as powerful kingdoms like ancient Egypt or modern Britain, never erected buildings which were not small and low; most of their edifices, therefore, not breaking above the general altitude of their dwellings, they did not require that strict attention to perfect pyramidal outline which was always attended to in the lofty buildings of other nations. They made no advances whatever in the more lofty departments of science which were requisite, and which were of necessity called into use in the construction of such gigantic edifices: they contented themselves with a mere trifling façade.

Both Greeks and Romans, however, appear to have been well aware of the upward diminution requisite in order to correct the otherwise overhanging appearance of the upper part of a building, whether from optical illusion or from the projection of a cornice; hence, we find many of their finest edifices were formed with the plain faces of their architraves receding, as if to continue the upward diminution of their columns. But the proper display of sculpture in the frieze of an order in general forbade that member to recede, except in small buildings, such as the choragic monuments of Lysicrates and Thrasyllos, which were fully taken into the eye at one view. Of the following ancient buildings the faces of the architraves recede: at Athens, the Parthenon, the temples of Theseus and Erectheus, and the arch of Adrian; at Salonica, the "Incantada;" at Rome, the external and internal orders of the Pantheon, the temples of Jupiter-Tonans, the frontispiece of Nero, the reputed temple of Pallas in the forum of Nerva, the arch of Constantine, and the Ionic and Composite orders of the Coliseum; at Tivoli, the reputed Temple of Vesta: all these examples shew the possession of the same knowledge, but different degrees of skill in making use of it; and there is at Agrigentum a remarkable monument, shewn by Mr. Wilkins in his "Magna Græcia," the order, entablature, and other members of which, all converge upwardly in a very peculiar

While upon the subject of outline, the author cannot refrain from contradicting, as far as in him lies, the opinion put forth with regard to spires by Mr. Britton, in his exquisite work upon "The History and Antiquities of the Cathedral Church of Salisbury," (p. 74). "Although this spire is an object of popular and scientific curiosity, it cannot be properly regarded as beautiful or elegant, either in itself, or as a member of the edifice to which it belongs. A may-pole or a poplar tree, a pyramid or a plain single column, can never satisfy the eye of an artist, or be viewed with pleasure by the man of taste. Either may be a beautiful accessory, or be pleasing in association with other forms. The tall thin spire is also far from being an elegant object. Divest it of its ornamental bands, crockets, and pinnacles, it will be tasteless and formal, as we may see exemplified in the pitiful obelisk in the centre of Queen-square, Bath; but associate it with proportionate pinnacles, or other appropriate forms, and, like the spire of St. Mary's Church in Oxford, and that of the south-western tower of Peterborough Cathedral, we are then gratified."

Very odd reasoning this, and quite at variance with the in-born feelings of nearly every native of Christian lands. The author would have deemed it unnecessary to refute such a passage if it had been put forth by any other than an antiquarian gentleman to whose taste and perseverance we owe so much.

By the denuding process mentioned by Mr. Britton, every thing accounted beautiful in the world might be rendered both uncouth and ugly: thus, take away the features of the finest head and face, you have remaining a raw skull: take away the sauce garniture and cookery of a feast, and you leave but crude flesh, raw vegetables, and a few other things equally untempting.

The builders of the Christian steeples, those outward beacons of a religious country, so caught from the true sublime one of the chords holding mastership over the human heart and feelings, that the tottering child and the snow-headed old man, the religionist and the scoffer, the churchman and the sectarian, alike pay the tribute of admiration to the beauty of form of the church spires built by our forefathers on principles the mechanism of which, perhaps, they cannot understand, and from feelings, which though some of them cannot possess, yet cannot but revere.

But the truth is, the myriads of these glorious outward church adornments, which told at every step the alien as he came to Europe, in this land Christ is great, now deemed useless though sublime, employed industriously and

profitably that portion of our Christian population which from the want of employment now begs or tenants the workhouse and the gaol.

No object exists more sublime than the steeple of St. Peter's Church at Caen, unless it be that of St. Michael's Church at Coventry—none more sublime than St. Michael's, unless it be that of Louth—none more sublime than Louth, unless it be that of Chichester Cathedral—none more sublime than the steeple of Chichester Cathedral, unless it be that of Antwerp Cathedral—none more so than Antwerp steeple, unless it be that of Strasbourg Cathedral—none more so than Strasbourg steeple, unless it be that of Freiburg in the Breisgau—none more sublime than Freiburg steeple, unless it be that of Salisbury Cathedral, which, tapering up to heaven in beauteous proportion till it seems more lofty than it really is, appears as though it had drawn down the very angels to work over its grand and feeling simplicity the gems and embroidery of Paradise itself; and, indeed, the most gorgeous of the English florid works of architecture always retain such a peculiar character of sacredness that they always unfold a truly religious appearance.

The pyramid is Nature's own form; her mountains, the grandest of earthly masses, diminish to heaven; architectural science requires that a building to endure should end in a pointed summit: a mere heap of sand will by its own gravity assume a pyramidal form, and so endure for thousands of years, and long outlive a wall of granite reared perpendicularly.

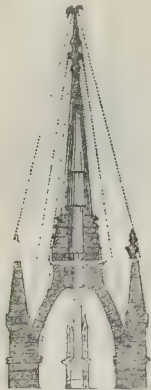
The feeling of love for the scientific and picturesque form of the pyramid is so inherent in man, that any modern steeple which is erected, is immediately universally condemned if its outline be not strictly pyramidal, and the most illiterate, who knows not why he condemns it, is strictly correct in his condemnation.

A pyramidal outline is of such importance, that if even a dome do not conform to it, ungraceful clumsiness, and disgust to every class of beholders, are the sure results. In this may be seen the wonderful art of Wren, in proportioning the dome of St. Paul's Cathedral. The cupola is placed a great distance within the tambour, so as at once to suit the particular scheme of its construction, and to form a pyramid. De Quincy says it appears very harmonious notwithstanding this peculiarity; but the truth is, that the perfection of its form emanates from this diminution. Indeed, many of the modern cupolas, built by Sir John Soane and others, being almost as



manner, not altogether unlike some of the spires of Norman architecture, as at Rochester Cathedral. This structure is reputed to be the tomb of Theron, tyrant of Agrigentum.

In buildings to be viewed from a great distance, the great art consists in making them appear pleasing from every point of view. Wren was in this as great a master as in geometry and construction; not only do his steeples bear the test of a front view, but when viewed diagonally and in various other ways they still conform to pyramidal outlines, whether passed down their utmost breadth, or through the distended open parts of them which appear in a side view.



Diagonal Outline of the Spire of St. Dunstan's in the East, London.

How ill the moderns have succeeded in steeple-building by piling one discordant heap upon another, may be gathered from the almost universal contempt with which the architect, the architectural critic, and the public in general, view our modern steeples; to raise upon each other, to coarse broken outlines, imitations of delicate small works of ancient architecture which stood on the ground, cannot satisfy the mind or the eye; these things all require to be designed on purpose; the higher the stages of the work ascend, they are more and more restricted in general magnitude by the outlines of the pyramid, yet from their superior altitude they require to be designed in a larger and simpler style, otherwise, not being read by the eye, they become confused, and thence tasteless. The steeple of the new church at Shadwell, from being formed with a good outline, has received almost general praise, although its details are coarse and its materials are mean and fragile; the easy labour of drawing two pencil boundary lines, meeting at its summit, gained for its designer this praise, and saved him from the reprehension given to many works, the details of which would rank higher if placed in proper situations. The author always knew that good steeples were formed on this principle, and he has been much pleased by finding the boundary lines remaining in pencil upon ancient drawings of them.—*Essay on the Decline of Excellence in Modern English Buildings.* By Alfred Bartholomew, F.S.A.

ANTWERP AND LONDON.—In 1342, when the disputes between the Archduke Maximilian and the bourgeoisie of Bruges ended in his blockading Sluis, and thus striking a fatal blow at the prosperity of a city that had been the great depot for the productions of the north and south of Europe, its trade was transferred to Antwerp, which had long been a formidable rival; and this, added to its previous advantages, gave it a preponderance in the scale of commerce, and it became the warehouse of the civilized world, where merchants from all lands congregated to buy and sell. To accommodate these visitors in the transaction of their business, "the Bourse" was constructed in 1531, which building furnished Gresham with his idea for the Exchange in London, which was originally styled "Britain's Bourse." In the same manner the ancient processions of the trades of Antwerp furnished us with the prototypes of much of the pageantry formerly exhibited in the early mayoralty processions of London; for the similarity between them is too striking to be the result of accident.—*Fairholt's Lord Mayor's Pageants.*

#### METROPOLITAN IMPROVEMENTS, &c.

THE following are extracts from the 20th Report of her Majesty's Commissioners of Woods, Forests, Land Revenues, &c., being the 14th annual report:—

##### HYDE PARK AND VICTORIA PARK.

The report also contains a schedule of property purchased under the authority of the act of 5 Victoria, sess. 2, cap. 19, to empower the Commissioners of Her Majesty's Woods, &c., "to form a new opening from the Knightsbridge-road into Hyde Park, and a new opening from High-street, Kensington, into an intended new road across the Palace-green;" the total purchase-money for which property amounts to 1,080*l.*; and a schedule of property purchased under the authority of the act 5 Victoria, sess. 2, cap. 20, to extend an act passed in the 4th and 5th years of her present Majesty, for enabling Her Majesty's Commissioners of Woods, &c., to purchase certain lands for Victoria Park.

##### NEW HOUSES OF PARLIAMENT.

In the appendix will be found a report from Mr. Barry of the progress made, up to the present time, in the erection of the new Houses of Parliament. The following is that gentleman's report:—

##### "Architect's Report as to the Present State of the Building."

"The curtain portions of the river front and a considerable portion of the north and south fronts are carried up to their full height in readiness for the roofs. The central portion of the river front and the wings of the building are a little above the same level, and probably will attain their full height in about four months from this time. Considerable progress is made with the superstructure of the western portion of the south front, the Victoria tower, the Royal Gallery, the House of Lords, the central tower and adjoining corridors, and the west front towards New Palace-yard, all which portions of the building are upon an average about 15 feet above the level of the Trinity standard of high-water.

"The stone continues to be supplied in great abundance from the neighbourhood of Austin, in Yorkshire, for the external masonry, and there is no deficiency of supply of a stone which has recently been employed, from Caen, in Normandy, for the internal masonry. The contractors have increased their number of hands at the quarry to about 300 men, and have provided additional tackle, horses, &c., by which and other arrangements the supply of stone for the future will be even still more certain and abundant than it has hitherto been. The work executed and the contractors' arrangements for the progress of it at the building still continue to merit my entire approbation."

—CHARLES BARRY.

"Westminster, August 12, 1843."

##### METROPOLIS IMPROVEMENTS.

In our last report we stated the progress which had been made in purchasing the interests in the property in the several lines of improvement authorized to be made under the Acts 3 & 4 Victoria, c. 87, and 4 Victoria, c. 12; and we have now to state that on those several lines, up to the 5th of January last, we have completed purchases to the amount in the whole of 300,755*l.* 5*s.* 8*d.*, and have contracted for further purchases to the amount in the whole of 194,641*l.* 13*s.* 6*d.*; viz.:—

1. In the line from Oxford-street to Holborn we have completed purchases to the amount of 166,851*l.* 12*s.* 10*d.*, and we have contracted for further purchases to the amount of 15,906*l.* 15*s.*
2. In the line from Bow-street to Charlotte-street, Bloomsbury, we have completed purchases to the amount of 35,464*l.* 11*s.*, and have contracted for further purchases to the amount of 26,485*l.*
3. In the line from the London Docks to Spitalfields Church we have completed purchases to the amount of 44,577*l.* 16*s.*, and have contracted for further purchases to the amount of 71,102*l.* 18*s.* 6*d.*
4. In the line from Coventry-street to Long-acre we have completed purchases to the amount of 54,281*l.* 5*s.* 10*d.*, and have contracted for further purchases to the amount of 78,477*l.*
5. In the line from East Smithfield to Rosemary-lane we have not completed any purchase, but we have contracted for purchases to the amount of 2,670*l.*

A statement is appended to the report shewing our receipt and expenditure in respect of monies applicable to these improvements, by which it appears, that of the sum of 500,000*l.*, mentioned in our last report to have been borrowed of the Equitable Assurance Company for the purposes of these improvements, upon the security of certain portions of the land revenue of the Crown in the county of Middlesex, there remained a balance of 166,918*l.* 1*s.* 10*d.*, on the 5th of January last.

##### THE PARKS.—KENSINGTON, REGENT'S PARK, &c.

It having been deemed expedient that the Crown should possess the freehold of the property to a certain distance immediately eastward and westward of the new entrance from the Knightsbridge-road into Hyde-park (now called the Albert Gate), for the purpose of obtaining and exercising a controlling power as to the style and character of the buildings to be erected on the ground adjacent to that new entrance, we have to report, that agreements have been entered into for such intended purchases, and for letting to Mr. T. Cubitt the disposable building-ground eastward and westward of the new entrance.

We have also to report that, under the powers given by the same Act, we have agreed for the purchase of the three houses in the High-street at Kensington, required for opening the intended new communication between Kensington and Bayswater; which not only forms an essential part of the plan for letting for villas the site of the late Royal kitchen-garden at Kensington, but will be a great accommodation to the rapidly increasing population in that district.

In furtherance of that plan, a new sewer for the drainage of the intended houses has been nearly completed; but, owing probably to a very great suspension of building speculations which has existed during the past year, we have as yet agreed to let only two out of the thirty-three sites designed for new buildings to be erected on this ground.

It was mentioned in our last report, that the value of this ground to be let on building leases would be sufficient to form a fund for acquiring and establishing a new kitchen garden, to be attached to Windsor Castle, as well as for the improvement of other royal kitchen-gardens; and that approved plans for forming such new kitchen-garden on part of the Crown's estate at Frogmore were then in progress.

Under the Act which authorized these arrangements, the monies required for "forming, improving, laying out, planting, and enclosing this new royal kitchen-garden, and in erecting, making, and completing all requisite houses, buildings, walls, sewers, drains, and other works connected therewith," have in the mean time been defrayed out of the land revenues of the Crown, as the funds to arise from the value of the late kitchen-garden at Kensington have not, for the reasons before mentioned, yet become available for this service.

The new bridges for connecting the Regent's Park with that portion of the Primrose-hill estate which, under the authority of the 5th & 6th of Victoria, c. 78, we had lately purchased from the provost and fellows of Eton College, having been completed and open to the public since the date of our last report, we are now in negotiation with the lessee of the college, with a view to the purchase of his interest, which will not expire till the year 1859; and if we fail in obtaining such terms as shall appear to be reasonable, it is our intention to avail ourselves of the powers of the Act in question, to have the value assessed by a jury.

Since the passing of the Act of 4th & 5th Victoria, cap. 27, which vested in us all the requisite powers for acquiring the lands intended to form a new park in the eastern part of the metropolis, we have agreed for the purchase of the freehold interests in 101 acres out of 290 acres comprised in the plan, and authorized by the said Act to be purchased for forming such new park; and having given the proper notice to all the parties whose lands or interests will be required, we are proceeding as expeditiously as possible to complete the purchases of all the still outstanding freehold interests, before we begin to deal with those of lessees, sub-lessees, or occupiers; and for the present the monies set apart for this service remain invested in Exchequer-bills.



The payments into the Exchequer out of the "Growing produce," or surplus yearly rents, arising from the land revenues of the Crown, amounted within the year ended 5th January, 1843, to the sum of 133,000*l*.

The balances of the different accounts standing in our names, and in the hands of receivers, deputy-surveyors, and other officers, on the 5th of January, 1843, amounted to 94,207*l*. 15*s*. 8*d*.

LINCOLN,  
A. MILNE,  
CHARLES GORE,

Commissioners of Her Majesty's Woods,  
Forests, &c.

Office of Woods, &c., Aug. 21, 1843.

#### VICTORIA RAILWAY-STATION, MANCHESTER.

THE Victoria station of the Manchester and Leeds and Liverpool and Manchester Railways at the junction in Manchester just opened, is the largest in the kingdom. It covers a distance from Hunt's Bank to the Ducie Bridge of 852 feet, with an average width of 130 feet; having five main lines of rails from end to end, three of which are appropriated for the main lines, and two are sidings. In addition to this there are other sidings, which may hereafter be used for goods; and the departure lines for the two railways are also sidings, on the south side of the other rails. To the length of 700 feet from Great Ducie street, the station is covered in with an iron roofing, erected in three compartments, the centre one being 59 feet 6 inches span; that on the north side, 28 feet; and that on the south side, 26 feet 3 inches. This roofing, with a length of 700 feet, and an entire width of about 114 feet, forms the largest extent of railway roofing in the kingdom, being little short of 80,000 square feet of iron roofing. This immense roof is supported by the north boundary wall of the station, and by a number of iron columns; and the south side is protected by a similar wall, forming also a retaining wall for the approach road from Hunt's Bank. The walls bounding this approach road are surmounted by ornamental cast-iron railing, instead of stone parapets. The *coup d'œil* of this splendid avenue, viewed from either end, is very striking. The interior of the roof is not left bare, as in some railway stations; but beneath the slates the whole has been boarded, and the joints of the boards covered with laths. During the day, the station is well lighted by skylights in the roof; and, during the night, by a series of gas lamps, fitted with burners for the new light, formed by a radiating combination of the flat flame burners, invented by Messrs. Hall, of King-street. The skylights are glazed with Chance's patent glass, which is a strong, thick, and cheap glass, in panes of about four feet in length by one in width, two of which in length include the extent of the skylights from the ridge downwards. The gas lights consist of a number of radiating tubes, like the spokes of a carriage wheel, perforated with orifices for the flat flame burners. Of these lights there are 15 within the covered station, a large one opposite each booking-office, and several others round the boundary wall down to Hunt's Bank. Connected with them is an arrangement of the utmost importance for such establishments as railways. One central tap at the station regulates and adjusts all the lights there, both along the railway and approaches, and also within the several booking offices, waiting and refreshment rooms. When a train is arriving or departing, the fullest illuminating power is required and used; but, in the intervals between that and the next departure or arrival, the smallest modicum of light is sufficient, and a single turn of the tap will reduce all the lights to any required degree. This will, of course, be the means of considerable saving in the consumption of gas. Every care has been taken to provide ample accommodation for the great traffic which must come on the line. Altogether, it is computed the company possess at the goods' station, Oldham-road, not less than eight acres of land, all applicable to the purposes of the goods' traffic. At and around the Victoria station, notwithstanding its centrality, the company possess no less than about thirteen acres.

At the official inspection of the station and extensive line, General Pasley and the directors were conveyed in two carriages, which, from their novelty, may not be unworthy of notice. Both these carriages are constructed from

designs of Mr. Houldsworth, the chairman of the directors, and are intended chiefly for summer use. The Tourist forms one apartment, with a high *dais* occupying the centre third of the floor from end to end. On this *dais* are placed at intervals two seats, backed by others, in all 16 on the *dais*. On the lower floor there are five seats on each side, which turn up, and then leave a passage all round. Four other seats are in the corners, making a total of 14 on the lower floor, the occupants of which, when seated, do not at all obstruct the view of those seated on the *dais*. The carriage is thus capable of containing 30 passengers. Besides the windows at the side, there are wooden slides in the coving of the roof, which, when drawn down, open with gauze ventilators, which let in the air, without admitting those draughts which are sometimes so injurious in the second-class carriages. For this application of wire-gauze we believe a patent has been obtained. The *dais* is fitted up with carpets, &c., and each end of the Tourist is lined with looking-glass, and has small ventilators for winter use. The other carriage, named the Gondola, is somewhat different in construction. It has open ends, like "stand-ups," from which doors open into a small but elegant saloon, each side of which is occupied by a sofa, covered with crimson velvet, and capable of seating six persons. There is a let-down seat within each door, so that this little centre will seat a party of 14, who may have greater freedom of movement than in the ordinary railway carriages, and may from time to time walk out into the air, either in front or rear. The junction or extension line of the Liverpool and Manchester Railway, from Ordsall-lane to Hunt's Bank (through Salford), to connect with the Manchester and Leeds extension, will be completed in March next.

#### USE OF IRON IN SHIP-BUILDING.

AMONG the new employments found for iron must be mentioned ship-building. Iron was first used about the year 1810 for the construction of vessels employed in canal and river navigation. After this, the next employment of this material occurred in 1820, when a steam vessel, called Aaron Manby, was constructed at the Horsey-iron-works, and made the voyage between the capitals of England and France without unloading any part of her cargo; this vessel is still in good condition, although twenty-two years old, never having required any repairs to her hull. In 1825, a small iron steam-boat was placed on the river Shannon, where she is now employed, in good condition. In 1832, the Elburkah—an iron steam-vessel built by Messrs. Macgregor, Laird, and Co., in Liverpool, made the voyage from that port to the coast of Africa, and twice ascended the river Niger. This successful experiment led to the construction of many other iron steam-vessels. One builder, Mr. John Laird, of Birkenhead, near Liverpool, has built forty-five iron vessels, of the aggregate burden of 12,600 tons. The total number launched since 1830 is said to exceed 150. The largest iron vessel yet finished, and in use, is the *Guadaloupe*, a steam-frigate of 788 tons, carrying sixty-eight pounders, and belonging to the Mexican government; but her dimensions are insignificant when compared with those of the Great Britain, now building, and nearly finished, at Bristol. The length of this vessel, from her figure head to her transom, is 330 feet; the breadth of beam 51 feet; the depth of her hold 31 feet; her draught of water, when loaded, is calculated to be 16 feet; and her burden 3,500 tons. The engines will have a force equal to that of 1,000 horses, and will be used to keep in action, as the means of propulsion, an Archimedean screw. The draught of water will be seen to exceed that of a first-rate West-Indian. At present, this vessel can only be considered as an experiment; and should it fail, an abundance of ridicule will no doubt be cast upon the proprietors by men whose genius would hardly have sufficed for the invention of a wherry. A great part of the steam navy of the East-India Company consists of iron vessels, twenty-five of which are now in use in India, among which are the *Nemesis*, the *Ariadne*, and the *Medusa*—names well known to the British public, from the conspicuous part which the vessels performed in the war with China. The advantages of iron over timber

for naval architecture are—the absence of "wear and tear" in the hull, no necessity for caulking or coppering, no possibility of injury from dry rot, greater lightness, and increased capacity; and, what is of even far more importance, greater safety. This last point has sometimes been questioned, but not by any one having knowledge on the subject. When a timber-built ship takes the ground with any violent shock, the whole framework of the vessel is strained, and in a measure dislocated, so that, by the mere buffeting of the waves, she will in all probability soon be made a complete wreck; but when an iron-built vessel strikes, however violent the blow, it is only the part that is brought into collision with the rocks that will be injured. The plan of building these ships in water-tight compartments, then proves its efficacy; for, should the injury amount even to the tearing away of the plates, the resulting mischief will only be to fill with water that particular compartment of the vessel to which the injury has occurred, so that the ship will be scarcely less buoyant than before; and experience has shewn that damage of this kind is easily repaired. The first cost of iron vessels is somewhat, but not much, less than that of the timber-built vessels; their comparative cheapness results from the greater durability. After years of constant employment, they are found to be as sound and as clean as when first built. Their weight, upon which depends the displacement of water, is as a general rule three-fifths the weight of wooden vessels of the same capacity. The weight of metal used in proportion to the burden of the ships varies of course with the size. A sea-going iron steam-vessel will take from nine to twelve cwt. of iron per ton register. Boats intended for river traffic, which do not require an equal degree of strength, of course take a less weight of metal. The building of iron ships is fast becoming an important branch of national industry; it is one which our mineral riches, and our great mechanical skill, will secure to us as a virtual monopoly.—*Porter's Progress of the Nation.*

#### THE NORTHERN COAL TRADE.

IN 1770 there were only 13 collieries on the Tyne, and in 1808 there were upwards of 30. In 1823 the number was increased to 41 on the Tyne, and to 18 on the Wear, making in all 59. The estimated powers of working possessed by these collieries—that is, the quantity of coals they are able to raise in a year—are calculated by the late Mr. Buddle, the most accurate and experienced viewer ever known in the trade, at 5,887,522 tons. In 1836 the number of collieries was again augmented on both rivers, and their powers of working extended to 8,133,922 tons yearly, being an increase in seven years of 2,236,400 tons, or nearly 38 per cent. In addition to this there were in that year new collieries already shipping coals, but not in the regulation, capable of producing another million of tons, which swells the increase per cent. to nearly 55, or considerably more than half. Still the Tees is not included. From the year 1826, when coals first began to be shipped on the Tees, up to 1835, the quantity increased, year by year, from 18,581 to 357,726 tons, conveyed along the Stockton and Darlington Railway alone. But in 1836 the Clarence Railway was in operation, and we may assume the powers on the Tees in that year to have exceeded 500,000 tons. Thus, then, from 1826 to 1836, the aggregate capabilities of the whole district has sprung from 5,941,812 (including the Tees) to 9,623,922, showing an increase of 3,682,130 tons, or fully 62 per cent. Taking the next septennial period, from 1836 to 1843, the ratio is equally progressive. Hartlepool, in the interval has become a great and flourishing port; and all the collieries shipping there, with the exception of Thornley, are creations belonging to this cycle. Lord Londonderry's own snug little harbour of Seaham has grown into magnitude, and tripled its trade within the time. Two joint-stock companies have, during the while, been formed, each with a capital of nearly 500,000*l*. sterling, and which have sunk nearly the whole of their funds in exploring new coal-fields. Moreover, on the Blyth, the Tyne, the Wear, and the Tees, multitudinous fresh winnings have been made by private individuals and compa-



nies, whilst an entirely new district around Workworth has been called into existence. In the same period, or nearly so, seven additional public railways, for the conveyance of coal, have been opened in the county of Durham alone. The impulse, has, in truth, been attended with amazing consequences. The region of developed coal-fields has been extended in every direction, until it describes a vast circuit, stretching from the Coquet, in the remote north, to the sterile waste of Cockfield Fell in the far west, sweeping round Middleham on the extreme south till stopped by the German Ocean on the east. We cannot estimate the increase of powers thus obtained at less than 3,000,000 of tons yearly, so that the aggregate capabilities of the district may be now assumed at upwards of 12,500,000 tons per annum, being much more than double the quantity that could have been raised in 1828.—*Newcastle Advertiser.*

#### PRESERVATION OF CHURCH ORGANS.

To those who take an interest in the means of obtaining church music, the subjoined letter to the editor of the *Hereford Times* may be interesting:—

"Sir,—It is to be feared that though the repairs of the Cathedral are progressing with certainty, they are also an exemplification of the saying—*slow and sure*. But though the slow and sure is a vexatiously dull pace, irritating the temper and exhausting patience, it is much better than a more rapid one, when the latter cannot be adopted safely. Considering that it appears by no means certain that the restoration of the Cathedral will be so far completed as to admit of the erection of the organ and the celebration of the Triennial Musical Festival within its walls in 1846, it becomes a matter of extreme importance to save that valuable instrument from inevitable ruin. An organ is always better circumstanced in churches where divine service is solemnized daily, and not merely on the first day of the week. I am of course supposing that the organ is regularly played on every day, except on Ash Wednesday and in Passion Week. But if the organ used for divine service daily is better circumstanced than that which is used but weekly, what shall be said of one which is not even used once a month or once a year? What shall be said of an organ which has been removed under the inspection of a competent person, but which has been treated like mere lumber and rubbish? The matter is too serious to treat with levity or indifference. A plain question is at issue. Shall the cathedral organ *exist*, or shall it not? The dean and chapter are the persons who have to decide its fate. Let them at once send for an organ-builder of well-known and justly-merited celebrity (I care not whether it be Mr. Hill, or Messrs. Gray and Davison, but it should be one of these), who should, under his personal inspection, see the organ placed in the Shire Hall. As for the expense, I have to observe that *any expense* is better than the destruction of a valuable instrument. A stitch in time saves nine. I hope it will do so now. Let the organ be erected in the Shire Hall; let Mr. Smith exhibit its powers once a week in public, as Mr. Stimpson does those of the Birmingham organ, and let the price of admission be the same. This, with the exhibition of the instrument to Mr. Smith's friends, and such others as he may admit at any time he may think fit, will save a noble instrument from the calamity which otherwise awaits it."

"AN ADMIRER OF OLD ORGANS."

**SUPERFICIAL MEASUREMENT OF THE GREAT WELLINGTON GROUP.**—Bronze casting:—Drapery, 128 feet; head of horse, 25 feet; neck, 120 feet; hand, 12 feet; hind quarter, 291 feet; fore quarter, 261 feet; hat, 26 feet; body of duke, 150 feet. Of the colossal head of his grace, cast from a cannon taken at Waterloo, we have not the dimensions, nor of the limbs from the foot to the knee; but it will appear from the above to be little less than 1,100 feet!

**ROYAL EXCHANGE CLOCK.**—Mr. Dent, the well-known chronometer maker in the Strand, has obtained the contract for making the Royal Exchange clock. His tender was for 800*l.*, but it having been ascertained by the committee that he could not execute it with chimers, quarters, &c., as wanted, for that sum, they have agreed to allow him 500*l.* more, making together 1,300*l.*, and out of this it is supposed Mr. Dent can scarcely clear himself.

#### WILTS HILARY SESSIONS.

**COLESHILL BRIDGE.**—The County Surveyor reported that he had examined this bridge, and he estimated that the cost of repairing and widening the old bridge would be 250*l.* The expense of building a new bridge at a different point of the stream, with the approaches, would be 450*l.* Looking to the future expenses of repairs, &c., and to the accommodation of the public, he would recommend the building the new bridge.

The Earl of Radnor stated that the Berkshire magistrates had appointed a committee to confer with the magistrates of Wilts, with authority to decide on building a new bridge, or to repair the old, as might be thought best.

The Clerk of the Peace stated that the approaches to the bridge would be liable to be repaired by the parties who repaired the present road,—the Commissioners.

It was then agreed on the motion of Lord Radnor that the present committee be requested to meet the magistrates of Berks to ascertain what place will be most convenient to build the bridge.

**BOREHAM BRIDGE.**—The committee appointed at the last sessions reported that they had examined the bridge and the evidence bearing on the question, and that in their opinion the county is liable to repair the bridge. The bridge was now in a very dilapidated state, and they recommended that the county surveyor be directed to examine it and take the usual necessary steps for its repair.

#### ASSESSED TAXES CASES.

*Determined by the Judges on Appeal.*

May 18, 1841.

Windows—Bakehouse.

*A bakehouse in a back yard and disjoined from the dwelling-house, and having no communication with it, is not a manufactory within the 48 Geo. 3, c. 55, and 50 Geo. 3, c. 104, and is liable for its windows.*

At a meeting of the commissioners held at the Red Lion Inn, in Dorking, on Monday, the 28th of September, 1840 (48 Geo. 3, c. 55, schedule A, rule 3), John Brown, of Dorking, baker, appealed against two windows in a bakehouse, which bakehouse is situated in his back yard, and is disjoined from his dwelling-house, and has no communication therewith. Mr. Brown is by trade a bread-baker, and claimed to be exempted from such windows on the ground of his bakehouse being what he considered a manufactory, and exempt by the 8th section of 50 Geo. 3, c. 104. The commissioners relieved the appellant for the windows in question: with which decision the surveyor was dissatisfied, and requested a case thereon for the opinion of her Majesty's judges. He referred to case 191, and submitted that, under the circumstances stated, the bakehouse in question was not such a manufactory as the law contemplated to relieve. The cases of Thomas Rose and John Saunders being similar cases to the above, the surveyor demanded the judges' opinion on their cases also.

W. CRAWFORD, } Commissioners.

E. KERRICK, }

We are of opinion, that the determination of the commissioners is wrong.  
J. PATTESON. T. COLTMAN. W. WIGHTMAN.

Windows—Solicitor's offices.

*Appellant (a solicitor) residing elsewhere, occupied premises as offices, underletting a part to his clerk, who lived there. A door was in front of the premises, opening into a passage common to master and clerk, the offices being on one side, and the rooms on the other: Held, not exempt for the windows, the offices and clerk's premises forming but one house, and being inhabited in the night-time.*

At a meeting of the commissioners of assessed taxes, held at the Wynnstay Arms Inn, in Llanfyllin, on the 11th of September, 1840, for the purpose of hearing appeals against the first assessments, for the year ending 5th April, 1841, (48 Geo. 3, c. 55, sch. (A); 57 Geo. 3, c. 25, s. 1; 5 Geo. 4, c. 44, s. 1).—Mr. T. Lloyd Royle, of Llanfyllin aforesaid, solicitor, appealed against an assessment for fifteen windows.

The appellant stated that the windows are charged for premises occupied by him as offices; that he is the tenant, and underlets a part of the said premises to his clerk, which he (his clerk) occupies as his dwelling-house. That there is a door in front of the premises which opens into a passage common to both, and the appellant's offices are through a door on the right hand, and his clerk's dwelling through a door on the left hand of the said passage, he

therefore contends that his offices are exempt, as they are separated from his clerk's dwelling by the passage before stated; and as he resides in another house, upon which the windows are duly charged, we the commissioners relieved the appellant, but the surveyor demanded a case, urging that the passage before mentioned is not any thoroughfare, for instead of leading *through* the premises, it *leads up stairs*, and that upon the passage (which is nothing more than a front entrance to the house) there is only one door, and that in the front, which is sometimes closed by day, and always by night, and then shuts all as in one dwelling; he therefore submitted that the appellant could not be exempted under the Act of 5 Geo. 4, c. 44, s. 4, in consequence of a part thereof being occupied as a dwelling-house.

EDWARD FOULKES, } Commissioners.

JOHN DAVIES, }

We are of opinion that the determination of the commissioners is wrong.  
J. PATTESON. J. GURNEY. T. COLTMAN.

Windows—Attorney's office.

*Appellant lived in a house, three rooms of which she let as offices to an attorney, who lived elsewhere; there was one front door only to the whole house. Held, not exempt for the windows of the rooms let as offices, they being part of an inhabited dwelling-house.*

At a meeting of the commissioners of land and assessed taxes, acting for the division of the town of Cambridge, on Monday, the 9th day of November, 1840, the following case was heard and determined (48 Geo. 3, c. 55, sch. A); Mrs. Ann Peed, of this town, appealed against five windows in her dwelling-house. Appellant being sworn, states, "she occupies a house containing eight rooms, including a kitchen under ground; there are fifteen windows, including the kitchen window. Appellant lets three of the rooms to Mr. A. Peed, an attorney, in which there are five windows, which Mr. Peed uses exclusively as offices, his dwelling-house being in another part of the town; there is one front door communicating with all the rooms in the house. Mr. Peed's dwelling-house is in Trinity parish, and is duly assessed. Appellant contends she is not liable for five windows in Mr. Peed's offices."

The surveyor contended that as the offices formed a part of the dwelling-house, and had communication therewith, the appellant had no ground for claiming any exemption from the five windows in the rooms so used or occupied, and produced cases 506, 507, and 508, in support of his opinion.

The commissioners, notwithstanding, were of opinion that as Mr. Peed occupied a dwelling-house as stated, and was duly assessed for the same, the appellant was not liable, and relieved her from the five windows. The surveyor being dissatisfied, requested a case for the opinion of her Majesty's judges, which we sign accordingly.

SAMUEL EVANS, } Commissioners.

WM. BISHOP, }

We are of opinion that the determination of the commissioners is wrong.  
J. PATTESON. T. COLTMAN. J. GURNEY.

Windows—Shop.

*A shop window on the left side of a baker's house, and looking on a carriage way running into an inn yard, such way being also a public way to the bakehouse and to the back premises of an adjoining house—Held, exempt as a shop window under the 4 Geo. 4, c. 11, s. 1.*

At a meeting of the commissioners, held at the Red Lion Inn, in Dorking, on Monday, the 28th day of September, 1840, (48 Geo. 3, c. 55, sch. (A))—John Sanders, of Dorking, baker, appealed against the charge for a shop window on the left side of his shop. The bow window (chargeable as two from its size) in the street front of the same shop was previously allowed him by the surveyor, and had not been assessed. The window in question is situated on the left side of the house, and looks on a carriage way running into an inn yard, and which way is also a public way to the bakehouse of the appellant, and also to the back premises of another adjoining house. The surveyor submitted that under such circumstances the side window in question did not come within the meaning of the act 4 Geo. 4, c. 11, s. 1; but the commissioners being of a different opinion, relieved the appellant; whereupon the surveyor requested a case for the opinion of Her Majesty's judges.

W. CRAWFORD, } Commissioners.

EDWARD KERRICK, }

We are of opinion, that the determination of the commissioners is right.  
J. PATTESON. J. GURNEY. T. COLTMAN.

**EXCHANGE BAZAAR.**—A society is in the course of formation on the Surrey side of the water, having for its object the raising capital of 1,000*l.* in small shares, in order to establish a bazaar for the mutual exchange of goods for provisions and other necessities on equitable terms, chiefly for the purpose of enabling small tradesmen to find a fair market for their goods. The whole, in fact, is in some respects on the principle of the Labour Exchange formerly established in Theobald's-road, but some defects in which are proposed to be remedied, and every objection removed. Preliminary meetings are at present being held in Stamford-street, and shortly a public meeting will be called, with a view to put the proposed plans in operation.



## Correspondence.

## MEASURING ROUND TIMBER.

Sir,—On page 559 of your last volume, a correspondent subscribing himself "L." complains of what he terms "a curious discrepancy in two ways of measuring a stick of round timber," and expresses a wish "to see it explained." He instances a piece 80 feet long, 6 inches diameter at one end, and 6 feet at the other, and informs us that "the contents, taking the centre of the length for the quarter girth, will be found to be 521'22050080," but that if the piece be cut into three pieces of 33 feet, 10 feet, and 35 feet long respectively, and each piece be measured separately in the same manner, their contents added together will be found to be 624'5597643390548525. Permit me to inform him that the discrepancy between the two operations (for they are not different methods) arises from the simple fact of their being both of them wrong; and that the difference between their results *proves* them to be so; for had they been correct, it is self-evident that the sum of the contents of the parts must be equal to the contents of the whole. It is absurd to "take the centre of the length for the quarter girth." If "L." was computing the superficies of a triangle, he might measure at the centre for a multiplier of the length with propriety, but the mensuration of the "stick of round timber" is a cubical affair, and, to do it properly and scientifically, he must consider it (what in its geometrical capacity it is) *the frustum of a cone*, and proceed as follows, viz.: find the mean area (not by girthing it in the centre, but) by adding together the squares of the two diameters, and the product of the two, and multiply their sum by .2618, the one-third of .7854 (which is the area of a circle whose diameter is 1), then multiply the main area thus found by the length, and the product is the contents of the frustum.

Or the mean area may be found, by adding together the areas of the two ends, and the mean proportional between them, which is the square root of their product, and divide their sum by 3.

Measured in this way, the contents of the piece given is 822'052 feet, or 822 feet 89'856 inches cubic; and if the three divisions he names are each measured in the same way, "L." will find that no discrepancy exists between the sum of their results and the contents I have given.

Though the question seems of a rather whimsical character, yet as it belongs to the important subject of timber surveying, on which a great many erroneous notions prevail, I deem it not undeserving of notice in a publication for builders; perhaps you will agree with me, and give insertion to this reply in the columns of your next. Should "L." wish to see the solution at length, I shall be happy to furnish it.

I am, Sir, your obedient servant,  
Liverpool, 9th Jan. 1844. S. HUGGINS.

## ARCHITECTS' COMMISSION.

Sir,—You will oblige an early subscriber, an architect, by inquiring through the medium of your paper, whether an architect's commission of 2½ per cent. can be substantiated for a series of drawings, and a report describing the same, with estimate of the probable expense. Any subscriber or correspondent having, in the course of his professional career, had the unpleasant necessity enforced on him of establishing his just claim by recourse to litigation, will confer an obligation by asserting the result thereof, by which an immense benefit may be derived, not only by myself, but by almost every member of the profession.

I remain, Sir, yours faithfully,

A SUBSCRIBER.

The drawings consist of four elevations, two sections, and plans of four stories; the estimate was £2,000.

[We think that within the charge of 2½ per cent. should be included the making a detailed specification of the work.—Ed.]

## THE LEICESTER MONUMENT.

Sir,—The chairman of the committee having informed the competitors of the result of this competition, in a circular expressed in terms of courtesy and fair dealing, and giving the name of the successful candidate, I would suggest that your correspondent in last week's paper should plainly state whether his remarks apply to the design No. 40, stated to be the one selected.

## ANOTHER COMPETITOR.

London, January 10, 1844.

## BLUE LIAS LIME.

Sir,—I shall be glad to be informed, through the medium of your valuable magazine, whether blue lias lime can be obtained any where in Yorkshire or on any of the rivers which branch from the Humber convenient for shipment; or if not, where the stone can be procured.

I am, Sir, your obedient servant,  
Bridlington, Jan. 6th, 1844. INQUIRER.

## Miscellaneous.

MR. JOSEPH'S STATUE OF SIR DAVID WILKIE.—A private view was afforded to the friends of Mr. Joseph, to several of the nobility and persons of distinction, and to those more immediately connected with the Fine Arts, of the statue, just finished, of the late Sir David Wilkie, by Mr. Joseph, now placed in the National Gallery, in Trafalgar-square, and open to public view. The statue is a representation of the late eminent artist in an attitude of contemplation: in the right hand, which crosses the heart, is a pencil, whilst the left holds a portfolio of designs or drawings. The figure is in a modern costume, the angles of which are kept down; and the whole is rendered classical in its appearance by a cloak, or robe, which falls in broad folds over the shoulders. The likeness is correct; it may be somewhat idealized and flattered, but not beyond what is allowable, or at least what every sculptor allows himself. The figure is dignified and simple; it is happily free from any exaggerations, neither is it made up of littleness, or frittered into detached portions. The drapery of the gown, or robe, is very good. The statue is placed upon an elegant and massy pedestal of polished veined marble in a shallow recess, upon one side of which, covered by plate-glass, is preserved a favourite palette of the deceased painter, and forms not only an elegant ornament to the National Gallery, but a proof that sculpture in this country is by no means on the decline. It is one of the best, if not the best, statue which Mr. Joseph has produced.

ARTESIAN WELL.—An artesian well has been recently completed at the Middlesex Pauper Lunatic Asylum at Hanwell, under the superintendence of Mr. F. Bullen, of London, which, from the quantity and the quality of the water which it yields, as well as the height to which the water rises, may be reckoned as one of the most powerful in the kingdom. The shaft to a depth of 31 feet is 10 feet in diameter, and thence to a further depth of 200 feet is six feet in diameter, making 231 feet. At that point a small auger was driven below into a sand stratum, strongly charged with water, through which it was found necessary to force cast-iron cylinders into the clay beneath a depth of 12 feet. The whole of the shaft is constructed of brickwork in cement, and the cylinders are also lined with the same material. At the depth of 243 feet a guide rope was inserted, and secured with brickwork, and the boring commenced with pipes of 14 inches internal diameter, which are carried down into the flints immediately overlying the chalk, a depth of 290 feet, whence the water now rises and overflows the surface at the ratio of 100 gallons per minute, and at 26 feet above the surface at the ratio of 23 gallons per minute. The following is a description of the strata through which the well has been sunk and bored, with the exception of a few veins of septaria:—vegetable soil, 1ft. 6in.; gravel, 7ft.; sand, 2ft. 6in.; gravel and sand, 9ft.; brick clay, 2ft.; blue or London clay, 169ft.; indurated mud, sand, and clay, with pieces of wood and shells embedded, 24ft.; pebbles and shells, 3ft.; plastic clay, 29ft.; sand, 2ft.; plastic clay, 4ft.; indurated mud, sand, and clay, 8ft.; dark brown clay, 9ft.; green sand and clay, 7ft.; oyster bed, 2ft. 9in.; pebbles and yellow clay, 2ft. 3in.; bed of flint stones into which the bore is carried, 3ft. The temperature of the water as it overflows the surface is 55 deg. of Fahrenheit.

HEALTH OF TOWNS.—Sir H. De La Beche, one of the Commissioners appointed by Government to ascertain the best mode of improving the health of towns, paid an official visit to Bath during the week before last, accompanied by Mr. Hobhouse, the Secretary to the Commission. The several registrars of births, deaths, and marriages, within the borough, are busily engaged under the Commissioner's direction, in preparing well-arranged statistical tables from July 1842 to July 1843, in order that the sanitary regulations of that city may be duly brought before the Commission.

SALISBURY RAILWAY.—It is now stated that the proposed line is to be carried out solely by the South-Western Railway, irrespective of any local shareholders. The bill will be applied for early in the session.

## RAILWAYS CROSSING COMMON ROADS.—

A few days since, the gates across the railway at Beeston station were not open when the first train from Derby came down the line, and the morning being very dark, the engineer did not see the obstruction, nor abate the speed of the train, which was then going very fast; the consequence was, that the engine knocked the gate all to pieces; and the force with which some part of it was thrown back, dashed to the ground the palings which enclose the station-house, breaking off the bars like so many matches. Fortunately the extent of the damage done is confined to the gate and paling; but this should be one more warning of the culpable inhumanity of railways passing common roads: the bare necessity of the removal of gates and barriers from across a railway insures, notwithstanding all possible care, the frequent occurrence of accident; and we dread to contemplate the cruel loss of life which will sooner or later ensue from the possibility of persons while going along a common road being cut down by a tornado of railway vehicles.

PROJECTED RAILWAY BETWEEN MARYPORT AND WHITEHAVEN.—A new railway has been projected, and will be brought before Parliament in the ensuing session, for constructing a line between Maryport and Whitehaven, in Cumberland. This forms a portion of the great north line from Lancaster, before the public a few years ago, which was to cross Morecombe Bay, but did not at that time meet the requisite support of capitalists, probably from a fear of the embankment in the sea across the bay from Lancaster to Ulverston. It has now assumed a more practicable shape, being confined to a single line of rails along the coast from Whitehaven to Maryport, where it will unite with the railway to Carlisle, and thence to Newcastle-on-Tyne, and when completed, will then be a continuous line of railway from Whitehaven to Tynemouth, Shields, Sunderland, Hartlepool, Stockton, and all places in connection with the railways in the county of Durham. The country has been examined, and the line pointed out, by Mr. George Stephenson, and his oldest assistant, Mr. John Dixon, formerly resident engineer of the Stockton and Darlington Railway, and afterwards, for several years, of the Liverpool and Manchester Railway, has been to Whitehaven preparing the necessary plans and sections for depositing with the clerk of the peace for the county of Cumberland. The present project meets with the approbation and support of the Earl of Lonsdale, through whose property the line runs for many miles, so that there is little doubt but ere long this projected line will be added to the existing railway communications in the kingdom.

## CENTRAL LINE OF RAILWAY INTO SCOTLAND.

—A report on a central line of railway to Scotland, by Messrs. Johnson and Wood, has been addressed to the directors of the Newcastle and Carlisle Railway Company. The line proposed is to take a central route, commencing at the Rose Hill station of the above-named line, and proceed by Gilsland, Askerton Castle, Cumbrook, New Castletown, Shields, Hawick, Melrose, and Galashiels to Edinburgh, at about an equal distance from the proposed Caledonian line on the west, and the Great North British on the east. The proposal of this line appears to be brought forward not from any spirit of opposition, but to endeavour to shew that the central line will prove of equal accommodation to the public at less expense than the other two lines, and in the working an annual saving of 227,333l. will be effected, paying 5 per cent. on the capital expended, and opening a line of communication through a mineral, manufacturing, and agricultural country, whose resources have never yet been developed.

RAILWAY JUNCTION.—At the meeting of the Hull and Selby Railway shareholders, the terms of junction with the Manchester and Leeds line were agreed to, so that it only remains to be carried out under the sanction of Parliament for the benefit of the general body. The principle of amalgamation, which at the present moment is the great feature in the railway world, will tend to consolidate interests, and destroy the evil of competitive management, if properly regulated with the view to public convenience as well as individual benefit.

STEAM THEATRE.—A great theatre is about to be erected at Brussels, in which the machinery of the scenes and decorations is to be moved by steam, with little or no aid from manual labour. The gradations of day and night, the effects of storm, moonlight, conflagration—even the movements of the clouds—are to be effected by optical illusions and the various combinations and contrivances of the ingenious mechanic.



**PASSENGER DUTIES ON RAILWAYS.**—From a return made to the House of Commons in the course of last session, it appears that the railroads in England and Wales, 56 in number, have paid in the year ending January 5, 1843, no less than 152,663*l.* 13*s.* 0*d.*, as passenger duty. The amazing increase of railway traffic within the last ten years may be gathered from the fact, that in the year ending January, 1833, the whole sum paid to Government as passenger duty was 630*l.* 16*s.* 10*d.* The amount paid in the year ending January, 1842, was 148,204*l.* 13*s.* 10*d.* In Scotland, in the year ending January last, 20 railroads paid 15,125*l.* 1*s.* 6*d.*, being an increase of 3,468*l.* 0*s.* 11*d.* over the preceding year. The gross amount paid by all the railroads in the kingdom during the last year was 167,788*l.* 14*s.* 7*d.* The amount paid in the previous year was 159,861*l.* 14*s.* 6*d.*, shewing an increase in 1843 of 7,927*l.* 0*s.* 11*d.* The ten railroads having termini in London paid 82,447*l.* 4*s.* 5*d.*; the three largest amounts being paid by the London and Birmingham, the Great Western, and the South-Western, which paid respectively 25,940*l.* 14*s.* 1*d.*, 25,801*l.* 5*s.* 2*d.*, and 12,043*l.* 19*s.* 7*d.*, or more than two-fifths of the whole amount.

**STEAM PLOUGH ON LOCHAR MOSS.**—This machine, which has occupied so much public attention in Dumfries for twelve months past, is now completed, under Mr. W. J. Curtis's management, and fully realizes all that was expected from it. The plough, governed by the peculiar apparatus invented by Mr. Curtis, turns over the soil in the most perfect manner; and the ploughman or steersman, seated on the plough, draws a furrow so straight, that no ploughman on the most favourable soil could surpass it. The moss is exceedingly soft, and full of holes and hillocks alternately; but notwithstanding this, the plough passes over the surface as majestically as a ship through the water. This result is likewise due to an improvement made in the figure of the plough by Mr. Curtis. A beautiful contrivance, also the invention of Mr. Curtis, is employed for reeling the wire rope upon the drum, by which the rope, although weighing on the aggregate upwards of a ton weight, is coiled up as evenly and easily as a skein of silk for a lady's work-box. The next step in the progress of reclaiming moss lands, viz., laying the subsoil upon the surface of the ploughed and levelled moss—an idea due to the intelligence of Mr. Curtis—will be next proceeded with; when the county of Dumfries, as well as the kingdom generally, will have reason to congratulate itself upon one of the most beneficent and useful applications of mechanics to the wants of society which the history of science can furnish.—*Correspondent of the Dumfries Herald.*

**SUBSTITUTE FOR STEAM.**—*La Réforme* announces that an operative at Ruel has discovered a substitute for steam. The experiment is to be made in a few days on the Versailles railroad, "Figure to yourself," says the *Réforme*, "an enormous wheel, five yards in diameter, between the spokes of which you place a horse with his rider. This large wheel being fixed on four ordinary wheels, placed on the rails of a railroad, it is sufficient to turn the large wheel to make the carriage advance. But what motive force does the inventor employ? It is the horse placed in the interior of the wheel, and yoked, by means of two bars of iron placed perpendicularly under the axle. The horse, by drawing, causes the wheel to turn in the same manner as a mouse or a squirrel in a cage. In order to permit the horse to enter into this singular wheel, it has been found necessary to dig an excavation near the station of the railroad, into which the horse is let down. The inventor pretends that he can modify his wheel so as to admit three horses, and that, in this case, the heaviest train may be propelled along a railroad with a velocity more rapid than that caused by steam."

**ACTS OF PARLIAMENT.**—By a return made during the session, it appears that from the year 1834 to 1842, both inclusive, no fewer than 2,451 Acts of Parliament were passed, of which 913 were public Acts, and 1,538 local, personal, and private. Last year was the largest number, there being 123 public Acts, and 172 local, personal, and private. Of the Acts passed in the session of 1842, one related to Scotland, seven to Great Britain, fifty-three to Great Britain and Ireland, and twenty-one to Ireland, of the public Acts; whilst twenty-one of the others related to Scotland, twenty-seven to Great Britain and Ireland, and eight to Ireland. More Acts were passed in 1842 than in any other session since the year 1834; there were 294.

**LONDON DOCK COMPANY.**—At the last half-yearly meeting of the proprietors of this company, held at the Dock-office, New Bank-buildings, it appeared that the revenue of the company for the last half-year, including wharfage and other dues, amounted to 197,168*l.* 15*s.* 7*d.*; and the expenditure 108,568*l.* 9*s.* 5*d.*, a dividend of two per cent. was declared.

**ANCIENT AND PRESENT STATE OF THE CITY OF LONDON.**—We quote the following interesting passage from Mr. Macaulay's writings, on the subject of the present state of the city of London, compared with its former state:—"The city, properly so called, now consists, in a great measure, of immense warehouses and counting-houses, which are frequented by traders and their clerks during the day, and left in almost total solitude during the night. It was then (in former days), closely inhabited by 500,000 persons, to whom it was not merely a place of business, but a place of constant residence. This great capital had as complete a civil and military organization as if it had been an independent republic. Each citizen had his company, and the companies, which now seem to exist only for the sake of episcures and antiquaries, were then formidable brotherhoods, the members of which were almost as closely bound together as the members of a Highland clan. How valuable these artificial ties were, the numerous and valuable legacies anciently bequeathed by citizens to their corporations abundantly prove. The municipal offices were filled by the most opulent and respectable merchants in the kingdom. The pomp of the magistracy of the capital was inferior only to that which surrounded the person of the sovereign. The Londoners loved their city with that patriotic love which is found only in small communities like those of ancient Greece, or like those which arose in Italy in the middle ages. The numbers, the intelligence, the wealth of the citizens, the democratical form of their local government, and their vicinity to the Court and Parliament, made them one of the most formidable bodies in the kingdom."

**CHURCH EXTENSION.**—On Monday, the 8th inst., the venerable Archdeacon Sinclair laid the first stone of the new church of St. John's, Kensington. The site of the church is on an eminence opposite to Notting-hill, where the "Hippodrome" was projected some time since, and commands a view of the whole surrounding country. The building will be in the Pointed style of architecture, and if the funds prove sufficient, will include a tower surmounted by a spire. Provision will be made for the accommodation of 1,500 persons. On Sunday last the archdeacon opened for divine service the new National School-rooms in the potteries of Kensington, preparatory to the erection of another church for the north-western portion of the parish.

**MOLIERE.**—The monument erected to Moliere, in the Rue de Richelieu, is to be inaugurated, the 15th inst., under the auspices of M. de Rambuteau, Prefect of the Department of the Seine. Four speeches are to be delivered on the occasion, the first by M. de Rambuteau, the second by M. Etienne, in the name of the French Academy, the third by M. Samson, as representative of the actors of the French Theatre, and the last by M. F. Arago, the president of the committee of subscription to the monument. All the members of the Institute, the municipal councillors of Paris, and deputations from all the dramatic and literary societies and institutions are to attend at the ceremony.

**FICTITIOUS BRONZES.**—All the deceptions practised on the public, in connection with the fine arts, are far surpassed by a new invention of forming figures, groupes &c., in zinc, which, being bronzed have all the appearance of real bronzes, while the malleability of the material renders their formation so easy, that a figure thus produced would cost but fifty shillings, while one cast in brass would cost thirty guineas. Several collectors, both here and in Glasgow, Dublin, Liverpool, and Manchester, and, indeed, in most of the provincial towns, have been deceived by these counterfeiters, which have such a genuine appearance, that they can only be known by their lightness and the ease with which they can be bent.

**PUBLIC SCHOOLS.**—At the Committee meeting of the Huntingdonshire Education Board, on Tuesday last, grants were made in aid of building schools in the following places:—Abbotsley, 30*l.*; Great Stukely, 20*l.*; King's Ripton, 30*l.*; Great Gidding (for a Sunday School), 5*l.* A committee was appointed to prepare a form of questions to be sent to the different clergy having schools in connection with the Board, respecting the average attendance and state of their schools. The secretaries were also requested to apply to those members of the Board who have received assistance towards the erection of schools and masters' houses to report to the Board for its future guidance whether the buildings were completed for the estimated sum, or if not, to what extent and for what reasons the estimate was exceeded.

**PUBLIC HEALTH.**—It appears that on account of a want of proper draining at Kentish Town, an alarming epidemic prevails there. It was stated last week, at a meeting of the St. Pancras board of directors and guardians, that in one street alone there were no less than thirteen families some portion of whom are suffering from fever.

**MUNIFICENT BEQUEST.**—Dr. Beckwith, senior physician of York, recently deceased, has bequeathed his ample fortune in aid of the various charities and public institutions in this city. During his lifetime he made the generous donation of 2,000*l.* to the funds of Dame Middleton's Hospital in Skeldergate, and by his will he has bequeathed more than 40,000*l.*

Yorkshire Philosophical Society.....	£10,000
York Dispensary.....	2,000
Parishes of St. Mary, Bishophill Senior, and Bishophill Junior, St. Mary, St. Martin-le-Grand, each 200 <i>l.</i> , the interest to be applied to the purchase of coals at Christmas.....	600
Wilberforce School for the Blind.....	5,000
Church of England Sunday Schools in York.....	1,000
Blue Coat Boys' School.....	2,000
Grey Coat Girls' School.....	2,000
Infant School out of Skeldergate Postern	1,000
DEAN AND CHAPTER OF YORK FOR A NEW PEAL OF BELLS, AND THE REMAINDER TO REPAIR THE CHAPTER-HOUSE.....	5,000
York Charity Trustees, in augmentation of St. Thomas' Hospital, out of Micklegate-bar.....	2,000
FOR THE FOUNDATION OF A PENITENTIARY IN YORK.....	5,000

Some of the above charities, which have legacies under 5,000*l.*, are appointed residuary legatees of the testator's personal estate, from which it is probable they will derive further considerable benefit.

**CONDITION OF THE LABOURING CLASSES IN ENGLAND AND OTHER COUNTRIES OF EUROPE.**—We are on the whole inclined to think, that the labouring classes of this island, though they have their grievances and distress, some produced by their own improvidence, some by the errors of their rulers, are on the whole better off as to physical comforts than the inhabitants of any equally extensive district of the whole world. For this very reason suffering is more acutely felt and more loudly bewailed here than elsewhere. The distress which has lately been experienced in the northern part of Germany, one of the best governed and most prosperous regions of Europe, surpasses, if we have been rightly informed, any thing which has of late years been known among us. In Norway and Sweden the peasantry are constantly compelled to mix bread flour with their bread; and even this expedient has not always preserved whole families and neighbourhoods from perishing together by famine. The rate of subsistence to which the labouring classes are reduced in the kingdom of the Netherlands is miserably low, and very far inferior to the English paupers. No distress which the people here have endured for centuries approaches to that which has been felt by the French in our own time. The beginning of the year 1817 was a time of great distress in this island. But the state of the lowest classes here was luxury compared with that of the people of France. We find in "Majendie's Journal de Physiologie Experimentale," a paper on a point of physiology connected with the distress of that season. It appears that the inhabitants of six departments were reduced first to oat-meal and potatoes, and at last to nettles, bean-stalks, and other kinds of herbage fit only for cattle; that when the next harvest enabled them to eat barley bread, many of them died from intemperate indulgence in what they thought an exquisite repast; and that a dropsy of a peculiar description was produced by the hard fare of the year. A surgeon dissected six of these, and found the stomach shrunk, and filled with the unwholesome aliments which hunger had driven man to share with beasts.—*Essays by the Right Hon. T. B. Macaulay.*

**ADHESIVENESS OF TIMBER.**—At one of the sectional meetings of the British Association, Mr. Eaton Hodgkinson read a table of different species of wood, and the power which they possess to resist a force tending to crush them. The following are a few of the principal woods, and number of pounds which they would sustain on the square inch, without sinking under the pressure. The weight was applied in all instances in the direction of the fibres. Yellow pine, 5,375 lbs.; cedar, 5,674 lbs.; red deal, 5,748 lbs.; poplar, not quite dry, 4,307 lbs.; green larch, wet, 2,301 lbs.; green larch, dry, 5,368 lbs.; plum tree, green, 5,364 lbs.; beech, rather green, 7,733 lbs.; beech, dry, 9,363 lbs.; dry ash, 9,363 lbs.; English oak, 5,364 lbs.; Spanish mahogany, 5,198 lbs.; elm, 10,331 lbs.; box, from 9,365 to 10,000 lbs.; kingwood, 12,645 lbs.

**COST OF FUNERALS.**—It is estimated that the probable annual expense of the total number of funerals in England and Wales, is 4,871,493*l.*, taking the average expenses of the funerals of the gentry at 100*l.* for adults, and 30*l.* for children; tradesmen of the first class at 50*l.* and 17*l.*; of the second and lower classes, 27*l.* 10*s.* and 7*l.* 15*s.*; artisans, &c., 5*l.* and 1*l.* 10*s.*; and paupers, 13*s.*



## TO OUR SUBSCRIBERS.

In compliance with the wishes of very many of our Subscribers, we have had prepared a cover for binding the copies of *THE BUILDER* for those who may be desirous of preserving them in uniform Volumes. These may be had on application at the office, at the price of Two Shillings; or our Publisher will undertake to have sets bound at a charge of Three Shillings per Volume.

We also take this opportunity to inform our Subscribers that, with a view to the additional embellishment of the Volume just completed, we have had printed an ornamental Title page, which may be had gratis, on application at the Office, by all those who would like to substitute it for that issued with the Index at the close of the year.

# The Builder.

NO. 1.

SATURDAY, JANUARY 20, 1844.



**S**INCE our last publication, so many subjects of grave importance have pressed upon us, that we had at first some difficulty in determining which we should earliest grapple with; but during the week, we were appealed to for aid in the cause of the widow of a deceased member of the architectural art, and this at

once determined us in making selection of the subject for our opening-address.

We greatly regret, at present, those devoted to architecture have, for an old-age of need, less chance of asylum than perhaps persons of any other profession in existence; and probably their widows may be worse off than the relicts of any other class of men devoted to learning, arts, or commerce.

For members of almost every branch and "art and mystery" of the building-trade, and for their widows and families, there are alms and almshouses, coals and clothing; for builders generally, there is a "Benevolent Institution;" but for architects, surveyors, and architectural-draftsmen, and for their families, there exists little beyond the tender mercies of the workhouse; indeed, as if to satirize this state of things, some few years ago, a crack-brained man used to wander about the metropolis, leaving at architects' offices his address-card, upon which was written "Mr. Fisher, Architect, Wapping-Workhouse."

So small being, indeed, the provision for decayed members of this profession, what, in truth, is there left for them in place of the amenities of respectable life, but the rudeness, the jail-like provision, with which paupers-born are dissatisfied? What for the comfortable chamber, but the huge night-warehouse in such establishments denominated a dormitory? What for the couch of luxury, but the niggerd pallet, shared perhaps with the disgusting, perhaps with the felonious? What for the

meditative quiet of the library, rich in the lore of delighting art, but the noisy assembly-room of coarse ignorance? Could the man nursed from childhood upon the treasured volumes of graphic art, or could his faithful partner, chosen for her elegant acquirements, find repose in the unfurnished apartment? Could they rest there exposed to the gaze of a hundred observers? Could they slumber on the same mattress with the repulsive?

The eleemosynary resources which have existed in the architectural profession, are of the smallest and least effective nature. The frail architectural institutions which have from time to time succeeded each other, seem to have taken no heed of this pressing matter, and failing in the initiative branches of the art, as in this necessary feature of every fraternity, they have expired after a few lingering years of half-dead existence.

But one of the prominent features of the architectural "College of the Freemasons of the Church," which will, no doubt, invigorate it, and cause it to outlive every other architectural institution, is the law by which

"One-fifth part of the ordinary revenues of the college shall be laid out and invested in the names of trustees in some or one of the public stocks or funds of Great Britain, or at interest upon government securities, so as to form, with such particular donations as shall otherwise be made, a permanent principal fund, to be denominated the "Charitable Fund," but no distribution of the interest, dividends, and revenue to arise therefrom, shall be made (except for the endowment of almshouses founded in connection with the college,) until such permanent principal fund shall consist of, or be equal to 3,000*l.* 3 per cent. Consolidated Bank Annuities, when the council shall prepare and present for consideration at some chapter of the College, a scheme for the application of the revenue arising therefrom."

Such a regulation, we are convinced, will cause more useful results from this institution than have emanated from any other architectural society in existence; and were there not the high scientific inducements of this fraternity to extend its influence, we are bound to say that this would be sufficient for every respectable member of the profession becoming enrolled with such a brotherhood.

But the particular case in behalf of which our aid has been sought, is that of the relict of the late Mr. Maddox, who recently died in extreme old age, even three years beyond fourscore, he leaving, without provision, after such a lengthened life, devoted to the teaching of architectural drawing, a widow considerably younger than himself. It was intended that this appeal should be confined to the pupils of the late master, but as application was made to us, without indeed our having had the benefit of the deceased one's instruction, we take occasion to remind those concerned in architecture, that it is possible for a man's instructing to be more beneficial to others than to his own family.

D.

## REGISTRY FOR MASTERS AND WORKMEN.

SHORTLY after the commencement of *THE BUILDER*, it was announced that a Registry of vacant situations, and of persons seeking employment, would be kept at our publishing office. This plan was accordingly adopted; and the very numerous applications on the part of masters and of workmen furnished abundant evidence of its great utility to both. Circumstances, however, occurred, which rendered it inconvenient to continue this accommodation; but, in consequence of the numerous solicitations which have been made at the office of *THE BUILDER* by those who have experienced the advantages arising from this description of

Registry, the proprietors have been induced to accede to the wishes of their numerous subscribers; and arrangements have accordingly been entered into by which such Registry will be re-commenced on Monday next, the 22nd instant.

This Registry will embrace the names of masters and workmen in all trades connected with building—namely, Clerks of the Works, Foremen, Carpenters, Bricklayers, Plasterers, Masons, Slaters, Plumbers, Painters, &c. &c., and will be open for gratuitous inspection, or insertion of names, &c., to all persons requiring workmen, or seeking employment. As this Registry will be kept by our publisher, and no charge whatever made, or gratuity in any shape accepted, it is hoped that all parties communicating by post will be careful to state precisely the description of situation or workman required, with the necessary references as to character and ability, &c.

The time of the publisher being wholly occupied on the day of publication, viz. Friday, it will be obvious to our friends that no application whatever should be made, or can meet with attention, on that day.

## THE "TIMES," MR. BOWEN, AND JOINT-STOCK BUILDING-SOCIETIES.

"We have before us a very successful *exposé* of 'A Joint-stock Building Society Bubble—by John Bowen.' The society in question is located at Bridgewater, and calls itself the 'Bridgewater Accumulating Fund and Building Society.' Mr. Bowen has an indubitable nose for a job, and shakes his victim mercilessly. There is no mistake about it.

"The primary design of this society professes to be semi-charitable—so very knowing and refined are we become in the art of humbug; it is to enable persons who want capital to borrow money at an easy rate. A person who wants money is invited to buy one, two, or more shares in this concern. He gives up the premium which would fall to him in course of time, if he waited, for the sake of so much ready money, with which the society supplies him instead; and he simply clears off his debt to the society by the monthly payment of his shares, spreading over a period of ten years, which is the calculated time of the duration of the society. A tabular explanation is given, and it is proved arithmetically how very advantageous such a plan as the proposed one must be to the borrower.

"Very fair and very good; but now we come to the lender. The society consists of two sides, borrowers and lenders; it does not profess to trade with its money; so all the advantage that it gives is simply derived from the money as it passes, within itself, from one side of the society to the other. Accordingly, if the borrower is benefited, it must be at the expense of the lender. Oh! no, the "Bridgewater Accumulating Fund Society" comes to a very different conclusion. While this plan is so advantageous to the borrower, it is still more so to the lender. It is calculated that the member who keeps his share to the last receives for his 60*l.* share 120*l.*; thus doubling his money in the course of ten years. The Bridgewater Society thus by the most curious luck and skill that were ever known, both lends its money at the easiest rate, and also receives the most enormous interest for it at the same time. This is a most wonderful result, and cannot be accounted for on any other supposition, except that money actually multiplies in its passage from one hand to another, and that the relation of borrower and lender is a creative one. As Mr. Bowen says, 'If any given number of men, by the mere process of borrowing and lending among themselves, can actually contrive so to double their common stock, there is an end to all the financial difficulties of the state. The whole national debt may at once be brought under the operation of this doubling process; for if 500 men can produce this result on their common stock, why not 5,000 or 50,000?'

"With this extraordinary combination of advantages the Bridgewater Society puts itself off in its prospectus. To the poor borrower it is a kind of friendly charitable cab; to the



rich capitalist it 'offers a very beneficial investment—a more advantageous investment than either the public funds or any other of the ordinary securities.'

"And now comes the question, how such a self-evident mare's nest and swindling *felo de se* as this,—how a statement that contradicts itself and cuts its own throat before you touch it, can get even an outside and surface to pass itself with? Mr. Bowen has gone into this point very accurately, and makes the hedgehog unroll itself.

"This is done, then, by a sort of legerdemain and sleight-of-hand movement. One set of figures appears in one part, and this re-appears in another with just a little alteration that would hardly be observed by a superficial eye, but which, when it runs up and is multiplied by four or five shares, makes all the difference. Thus they coolly start with telling the borrowing member of the society that he pays for his ready money by a deduction, 'averaging, according to the experience of similar societies, from 50*l.* to 65*l.* per share.' Now, every one must see, that where the borrowed sums are as small as these are here, the difference between the 50*l.* and 65*l.* must make all the difference as to the advantageousness of the terms to the borrower. Multiply 15*l.* per share by four or five shares, and you will find the amount make a good hole in two or three hundred pounds. Now, when they come to their explanatory table, which they mean to catch the eye of the needy borrowing man, they of course take their smallest deduction,—50*l.* Mr. Bowen simply takes their highest—65*l.*, and this makes all the difference. For, whereas their table shews that a man can borrow 350*l.* of them, and repay the same at an interest of only 70*l.*, Mr. Bowen's shews that his 350*l.* will cost him an interest of 300*l.*! The difference between the 50*l.* and the 65*l.* to begin with, makes the difference between 70*l.* and the 300*l.* in the event. And so far from Mr. Bowen's scale of deduction being too high a one, he declares it is frequently a full 10*l.* higher in such societies.

"But the terms on which the society lends its money speak for themselves, and make the principle of the whole apparent:—

"As the association is from time to time in a position to make advances, notice thereof will be given to all the members; and those of them who are desirous of receiving their shares for any of the purposes contemplated by the association, will then state the largest amount they will deduct from the final value; in other words, for how much less than 120*l.* they will, in consideration of an immediate advance, sell to the association the ultimate value of each share; and if more than one member require an advance, that member who will consent to the largest deduction—that is, to receive the smallest sum, will be entitled to priority."

"Can any thing," remarks Mr. Bowen, 'more detestable in principle, more degrading to our common nature, be presented to the world than this nefarious scheme for transferring the little savings of the frugal poor into the pockets of ravenous capitalists? Here are the inexperienced, the sanguine, and the needy encouraged to bid one against another! Advantages are taken of the pressing necessities which sometimes induce men to submit to a ruinous loss for a present accommodation, and thus a bonus is wrung from the very recklessness of despair! Ignorance, misfortune, and distress, are converted into a Joint-stock Bank, for the benefit of speculating shareholders, under the base pretence of 'opening a channel for the fruits of industrious labour and of affording a rich reward to economy and prudence.'"

Lately has appeared, from the pen of Count de St. Priest, an interesting work, illustrated by numerous large and beautifully coloured plates, upon American antiquities: it describes the wonderful monuments of architecture which nations long since extinct have left behind them, in the remains of Xochicalco, Mitla, Palanca, and other places.

A work on the Egyptian Museum at Rome will shortly appear: the execution of the plates has been entrusted to the architectural engraver, Troiani, to whom a sum of eight thousand crowns has been allowed for the purpose; the letter-press will be from the pen of Barnabite P. Ungarelli.

#### CHANTREY'S STATUE OF GEORGE IV.

THIS statue, which was originally intended to surmount the marble arch in front of Buckingham Palace, but which has been placed on the pedestal at the north-east corner of Trafalgar-square, is now uncovered, and attracts a great deal of attention. The likeness is at once characteristic and elegant, as all Chantrey's are; the rider is well seated in the saddle, and has an air of dignified ease; the left hand holding the bridle loosely, and the right gracefully holding a baton, which rests on the thigh. The drapery is the conventional compromise between modern and classic dress, by means of which Sir Francis Chantrey got rid of the alleged difficulty of treating in sculpture the modern costume; and covers the upper part of the figure, on which it hangs in light and graceful folds, that leaves sufficiently expressed the form beneath; and the lower limbs are clothed in a sort of close pantaloons. The thin and close covering of the legs gives them a naked and unfinished appearance, which is increased by the absence of stirrups. The horse stands firmly in an attitude of rest, all four feet being planted on the ground, and seems by far too unimpassioned for a public work of the kind. The head is small and animated in expression, the neck arched, the chest ample, the limbs muscular and finely formed, the hind quarters are spare, and seem somewhat small compared with the full development of the fore-part. We do not question the correctness of the animal's proportions; Chantrey would scarcely be wrong in so important a point. Perhaps, however, the form of a horse of the Arab breed is not so well suited to sculpture as that of the Flemish breed which figures in the battle-pieces of Rubens; this is the type of the horses in equestrian statues, including that on which Charles I. is seated at Charing-cross. In modelling the horse standing upon all four legs, Chantrey has made an innovation on the old custom of representing horses in statues either curvetting or ambling. On the whole, we do not think this fine statue will add to the reputation of the great artist. The raising of the man upon the huge quiet horse, and building him up as it were firmly upon the four sound legs, has, we think, more the appearance of exhibition than of high art, which delights in seizing, and with one jet of bronze to render eternal as it were the graceful and rapid action of the great.

#### LEICESTER MEMORIAL.

ON Thursday, the 11th inst., the committee met to decide upon the adoption of a design for the Memorial to Lord Leicester. There were 76 plans and models exhibited. One, No. 40, was chosen, subject to certain arrangements with the architect, Mr. Donthorne, of Hanover-street, London. We subjoin a description of the design:—

No. 40.—"To him whose pride it was to render the Farmer independent."

This design is composed of a pedestal, on which is erected a fluted column, surmounted by a wheat-sheaf. Three sides of the pedestal are bas-reliefs: one representing the late Earl granting a lease to a tenant; the second representing the Holkham sheep-shearing, through which the great stimulus was first given to agriculture; the third to indicate irrigation. The fourth side of the pedestal is left for the inscription. The four corners of the pedestal shew the means by which cultivation and production were improved and increased by the late earl. At the first corner, an ox, with the inscription under it, "Breeding in all its branches." At the second corner Southdown sheep, with the inscription under them, "Small in size, but great in value." The third corner, the plough, with the inscription, "Live and let live." The fourth corner, the drill, with the inscription, "The improvement of agriculture."

The Minister of Public Instruction has just succeeded, after considerable opposition on the ground of expense, in obtaining from the Chamber of Deputies a vote for the removal of the *Bibliothèque de Sainte-Geneviève*, at Paris, from the fine but ruinous gallery which it occupied over the College Henri IV. to a new building to be erected for its reception. The sum demanded was about seventy-five thousand pounds sterling.

#### TRANSACTIONS OF THE OXFORD ARCHITECTURAL SOCIETY.

At the meeting held Nov. 29th,

Dr. Richards, the rector of Exeter College, read a paper on the history and origin of *Rural Deaneries* in England, and on some of the duties of the office of rural dean, with especial reference to the deanery of Woodstock, of which an account is about to be published by the society in their "Guide to the Architectural Antiquities in the Neighbourhood of Oxford." He shewed that the office of rural dean was in use in England in the eleventh century, and in the Christian church as early as the sixth century; that the probable origin of the name was that this officer originally presided over ten parishes, although in the subsequent increase of parishes, and the union of two or three deaneries into one, this origin has been almost forgotten. One great use of the office at the present day is to prevent further mischief being done to our churches; and as no alteration can be made without the consent of the ordinary, the rural dean may, by an appeal to him, prevent the introduction of galleries, the conversion of open benches into close pews, the removal of screens, and the performance of other injuries; but that for the restoration of our churches to a decent state where the mischief has been already perpetrated, he must rely rather on persuasion, repeated admonitions, and appeals to the better feelings of the parties interested, than on the expensive processes of ecclesiastical law. In his own deanery, great credit is due to the incumbent and parishioners of Steeple Aston for the very beautiful restoration of their church. The manner in which it has been effected was also very creditable to Mr. Plowman, the architect. Much credit is also due to the incumbent of Cassington, for his zealous efforts to effect the same object, though he had been but ill-seconded in general by the parishioners. The churches in this deanery are not generally what would be called fine churches, although perhaps Kidlington, Handborough, and Stanton Harcourt, might deserve that distinction, but almost all of them are ancient, and possess features of interest, and are worthy the attention of the architectural student.

#### CEMETERY AT OXFORD.

At a meeting held at Oxford on the 2nd January, the Rev. Dr. Buckland, Canon of Christ Church, begged to call the attention of the meeting to Mr. Chadwick's Report on Interments in Towns, full of most frightful and curious details. He cited also Mr. Chadwick's account of the parish of St. Margaret, in Leicester, in which is a population of 22,000 persons, whose average age of death, in 1840, was, in the whole parish, at 18 years. In the different streets of this parish the average being as follows:—

	Years of Age.
In streets drained, but not perfectly, at 23½	
In streets partially drained, at ..... 17½	
In streets entirely undrained, at .... 13½	

The inhabitants of all this parish are chiefly stocking-weavers. The fact of the average duration of human life in the tainted air of one undrained street being only 13½ years, was quite appalling. His (Dr. Buckland's) attention had been called that morning, by a magistrate of Oxford, to a certain foul drain, in narrow parts of this city, that may, in unhealthy seasons, become the source of pestilence and death. He considered facts of this kind to be very pertinent to the business of the present meeting, inasmuch as the pestilential effects of putrid air, from the decomposition of bodies in over-crowded cemeteries, had been recently demonstrated, by inquiries made by commissioners appointed to report on the sanitary condition of the labouring population, and on the health of towns; who further state, that "the occurrence of fever is frequently connected with near proximity even to a small amount of decomposing organic matter." He was therefore gratified at the prospect of witnessing the removal to an appropriate spot without the city of those occasional sources of contamination to the air, and injury to the living, which may sometimes arise from the putrid bodies of the dead. The example of all large cities on the Continent, and of the most populous towns in England, has shewn the expediency and facility of providing a



common cemetery for the inhabitants, occasionally divided by a wall, or a deep trench, into compartments assigned to different sections of the inhabitants. The difficulty and expenses of procuring one fit place for a cemetery are usually great, and must be proportionally greater if more than one were required; and this difficulty is magnified in Oxford by the great scarcity of freehold property in its environs. The decomposition of dead bodies was usually completed before the entire decay of the wood in which they are enclosed; so that the miasmata that escaped slowly from the crevices of the coffin ascend gradually upwards, and are imperceptibly mixed with the atmosphere. If interments are made in clay, the impermeability of this earth to water and air retards the decay both of coffins and the bodies enclosed in them to a length of time inconvenient in a cemetery destined to be the dormitory of successive generations, and in which it is therefore desirable that our bodies should as speedily as possible return to their dust, when the spirit has returned to God who gave it. Under these circumstances, Dr. Buckland rejoiced to hear that a negotiation had been opened between the authorities of the city and New College for the exchange of some land which may be convenient for a cemetery on the north of Oxford.

#### LITERARY AND SCIENTIFIC INSTITUTE, BRECON.

##### MR. THOMAS'S LECTURE ON SCULPTURE.

MR. THOMAS having apologized for the seeming presumption of one so young in years venturing publicly to discourse upon so distinguished a subject, commenced his lecture by remarking that the art was coeval with the existence of mankind in a state of society, and that our knowledge of their history and institutions is principally derived from hieroglyphical sculpture; but that, having now become the object of national attention in England, it is making rapid advances to attainable perfection. He was surprised that many should think sculpture alone serviceable as an ornament, and not choose to acknowledge the moral benefit it conferred upon mankind; as, by so doing, they must think that sense, genius, and talent were given to man by chance and perished with him as did the instinct of brute animals. He thought it was a precious gift bestowed by the Wisdom of Providence for the purpose of continuing the glorious intellect with which man is distinguished. He also thought that the art had an effect in harmonizing the manners and softening the temper; and, although those who were devoted to the luxury, and pleasures, and grosser enjoyments of this life, could not, properly, appreciate those impressions, yet, the professors of sculpture returned from their studios to society, with manners polished, and hearts more disposed to feel and reverberate the endearments of social life and reciprocal benevolence. It was an art designed by the All-wise Being to perpetuate the pride of man's reason, and to excite laudable emulation in others. He thought, that as man's imagination is so unbounded, it seemed to instance more clearly than his reason the knowledge of his immortality. Such being the case, those who excited the imagination to noble thoughts—the painter, the poet, or the sculptor, who, by their works, tended to raise man to a higher state of being, were, themselves, of a more exalted nature, and held intercourse with more exalted powers, and ought to be distinguishedly placed amongst the benefactors of the human race. He instanced many who sought to depress man into a state of debasement, by levelling him with the inferior animals, but was indignant at their presumption; and said it was the duty and interest of all, who attempted the moralization of man, to shew him that he is of more dignity than to rank with brutes, and that being designed by Providence for future happiness, it was his duty to cultivate virtue, truth, and honour. He then proceeded to say, that having shewn the moral benefits conferred by the arts, he begged to recommend the study of drawing to all, as it was not only a graceful and agreeable employment, but one of actual utility; for it frequently occurs, that in our descriptions of things we find words inadequate to convey a correct idea, when a few strokes of the pencil would elucidate the whole at a glance. He instanced many who had travelled far and long, who had viewed dangers and seen wonders, to bring

home journals, and after all, the best part of the story is untold; and all for want of a pennyworth of Indian ink, properly distributed over a few scraps of paper. He afterwards proceeded to compare the effect of the different liberal arts upon the human passions, and first cited the opinion of a writer of much credit, to the effect, that a sculptor, to become a worthy one, must possess many liberal arts, and be also a curious artificer, whereby he becomes superior to those possessed of but one. This being the case, when so many influences were wanted, he would not hesitate in affirming that the works of an Angelo were equal in merit to the Iliad of Homer—the Eneid of Virgil—the historical writings of a Thucydides and a Livy—the orations of Demosthenes and Tully—the Paradise Lost of Milton—the Macbeth of Shakespear—or the Messiah of Handel. He then spoke in high and flowing terms of poetry, and proceeded in a strain of eloquence to illustrate its charms and its beauties—its tendency to support virtue and good actions—its captivating powers, and its pleasant illusions; and yet, with all these graces, he proved that his own favourite art had one transcendent advantage—and that is, that it gratifies the sight—the most pleasant sense we possess, for we see that which is only described by the poet. He for some time proceeded with the argument, and concluded by putting the subject to the judgment of the audience, by asking who would not prefer seeing the Alexander of Apelles, in the character of Jupiter, to reading Shakespear's beautiful description of Denmark's King? After giving some interesting anecdotes of the influence of sculpture on Julius Cæsar, Publius Scipio, and Quintus Fabius, which tended to prove the vast superiority of the art, that it had an enchainment which kindles in the human heart higher feelings—feelings which fully corroborate its kindred to Heaven,—he proceeded to go through a regular analysis of the processes used in the mechanical part of sculpture, and the clear and concise manner in which they were elucidated, proved that the lecturer was quite at home with the subject. Mechanical aid is brought to bear upon the marble, and the province of the master-mind is chiefly to execute in clay or wax a model of the intended work; and after the pointer has completed his labours, to bring the resources of his mind and genius into play for the production of these wonderful specimens, which exalt his labours to such a high rank, and which, said he, "forms the true aristocracy of nature, for 'Lord' can be stamped on any clay, but inspiration only on the finest metal." The spectator, contemplating this wonder, rising as if reluctantly from a shapeless mass, through the enchanting wand of a magician, cannot help involuntarily exclaiming, as the illustrious Michael Angelo did to his Moses, "Speak, speak, if thou canst."

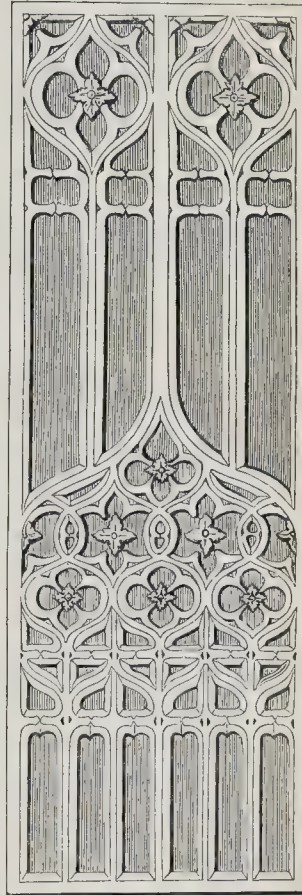
He then entered into a comparison between sculpture and its sister art—painting. He next gave the history of sculpture from its earliest period to the present day, reviewing in succession the wonderful works given to the world by the Egyptians, and the sculptors of Greece and Italy, concluding with a tribute to the departed genius of our most celebrated modern artists—Canova and Chantrey. He likewise interspersed this historical sketch with reflections on the influence which the fine arts had upon the glory of the great nations who cherished them.

He then thought it not out of place to mention the high estimation in which some of the celebrated painters were held by the Emperor Charles V. and Francis I. of France, and related some very pleasing anecdotes in proof of the same. He afterwards alluded to the quality called genius, and hoped none would think application was unnecessary, because they fancied they possessed this intuitive excellence; and enumerated all the studies and qualifications the student must go through, and be possessed of, before he can properly carry out the minutiae of the conceptions of his brain; and in support of his assertion quoted the great Michael Angelo, who encourages every student to soar as high as his competitors, and obtain that fame which cannot be purchased by the riches of Mexico and Peru. For this purpose the splendid works of the ancients should be resorted to, and after becoming conversant with those specimens of

dignified inhumanity, the student will be able to form a style peculiar to himself. He then proceeded to give a detailed account of the Royal Academy of London, which was highly entertaining, and proved it to be a well-regulated institution, and greatly conducive to the promotion of art in Great Britain. He apologized for treating the subject in such a general manner, and would have kept himself more particularly to sculpture, had he not thought the plan he had adopted would be more interesting to the generality of his audience. He concluded with fervent wishes that the principality may also become famous in future ages for its encouragement of arts which have so pleasing an influence on society.

The lecturer then sat down, after occupying the attention of his audience for the space of nearly one hour and a half, having been frequently interrupted by bursts of applause, which were renewed at the conclusion.

#### GOthic WOOD CARVING.



Elevation.

Plan.

#### TO THE EDITOR OF THE BUILDER.

SIR,—I beg your acceptance of the above sketch, which I trust you will deem worthy of a corner in your excellent paper; it is one of the panels in the pulpit of the Priory Church, Brecon, and is valuable as an interesting relic of that beautiful style of wood carving so much in practice with our ancestors in church decoration, but which, it is to be greatly lamented, occurs so rarely in the present day. It is worked in 1½ inch stuff, and lined with green cloth, which as a ground forms a pleasing contrast to the rich colour of the oak.

Trusting that the style may speedily be revived, I am, Sir, your obedient servant,

J. L. T.



## ROYAL ACADEMY PRIZES.

THE President and Council of the Royal Academy have announced the following premiums for distribution on the 10th of December next, viz.:—Gold medal and the discourses of the Presidents Reynolds and West, for the best historical picture in oil colours, subject, "Themistocles taking refuge at the Court of Admetus;" the picture to consist of at least three figures; size of the cloth to be a common half-length; the principal figure to be not less than two feet in height. Gold medal and the discourses of the Presidents Reynolds and West for the best composition in sculpture, subject, "The Combat of the Centaurs and Lapithæ;" in alto-relievo; the principal figure to be not less than two feet in height. Gold medal and the discourses of the Presidents Reynolds and West, for the best finished designs in architecture; subject, design for a metropolitan Music-hall and Royal Academy of Music; the whole comprised in one general and regular composition; the designs to be as large as an entire sheet of double-elephant will admit, and to consist of plan, elevation, section, and a perspective view. A number of silver medals will be given for the best drawings and models of academy figures, done in the Royal Academy, and for the best accurate finished drawings of the portion of Greenwich Hospital by Inigo Jones, done from actual measurement, carefully finished and washed, as large as a whole sheet of double-elephant will admit, with a rough outline giving the dimensions, attested to be their own performance by any one of the academicians, or any other professor of reputation resident in London. The first medal in each class will be accompanied by a copy of the lectures of Professors Barry, Opie, and Fuseli, handsomely bound. Three silver medals will also be given for the best drawings; and three silver medals for the best models of a statue or group in the Antique Academy, to be selected and set out by the keeper for this purpose. The first medal in each class will be accompanied by copies of the lectures of Professors Fuseli and Opie, handsomely bound. Two silver medals for the best copies made in the School of Painting, between the time of its opening after the exhibition and the 1st of November; the first medal to be accompanied by the lectures of Professors Barry, Opie, and Fuseli, unless the student to whom the premium may be adjudged shall have before acquired them in the Academy. A silver medal will also be given for the best metal die to be cut in steel, from the head of the Belvedere Apollo in the Royal Academy; the size to be not less than one inch and a quarter in diameter, to be accompanied with an impression in wax.

## SOCIETY OF ARTS.

THE first meeting of the members of the above society, for the present year, was held on the 10th January, in the theatre of the institution, John-street, Adelphi. Dr. Roget, V.P., F.R.S., in the chair.

The secretary (Mr. Whishaw) commenced the proceedings by reading an interesting paper on the very important subject of cleansing the streets of the metropolis. The paper, after dwelling upon the importance in a sanitary point of view of keeping the streets and public thoroughfares in a state of cleanliness and comfort, proceeded to describe the mechanical operations and advantages of the newly-invented street-sweeping and cleansing machines, lately introduced by Messrs. Whitworth and Co., and now daily employed on the wooden pavement at the West-end, under contract with the Commissioners of Woods and Forests, and also in Chesham and the neighbourhood, under contract with the civic authorities. (A very unique model of the machine was placed upon the table.)

Mr. Croucher called the attention of the members to a newly-invented machine for similar purposes, which, he stated, would be brought before the notice of the public in a few days, and which, he had no doubt, would be found equally efficient, and could be worked with a considerable reduction both in labour and cost; it would sweep both longitudinally and transversely, which must be of considerable advantage to wood paving, whilst it was equally applicable to Macadamised or stone pavement.

Mr. Thompson then exhibited his newly-invented apparatus for the preservation of life

from fire, the simplicity of which, as a means of escape, added to its cheapness, placed it within the reach of every housekeeper, and which, from its being deposited at the various station-houses, might always be advantageously used by the police.

Mr. Whishaw lastly read a paper on the construction of wooden railways, as being principally applicable as feeders to the great lines of railway. The chief recommendation of the proposed system was that these lines could be constructed at a considerably less cost than the iron rails hitherto in use. It was stated that a trial line had lately been laid down near Vauxhall-bridge, and that the experiments which had been made upon it had been most successful. In consequence of this, it was now proposed that the branch railway from the Woking Station, on the South-Western Railway, to Guildford, should be constructed on this principle.

Votes of thanks were unanimously awarded to the authors of the above-named papers and inventions, with the exception of a person of the name of Mr. Higgins, who appeared in every instance to place himself in collision with all the other members present.

## PRIVATE CHAPEL AT WINDSOR.

THE Queen's new private chapel at Windsor, consecrated December 19th by the Bishop of Oxford, in the presence of her Majesty, Prince Albert, the Duchess of Kent, and many members of the royal household, has been fitted up in an apartment adjoining St. George's Hall, occasionally also used as a chapel in the reigns of George IV. and William IV. Its extent is about forty feet from north to south, and about thirty feet from east to west; the flat ceiling of the fabric, which is in the form left by Sir Jeffrey Wyattville, is enriched with Gothic mouldings and other decorations. Pendent from the centre of this ceiling is a massive Gothic chandelier for eight lights, of elaborate workmanship, and gilt. The pulpit of carved wainscot is in two stories, the lower one having flying-buttresses and pinnacles: at the angles of its cornice are figures of saints; the reading-desk is in accordance with the pulpit; at the south-west angle of the chapel, opposite the pulpit, is placed her Majesty's closet, in dimensions about eighteen feet long and thirteen feet wide; it is approached from the corridor and private apartments, through the vestibule at the top of the visitors' staircase, at an elevation of ten feet from the floor of the chapel. Behind this apartment is a large Gothic window receiving a subdued light from an outer window, and glazed with stained glass, containing the arms of the Queen and Prince Albert, the garter with its motto, red and white roses, theistle, the shamrock, and other insignia and decorations. The communion-table is of carved wainscot; the window behind the communion-table, and two other windows at the sides of it, are filled with stained glass of a dark orange colour. On the floor of the chapel, around the south, east, and west sides of it, are seven pews, with fronts of carved wainscot, affording accommodation for fifty or sixty persons; of these seven pews, three are for members of the royal household in attendance upon the Queen and Prince Albert, and the remaining four are for the royal domestics; besides these, six wainscot seats are placed on the floor opposite the communion-table, for upwards of forty servants in livery.

The chapel is warmed by hot air, conveyed from the basement of the castle. In a recess behind the screen on the north side of the chapel, has been erected King George the Third's favourite organ, formerly in the private chapel at Buckingham House, and built by Samuel Green about the year 1770, with one row of keys, and six stops now increased to ten.

PICCADILLY IMPROVEMENTS.—The Commissioners of the Woods and Forests, on the meeting of Parliament, intend to apply for a bill to carry into effect the long-projected improvements in the above street. Government, we understand, has offered to pay the whole expense of widening the street from the mansion formerly the Marquis of Hertford's, where the road is only 31 feet wide, to Hamilton-place, taking the ground from the Greenpark, and making the whole of a uniform width of 70 feet; and the parishes of St. Martin and St. George are to keep it in repair.—*Standard*.

## ETON COLLEGE IMPROVEMENTS.

THE architectural improvements now in progress at the College are of a very important character, and seem to bid fair to render this ancient seat of learning as celebrated for its external beauty as its classical renown. Two very spacious and elegant houses, in the Elizabethan style of architecture, are in the course of erection on the site of the mean pile of houses recently razed opposite to the principal entrance to the College. These houses are already sufficiently advanced to enable some opinion to be formed of their external character. We understand that another building, precisely similar in the style of its architecture, will be erected close by in the course of the ensuing summer. The whole are being built by the College. There has also recently been built at the northern end of the long-walk wall, a gateway and a lodge, thus effecting an improvement on the old dead wall which previously existed at this spot. But it has been generally remarked that it is not clear what it is a lodge to. As a lodge it seems misplaced; indeed, it has more the appearance of the grille of a cloister. It has a small tower which is octagonal, while every other of the College is square. The lodge runs into, rather than up to, the tower of the head master's chambers, at a very unusual angle, and with a most unpleasant effect. The architect appeared anxious to interfere with this portion of the ancient edifice as little as possible, and has therefore reduced the height of the lodge before it reached the tower. There are great general improvements, however, whatever in some cases may be their defects. We hear that there is a plan in contemplation for materially altering the whole front of this building, so as to harmonize with the simple character of the Long Chamber and the Lower School. A sanatorium for the exclusive use of the Etonians, at Eton-wick, about a mile from the College, is now nearly completed, and also a handsome and spacious hexagonal building, in the immediate vicinity of the College, intended for a mathematical school, and occasionally for the delivery of lectures. In all the extensive improvements now being effected and contemplated, every possible precaution will be taken to secure an effectual drainage and a thorough ventilation of the premises, thus being the means of materially contributing to the general healthfulness and salubrity of the College.

## TOMB OF NAPOLEON.

IT is the intention of the French government to surround the tomb of Napoleon with a pavement, constructed on the same plan as the famous pavement of the Duomo of Siena, which was designed by Domenico Beccafumi, and executed under his direction, between 1520 and 1550. The construction of this pavement resembles the manufacture called *pietra-dura*, a kind of mosaic, in which the figures are composed of pieces of white, black, and grey marble, artificially put together in their natural shades, so as to produce the effect of chiaroscuro. In this material, which, from its gravity and durability, is peculiarly fitted for the architectural decoration of a building devoted to solemn purposes, Beccafumi executed those sublime groups from the Old Testament, which are well known by the fine old wood-cuts and engravings which exist of them. The original cartoons are preserved at Siena. Few, however, have seen the whole of the pavement displayed at once; it is, or was till lately, boarded over to preserve it from injury, and only one or two compartments removed from time to time, to gratify travellers and amateurs. We are not aware that any imitation on a large scale of this colossal work has ever been attempted; the idea, therefore, of surrounding the tomb of Napoleon with a pavement on which the memorable events of his life are to be represented in this grand and imperishable style, appears to us magnificent in taste and spirit. The execution of this national work is confided to M. Henri de Triqueti, the sculptor—an excellent choice—both as regards the talent of the artist and the particular direction of that talent. The characteristics required in such a work belong to sculpture rather than to painting, and those works of M. de Triqueti, already before the public, display such a profound knowledge of art in the abstract, and in his own particular province of art, such a degree of grandeur and



severity and purity of taste, as to give earnest of his success. It is not often that an artist in the prime of life, and animated by very noble views in his own art, and a deep feeling of the moral responsibility attached to the gift of surpassing genius, has been afforded such ample space in which to embody his conception of the beautiful and the true. The contemplated pavement, as far as we can understand, will form a circular frieze or band round the tomb, about 8 feet in width, and about 220 feet in its extreme length. On this area the figures will be represented in marbles of different shades, as in the pavement at Siena. The adaptation of the treatment of the subject proposed to the especial locality, the application of a material so novel, presents difficulties to alarm the most sanguine and enthusiastic temperament; but the result, if successful, will be glorious, and form an era in the history of modern art. The composition and arrangement must have the simple severity of a bas-relief; and, from the immense scale of the figures, will require the utmost correctness as well as largeness of style. Beccafumi was assisted in the execution of his great work by two able sculptors; but the designs were entirely his own. We may return again to the consideration of this famous pavement, and the imitation of it, or, rather, adoption of the same material by M. de Triqueti. The contemplated decoration of our Parliament House renders every suggestion of the kind at this moment particularly interesting and important. —*Athenæum*.

#### PORCELAIN TOWER AT NANKING.

A BRITISH officer obtained some particulars and a printed paper from a person in charge of the above edifice, which, being translated, has recently arrived in England, from which we are enabled to give a brief description of it. It exhibits, in a striking but melancholy manner, the gross incredulity and superstition of the Chinese. Subjoined is an extract from the literal translation:—

"After the removal of the imperial residence from Nanking to Peking, this temple was erected by the bounty of the Emperor Yunglo. The work of erection occupied a period of nineteen years. The building consists of nine stories of variegated porcelain, and its height is about 350 feet, with a pineapple of gilt copper at the summit. Above each of the roofs is the head of a dragon, from which, supported by iron rods, hang eight bells, and below, at right angles, are eighty bells, making in all 162. On the outside of the nine stages there are 128 lamps; and below, in the centre of the octagonal hall, twelve porcelain lamps. Above they illuminate the thirty-three heavens, and below they enlighten both the good and the bad among men. On the top are two copper boilers, weighing 1,200 lbs. and a dish of 600 lbs. weight, placed there in order constantly to avert human calamities.

"This pagoda has been the glory of the ages since Yunglo rebuilt and beautified it; and, as a monument of imperial gratitude, it is called the 'Temple of Gratitude.' The expense of its erection was 2,485,484 Chinese ounces of silver, equivalent to 150,000£ sterling.

"There are in this pagoda, as a charm against malignant influences, one carbuncle; as a preservative from water, one pearl; from fire, one pearl; from wind, one pearl; from dust, one pearl; with several Chinese translations of Sanscrit books relating to Buddha and Buddhism."

Lecompte, in his journey through China, says, "The wall at the bottom is at least twelve feet thick. The staircase is narrow and troublesome, the steps being very high; the ceiling of each room is beautified with paintings, and the walls of the upper rooms have several niches full of carved idols. There are several priests or bonzes attached to the building to keep it in order, and illuminate it on festival occasions. This is effected by means of lanterns made of thin oyster-shells, used by the Chinese instead of glass. These are placed at each of the eight angles, on every story, and the effect of the subdued light on the highly reflective surface to the tower is very striking and beautiful."

#### THE IRON TRADE.

BIRMINGHAM, Thursday, January 11.—The usual ironmasters' quarterly meetings have taken place during the present week at Walsall, Wolverhampton, and in this town. The assemblage in our Town-hall to-day was numerous, the great majority of the most extensive ironmasters from the surrounding districts and many from Wales being present.

During the last week it was reported that an attempt would be made to effect a reduction of the price of iron; and yesterday, at an adjourned meeting of masters held at Wolverhampton, in accordance with this prediction, a gentleman from London, largely interested in the iron trade, moved that bar-iron be reduced at the rate of 10s. per ton. The motion found a second, and that was all, for upon its being put to the meeting, the proposed resolution was, with the exception of its authors, rejected by the entire assembly. The prices, therefore, remain the same as last quarter—bar-iron from 5*l*. 10*s*. to 6*l*. per ton; pigs, according to their quality, from 2*l* 15*s*. to 3*l*. 5*s*.; hoops, 6*l*. 10*s*.; and sheets, 7*l*. to 7*l*. 10*s*. Many of the most extensive works are in full employment, and altogether the trade presents a more cheering appearance than was anticipated about a month ago.

It is to be regretted, however, that a great proportion of the mining and iron workmen in the Staffordshire fields are joining the Northern Union for the obtaining of a higher rate of wages and the reduction of the time of work. This is the more to be regretted, as during the present year the masters in these districts, upon the first symptom of improved trade, generously came forward, and raised the amount of remuneration for some descriptions of labour 6*d*. per day. At the present time there are delegates from the neighbourhood of Newcastle-upon-Tyne prowling about Staffordshire, and daily and nightly employed in enlisting recruits into the Union. 6*d*. is paid upon the receipt of the admission, and 2*d*. per week as a subscription to the Union.

A circumstance in connection with the Northern Union has recently occurred, and is worthy of note. It has been the immemorial custom in the Staffordshire iron-ore districts for a fortnight's notice to be given, either by masters or men, previous to the termination of an engagement. Within these two or three weeks a number of men refused to work in a pit belonging to Messrs. Williams, Darlaston, because one of the men employed on the same works was not a member of the Union. Messrs. Williams retained the non-unionist; the consequence was, all the rest left work. Three of the ringleaders were apprehended, and committed to Stafford Gaol. An attempt is now being made to set aside the conviction as bad in law; and should the judges refuse to commit, the consequences will be very serious in the Staffordshire iron districts.

#### PATENTS RELATING TO ARCHITECTURE, ENGINEERING, &c.

Granted between the 24th November and the 23rd December, 1843.

[SIX MONTHS FOR ENROLMENT.]

William Irving, of Regent-street, Lambeth, engineer, for improved machinery and apparatus for cutting and carving substances to be applied for in-laying and other purposes. Nov. 25.

Edward Tann the elder, Edward Tann the younger, and John Tann, of Minerva-terrace, Hackney-road, iron safe manufacturers, for certain improvements in locks and latches, and in iron rooms, doors, safes, chests, and other repositories. Nov. 25.

Alexander Vivian, of Gwennap, Cornwall, gentleman, for an improved apparatus for dressing ores. Nov. 25.

Joseph Rock, jun., of Birmingham, factor, for certain improvements in locks and latches. Nov. 25.

Thomas Drayton, of Brighton, gentleman, for improvements in coating glass with silver for looking-glasses and other uses. Nov. 25.

John Hick, of Bolton-le-moors, Lancaster, engineer, for certain improvements in steam-engines, and an apparatus to be connected therewith, for driving machinery, part of which improvements are applicable to forcing, lifting, and measuring water. Dec. 5.

Joseph Robinson, of Old Jewry, solicitor, for certain improvements in the construction and mode of working engines by the agency of air or gases, for obtaining or reproducing motive power. (Being a communication.) Dec. 5.

William Newton, of Chancery-lane, civil engineer, for improvements in extracting certain metals from ores and other compounds of these metals, some part or parts of which improvements are also applicable to obtaining another product or other products from such ores or compounds. (Being a communication.) Dec. 5.

Lawrence Holker Potts, of Greenwich, doctor of medicine, for certain improvements in the construction of piers, embankments, breakwaters, and other similar structures. Dec. 5.

Joseph Bishop, of Poland-street, Westminster, jeweller, for improvements in paving roads, streets, and other places. Dec. 8.

William Baddley, of Lombard-street, civil engineer, for certain improvements in rotary engines. (Being a communication.) Dec. 8.

Henry Purser Vaile, of Blackfriars'-road, gentleman, for improvements in manufacturing metal combined with other matters, for covering floors and other surfaces. Dec. 13.

William Young, of Queen-street, Cheapside, lamp-maker, for improvements in the manufacture of lamps and gas-burners. Dec. 13.

Thomas Murray Gladstone, of New Swan Garden Iron Works, Wolverhampton, for certain improvements in machines for cutting or shearing iron or other metals. Dec. 28.

#### DESIGNS FOR ARTICLES RELATING TO ARCHITECTURE, ENGINEERING, &c.

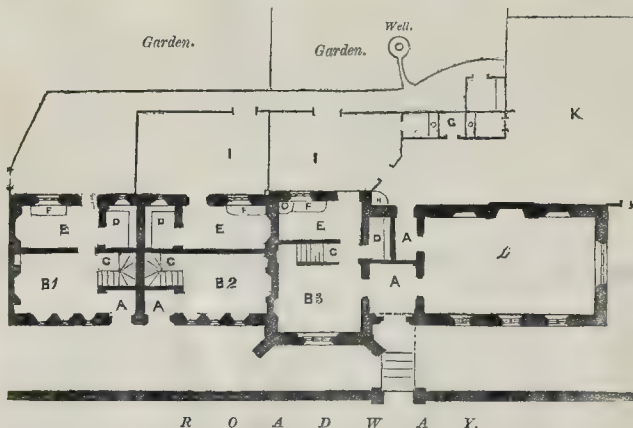
Registered under 5th & 6th Vic., cap. 65.

Date of Register, 1843.	No. in Register.	Proprietor's Name.	Address.	Subject.
Nov. 27.	73	Alexander Milner.	50, Garden-st., Sheffield.	Ventilating drawer for perforated ventilating hearth-plates.
— 28.	75	Thomas Walker.	Wednesbury.	Bar-iron for bolt nuts.
— 29.	78	Frederick Finlay.	34, Bloomsbury-square.	Cast-iron fire-proof strong-room.
Dec. 5.	84	Henry Cobby.	General Steam Navigation Company's Office, Kingston-upon-Hull.	Apparatus for causing the paddle-wheels of a steam-vessel to revolve in a contrary direction to each other, and thereby to turn the vessel round.
— 7.	85	John Richardson.	62, Edgware-road.	Improved Chimney-cowl.
— 13.	90	William Middleton.	Birmingham.	Wheel for railway-carriages
— —	91	Jeakes and Willis.	Great Russell-st. Bloomsbury.	Improved Roasting-jack.
— 14.	93	John Middleton.	Birmingham.	Wheel for railway-carriages
— 23.	97	James Boyd.	78, Welbeck-st., Cavendish-square, London.	The Himalaya Funnel for the cure of smoky chimneys.





PERSPECTIVE VIEW.



R O A D W A Y.

GROUND PLAN.

A. A. Lobbies.  
B 1 B 2 B 3. Living-rooms.  
C. C. C. Open staircases, with closets under.  
D. D. D. Pantries.

E. E. E. Sculleries.  
F. F. F. Sinks.  
G. Ash-bin and privies.  
H. Washing-trough.

I. I. Yards.  
K. Play-ground.  
L. School-room.

## SCHOOL AND COTTAGES.

TO THE EDITOR OF "THE BUILDER."

SIR,—Observing in your publication remarks upon Cottage Economy, and being anxious to contribute my mite towards the furtherance of a knowledge of the subject, I inclose sketches illustrative of the general external character and internal arrangement of some cottages, with a school, to which is attached the house of a school-mistress, which I have lately erected in the village of Bourton, near Shrivenham, Berks, upon the estate of Henry Tucker, Esq., and which I am enabled to say meet, in all points of economy, the wishes of their inhabitants, and I may add that to "cottage comforts" some little attention has been paid in order to revive, even in this humble particular, the true spirit of by-gone days.

The cottages are each provided with a lobby, a living-room, a scullery, a pantry, an open staircase, with a closet under the stairs; on the chimney-piece are two large comfortable bed-rooms, with closets.

The mistress's house is a more spacious dwelling, with three bed-rooms. The school is provided with two lobbies, one of which is

available to the house, the other is used as a general depository for cloaks, hats, &c.; the timbers of the roof are entirely exposed with circular framed ribs, and boarded under the slates; in the gable over the larger end window is formed a cross in stained glass; the windows are otherwise of ground glass; the walls are constructed of a hard lime-stone, their dressings being of Bath stone.

I am, Sir, yours respectfully,

T. W. ORDISH.

Bourton Village, Dec. 11, 1843.

## METROPOLITAN IMPROVEMENTS.

The following letter upon this subject has been addressed to the editor of the *Times* :—

"SIR,—The public, and especially the inhabitants of different localities where metropolitan improvements are in progress, have just cause of complaint. The *modus operandi* is as follows :—They pull down one house here, and another there, in places unconnected with each other. The Act of Parliament directing these improvements passed in August, 1840, yet they have not built one house, nor cleared a spot that one might be built. This is very injurious to the inhabitants of the locality, who

not only sustain great inconvenience, but serious loss. Every house untenanted diminishes the number of the customers to the tradesmen in the vicinity, whilst the public lose the amount of the rents of those houses, which, if received, would go in part liquidation of the improvements.

"At the end of Plumtree-street twenty houses have been pulled down for twelve months. All the houses in Broad-street required have been settled with some time, yet these are lying empty. No cause is assigned for delay, yet individuals applying for the terms of rebuilding obtain no answer.

"The means by which these improvements are to be carried out is by a heavy tax on coals, therefore these delays and losses will be seriously felt by the public at large.

"The last paragraph under the head of 'metropolitan improvements' states that they have commenced pulling down houses opposite St. Andrew-street, St. Giles's. Why commence there until they have finished the upper end of St. Martin's-lane, or Plumtree-street?

"In addition to the losses sustained by the obstructions caused by pulling down, by the departure of customers to other places, the



parish authorities have been forced to levy an additional penny in the pound on the poor-rates, the number of inhabitants who pay being in this neighbourhood so much diminished.

"On reference to the books of the parishes of St. Giles and Bloomsbury, I find that the estimated loss of rental is 15,000*l.*; this is calculated by the rates, which are much less than the sums paid by occupants. At a rough calculation the real loss is 25,000*l.* Any parishioner may ascertain the truth of this statement by examining the books, open for inspection at the vestry of St. Giles's.

"I remain, Sir, your very humble servant,  
AN OLD INHABITANT OF ST. GEORGE'S,  
BLOOMSBURY.

"Bloomsbury, January 4."

We beg to remind "An Old Inhabitant of St. George's, Bloomsbury," of the benefit to the rating of this particular district which will be occasioned by the breaking up of such a horrid accumulation of filth and poverty.

#### WESTMINSTER BRIDGE.

INSTEAD of our own observations, which require illustrative cuts that could not be executed in time to appear in our present number, we this week insert the following communication from a correspondent:—

TO THE EDITOR OF THE BUILDER.

SIR,—At a time when a warfare of opinion is waging upon the reparation and embellishment of Westminster-bridge, between those eminent gentlemen of their respective professions, Messrs. Walker and Burges, the civil-engineers, and Mr. Barry, the celebrated architect, it is with every sense of deference and respect to those gentleman, and with no disparagement to the plan of either, that I beg, through the medium of your highly valuable and instructive publication, to submit to the public the accompanying design, which as a practical man, I have for some time past contemplated as a desideratum in this (almost national) improvement.

Although this project does not participate in the features of either of the above parties' designs, in my opinion it more than embraces the desired objects of both; for whilst its character in *artificial effect* somewhat assimilates with the style of the new Houses of Parliament (though in a far less elaborate degree), it, at the same time, not only affords a greater water-way, but considerably reduces the present steep road.

way. This suggestion presented itself some time since, when it may be remembered that one of the piers on the Middlesex side of the bridge sunk suddenly several inches, and this, I believe, after the execution of the work by Messrs. Walker and Burges to the foundations of the piers, rendering them, as they state, much more *secure* than they had ever been before.

During the formation of the Thames Tunnel an opportunity was afforded of witnessing the substrata of the bed of the river, in which there is a considerable vein of silt, or quicksand, and which proved the greatest enemy (with the exception of the water), that that intrepid engineer, Sir I. M. Brunel, had to cope with, and which vein extends below as far as the Nore, and, there is but little doubt, as far up the river. With this impression, and the knowledge of Labeyle's (*caisson-constructed*) piers, it occurred at the time that the ballast-dredging machine completed cutting the low-water channel for the steam-boats (nearly fronting the pier which sank) at this period, that having tapped the strata of silt or quicksand, there is but little doubt that its exit from under the caisson caused the sudden settlement which occurred.

Upon examining the costly and stupendous barriers of the coffer-dams which Messrs. Walker and Burges so ably and substantially erected around each of these piers, that with this bulwark, had they been applied only to every other pier, and had those been underpinned (despite of the caisson) progressively to the whole depth required, so as to obtain a sound and substantial foundation on such a stratum as might be relied upon for carrying the most massive erection. Having by these means strengthened and lengthened the piers for the requisite additional width, it is presumed by the increased water-way thus gained (*i.e.* by the removal of the intermediate piers), that the springing of the arch, which is described of Tudor form, might, for additional strength and security, spring from a little above the low-water mark, so that the largest or centre arch would in its span be about 140 feet, with a rise not exceeding that of the present centre arch, which is proposed to be united with that of the adjoining one on the Surrey side, so as to embrace more of the actual current as it at present ebbs and flows.

For the practical execution of these works, without interfering with the traffic during the progress of the proposed alterations, it was intended to relieve the bridge throughout of the present balustrading, and to extend over one side of the bridge a footpath 6 feet wide, supported by cantilvers of timber, which might be buried in the roading, and, if necessary, might be strutted from the piers and spandrels. By this addition, a space equal to the present width of roadway might be retained during the progress of the works; and as soon as the alternate piers were extended to the additional width and length required, and the present portion underpinned to the depth of the proposed addition, and carried up as high as the springing, so much of the arches of the present bridge might be removed as the width of roadway would admit. The arches are proposed to be composed of cast-iron perforated Gothic ribs, five feet apart, cast with flanges and fillets to secure cast-iron plates behind them, to form the sinking of the panels in the spandrels, and fair soffits to the arches, which would shew upon every rib archivolt-mouldings traversing longitudinally from springing to springing.

Stone relieving-arches might, for additional security, be constructed between the iron ribs, avoiding the braces and iron-work throughout, and turned upon sand cores, so as to allow of any action in the iron-work by expansion and contraction. By this design it is proposed to widen the bridge to the total width of 60 feet; and the *additional width* is proposed to be made *wholly* upon the *lower side*, as I deem the present bridge to be already too near to the new Houses of Parliament, and by following this plan, the line of the present approaches on either side of the bridge would be better conformed to.

When the above works should be completed to the height of the intended roadway, a similar temporarily-constructed footpath might be applied, and the rest of the present bridge be so far removed, as to complete the remaining portion of this proposed re-construction, even to the balustrading or parapet, which might be either of plain masonry or of cast-iron in ornamental or perforated Gothic panels; the opposite side might then be similarly completed, and the intermediate piers removed.

It may be seen by this arrangement, that on the score of economy, a considerable saving would have been gained by the requisition of only eight of those expensive items in engineering works, called *coffer-dams*, instead of the fifteen required in the *partial*, and since proved *abortive*, reparation of the present defective and incompetent bridge. With every apology for this lengthened trespass on the pages of your instructive work, and with a view that it may bring forth a more eligible design, I remain, Sir, your obedient servant,

A PRACTICAL OBSERVER.



PRESENT ELEVATION OF WESTMINSTER BRIDGE.



PRESENT ROADWAY.



EXTENDED ROADWAY.



PROPOSED ELEVATION OF BRIDGE.

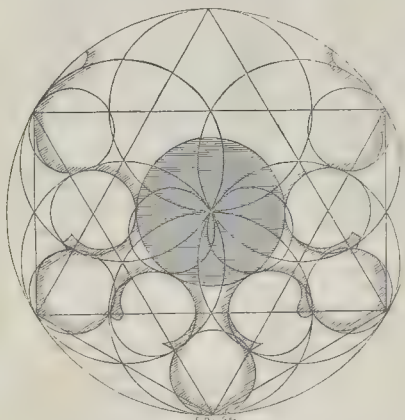


## Literature.

*Illustrations of Stone Church, Kent. With an Historical Account by EDWARD CRESY, Architect, F.S.A. Published for the Topographical Society, by H. Hooper, Pall-mall East, 1840; fol. 16 pp., 17 plates, 13 wood-engravings.*

THIS work, elucidated by copies of beautiful drawings, the work of Mr. Cressy, the accomplished Professor of Painted Architecture to the College of the "Freemasons of the Church," and other members of the Topographical Society, we most particularly recommend to the student, the educated architect, and the antiquary, on account of its exact

graphic merits, the beauty and elegance of the subjects which form the prototypes of its illustrations, for the clear and admirable historical and descriptive matter which it contains. The work, though small or thin, is all pith, and gladly should we, if decently we might, quote every word of its text; from it we indeed draw copiously, knowing its sterling merit, and that it is one of those compressed works out of which not only the juvenile learner, but the hoary practitioner, may acquire largely due information relative to his craft. It is in verity a true masonic work of the highest class, as may be seen by the columnar diagram here given, which we have had engraved after the one inserted in the work itself.



"Stone is a small village on the high road from London to Dover, seventeen miles from the metropolis, bounded on the north by the river Thames;—it is in the hundred of Axtane and diocese of Rochester.

"Stone Church is dedicated to St. Mary, and anciently paid ninepence Christ rent to the mother church of the diocese; and in the 15th of King Edward the First, was valued at thirty marks, and the vicarage at seven marks.

"It is not improbable that, during the life of the first rector, all the works in this church which bear the marks of the 13th century were executed, and that the previous church mentioned in the Domesday survey, resembled others erected by the Saxons. These Saxon churches differed little from those of Normandy, and some time after the Conquest, religious edifices were constructed in a similar manner to those erected previous to the invasion by the Normans.

"At Mappescombe are the ruins of one of these early churches, having its east end terminated semicircularly. Its total internal length is 53 feet, and breadth 22 feet, the walls being three feet thick. At South Darent, now a hamlet, though formerly a parish, paying ninepence Christ rent, are the walls of a similar church, now converted into a malthouse; a few years ago, another, with a singular tower, partly constructed with Roman bricks, remained in a field at St. Margaret's at Hills, but of which the plough has now destroyed every vestige.

"In the reign of Richard the First, or about the latter end of the 12th century, the parish churches throughout the kingdom underwent a general reconstruction. A new style was introduced, and a decoration, not before indulged in, everywhere displayed itself. It being adopted simultaneously throughout Christian Europe has occasioned its introduction to be attributed to the Crusaders, who possessed Palestine from the years 1095 to 1291. Among those enthusiastic warriors, the most distinguished for science were the Knights Hospitallers of St. John of Jerusalem, and possessing 19,000 manors in Europe, could easily have carried any improvement wherever their influence extended. They were established about 1101, and held considerable lands in the adjoining parishes to Stone. On an estate given to them by Robert Basing about 1118, at Sutton-at-

Home, was one of their commanderies established, which formed their principal resting-place when they visited their possessions in this part of the county, situated in the middle of the beautiful valley of Holmsdale, and watered by the clear and pellucid Darent; surrounded by meadows and rich lands, few situations could vie with it either for fertility or beauty. That this establishment was upon an extensive scale may be inferred from walls built of flint, six feet in thickness, extending as far as South Darent, being discovered by the writer when superintending the construction of the present iron bridge. Similar walls have also been traced along the banks of the river in many places.

"In the 12th century the knowledge of geometry was revived by the monk Athelard or Adelhard, who, after travelling through Spain and Egypt, translated, about 1130, the books of Euclid from the Arabic into Latin. This science was ardently taken up by the learned men who immediately followed, particularly by Grosseteste, Bishop of Lincoln, and others employed on the great buildings in England as well as on those of the Continent.

"The abbey church of St. Denis near Paris, commenced by Eudes Clement in 1229, and finished by Matthieu of Vendome about 1281, the fine chapel at Vincennes, and the Sainte Chapelle at Paris, built from the designs of Pierre de Montereau, who died in 1266, are early examples of the change that architecture underwent after the revival of the study of geometry; and Eudes de Montreuil, who accompanied St. Louis to the Holy Land, left many similar works.

"Salisbury, Lincoln, Westminster, Winchester, and other buildings of this time, no longer exhibited the round arch or features borrowed by the Normans from Roman constructions, but a new style altogether, having principles essentially geometrical; and it is in vain that we attempt to imitate this style correctly, unless we consider them to emanate from some simple figure. However numerous the mouldings, they never appear confused, which entirely arises from the order observed in their arrangement; this may be better expressed by the subjoined diagram, taken from the mouldings which form the trefoil arches round the chancel of Stone Church. The points of intersection of the two equilateral triangles are

the centres for the hollows, and the more prominent parts of the moulding are set out with the same radius at the points of the triangles; or, in other words, four circles are encircled within a circle, and by omitting each alternate one the figure is formed. From the equilateral triangle are readily produced the hexagon and duodecagon; and the rose windows of the churches and cathedrals of France, many nearly fifty feet in diameter, and exhibiting a great variety of figures in their designs, are among the most beautiful examples which can be cited of the early and later application of the equilateral triangle to the figures of architecture. From the trefoil, sexfoil, and their multiples, as shewn at St. Denis, proceeded the flowing tracery, simply produced by omission of portions of the regular geometrical figure, that which remained being so combined that the manner of its setting out was concealed, probably for the purpose of exciting wonder in the spectator, and thereby adding to that air of mystery which the craft delighted to spread around them. The system depending on the equilateral triangle for its variety of form continued in use till the beginning of the 15th century in France, when it underwent a great and important change by the introduction of the isosceles triangle, and its compound the pentagon. A pupil of Alexander de Berneval, architect to the church of St. Ouen at Rouen, proved that these figures could furnish novelties in design, and that all beauty was not confined to the long used favourite triangle. We can well imagine how displeasing this innovation must have been to the whole fraternity of masons; their mystery was invaded, and their very prejudices would lead them to doubt the practicability of any new thing. The result seems to have been fatal to the ingenious artificer. Dom. Pommeraye, in his History of the Abbey of St. Ouen, mentions that the master was so incensed at the clergy preferring the northern rose window of the transept executed by his pupil, where this innovation was first introduced, to that of the south, of his own execution, upon the ancient triangular system, that, in a fit of jealousy, he killed his rival, and was himself condemned to be hanged.

"To the common observer this theory may appear fanciful, but the writer does not hesitate to assert that the boldest mouldings, and the most delicate tracery, where gently flowing lines seem the result of a sportive fancy only, equally emanate from the same sources, and that it is to the neglect of the application of the rules of geometry that we may attribute the defects and failures wherever an imitation of this early style has been attempted in the present day, which neglect has been greatly fostered by the too prevailing opinion that all the beauty we admire is produced by art alone unaided by the science of geometry, the time devoted to line and rule being considered lost. The beautiful tracery, called by some, *par excellence*, the decorated English, cannot accurately be displayed without a knowledge of these principles. Many examples have been tested to prove this fact. On some future occasion this subject may form a portion of a more compendious essay, "On the first principles of Gothic architecture," if not taken up by more able hands.

"This church at different periods has undergone various alterations; but the plan remains as the result of one design. The foundation walls of the tower are the most ancient; they are arched on the north and south sides, as well as towards the nave, forming a vestibule to the church, an arrangement not commonly found, but in this instance adding much to the beauty of the interior. The upper part of the tower is more modern, and once was surmounted by a lofty spire; the flying buttresses contrived to steady the work, have their mouldings in a style as late as the time of Edward the Third, and may be attributed to Johannes Lumbarde.

"The windows which light the side aisles of the nave are not all placed in the middle or opposite the main arches, and those which terminate the east ends of the two aisles are walled up. The outer walls of the church are two feet four inches in thickness; the buttresses attached to them are not of a strength to resist the thrust of a vaulted roof. Those of the chancel are of much greater solidity, and are calculated to bear up against a groined vault, which, without doubt, it once had, and which



must have remained when Wiltshire's chantry was thrown out, as the flying buttress spanning the whole addition was apparently introduced to supply the use of that necessarily removed.

"Roman tiles 12 inches long, and two inches thick, are seen bedded in various parts of the walls, which are rubble, and generally composed of flint.

"The three main arches on each side that separate the side aisles from the nave are light and well proportioned, and set out with great regularity. Their extent, comprising the entire of the cluster pillars, is 40 feet 6 inches, and their height from the pavement to the top of the mouldings 27 feet; each of these divisions is thus formed of a double square. The pillars are arranged with great regularity, and their lightness is equal to many of the classic age, being nine and a half diameters in height, and placed at six and a half diameters apart. Including capital and base, their height is 16 feet 7 inches.

"The arch of the tower is of a different character, and belongs to a later period. The capitals are enriched with the oak leaf, and the mouldings are not so elegantly formed.

"Around the outer walls under the range of windows, a dado or series of arches similar to those of the chancel, perhaps rested upon the seat or plinth which projects so considerably, and was contrived for the purpose of supporting them.

"The main arches are of Reigate stone, or some similar, and the variety of mouldings into which they are cut, proves that there was no poverty of invention in the architect, and that he could preserve symmetry without adopting strict uniformity. Each pair of arches corresponds in design, and the two eastern ones have in their soffits that elegant enrichment, the quatrefoil or dog's tooth. The four small columns of the cluster pillars are of Bethesda or Petworth marble; the capitals with their enrichments, as well as the bands and bases, together with the larger column in the centre, are of the same stone as the arches. The modern pews, pulpit, &c. are omitted, as they take away from the view of the lower part of the chancel, and destroy the fine proportions of the church.

"The windows walled up at the east end of the side aisles, and once glazed as well as the present with coloured glass, produced a richness difficult to describe and rarely imitated in modern days. There is a fashion in glazing which appertains to the era of Henry the Third and his successor's reign, some fine examples of which are to be seen at Canterbury Cathedral and York Minster, and it would be well, in the introduction of this material, at all times that the style of architecture to which it is applied was considered.

"Shields and coats of arms are of a more recent introduction into windows. The early English, composed of small pieces of glass, resembled mosaic, and was comprised in quatre-foils or circles, one above the other, within a border of scroll work. Armorial bearings, whenever introduced, are always rich, and accompanied with a great variety of design.

"The polished Petworth marble columns had their delicately carved capitals above those of the nave, and when sustaining the cross springers of the vault, would have left nothing wanting to render this chancel a beautiful model of the early pointed style.

"The present windows are not of good proportions, and admit too great a body of light. They are the work perhaps of Johannes Sorewell, who died in 1439, and were certainly commenced some time after the time of Johannes Lumbarde, who died in 1408.

"The curious and enriched portal bears a great resemblance to many in Sicily erected by the Normans soon after the year 1072, when they settled themselves in that island, where they usually adopted the pointed arch upon which to display their favourite mouldings. In Girgenti and its neighbourhood abound examples in which the zig-zag in all its variety of form are in conjunction with the purest ornaments of classic Greece. The opinion of the present inhabitants is, that these Norman portals are of Caen stone, and were executed in Normandy and brought by the invaders from their native shores. But that a portion of the semicircle should be omitted, and the pointed

arch adopted instead, is singular, and cannot be accounted for unless we suppose that from the descendants of the Mahomedans, already established there, they acquired this new feature in construction."

We feel heartily indebted to the gentlemen who have combined to furnish the drawings, and who have executed the engravings for this sterling volume, among which we find the names of W. S. Wilkinson, J. Johnson, Bailey, S. Bellin, Owen Jones, G. Hawkins, jun., and Edwin Nash.

With them we know it was a labour of love. It contains fine exemplars of windows, columns, archivolts, spandrels, and other sculptures; and many of its elegant details, being of that peculiar character of genius-begotten inventions, which, amid the involutions of any degree of antiquity, still remain fresh and removed from and far above the common and vulgar, are particularly worthy of re-appearing in modern fabrics of the highest class. No architectural, topographical, or antiquarian library should be without this intrinsic book. Its sixteen pages of quiet, manly literature will teach truthfully more of genuine architecture than a hundred times as much of quarrelsome controversial diction, which, indeed, instead of leaving on the mind an impress of architecture, writes there only a sense of commotive irritation.

F.

## CHURCH BUILDING INTELLIGENCE.

**Worcester Diocesan Church Building Society.**—A quarterly meeting of the committee of this society was held on Wednesday afternoon, the 10th inst., at the Guildhall, the Lord Bishop of the Diocese in the chair, when the following grants were made for the building, enlarging, and repairing of churches in the diocese of Worcester:—150*l.* towards the erection of the new chapel at Barnard's Green; 80*l.* towards the erection of a new church at Trimpey, near Kidderminster; 10*l.* (second grant) towards the enlargement of Broughton Hackett Church; and 40*l.* for repairing Beoley Church. The 100*l.* granted at a former meeting towards the erection of the new chapel at Whittington, near this city, was directed to be paid, the building being now completed; and after the secretaries' report, which was of a very satisfactory nature, had been read, and other business of a routine character transacted, the meeting broke up, first voting the usual thanks to the right rev. chairman and secretaries.

**Kingston Church.**—The progress made in rebuilding this church is surprising. The contractor and builder, Mr. Nicholson, of Wandsworth, began taking down the old parish church on the 10th July, 1843, and intends the new erection to be ready for consecration by the 10th of next March; therefore, excepting the time employed in taking down and removing the old materials and remains, little more than six months will be required by him to rebuild and finish the present handsome and substantial large parish church, although the terms of contract allowed him ten months.

**New Church at Lynn.**—The committee for building the new church appear to be undecided where that building shall be placed, a meeting was held last week, when it was agreed that the committee should view the site offered to them by the corporation, as also some others, and determine thereupon.

The Warden and Fellows of Winchester College, Oxford, have contributed 200*l.* towards the erection of a new tower for the new parish church of Portsea.

**Opening of the New Baptist Chapel, Myrtle-street.**—On Wednesday, the new Baptist Chapel, erected at the corner of Hope and Myrtle-streets, was opened for public worship for the first time. This chapel has been built, as most of the public are aware, for the congregation who have been worshipping, for the last forty years, under the pastoral care of the Rev. James Lister, in the building, at the corner of Lime and Elliot-streets, which building is now about to be removed by the corporation, in order to widen the approaches from Ranelagh-place to the new Assize Courts. The new Chapel is built in the Gothic style of architecture, and is surmounted by a number

of ornamental turrets, the combination of which, at the south end, produces a striking and beautiful effect. The interior possesses an air of neatness in strict conformity with the character of the exterior. At each end is a gallery supported by projecting trusses, richly ornamented. The ceiling is divided into panels, with enriched centre pieces, and pendants at the intersection of the moulded ribs. A powerful organ, built by Bewsher and Fleetwood, of this town, occupies the centre of the northern gallery. Immediately in front of the organ gallery and choir, the pulpit has been erected. The chapel is lighted with the Bude light, by means of a large chandelier suspended from the centre pendant in the ceiling. The extreme length of the building is eighty feet; and it is calculated to accommodate between 800 and 1,000 persons. Underneath the chapel is a spacious school-room, capable of containing about 600 children; also an excellent and convenient lecture-room, 47 feet by 39, which will hold 400 people, besides committee and retiring rooms. The whole has been erected under the superintendence of Mr. W. H. Gee, architect, of Castle-street; and the total cost of the work will be about 8,500*l.*—*Liverpool Journal.*

**Northfleet—Curious Discovery.**—On Thursday, 11th inst., some workmen whilst trenching at Perry-street, Northfleet, dug up a leaden seal, once attached to a Papal Bull, on the one side was the name of the Pope JOHANNES, PP. XXIII., in Roman characters, and on the reverse the heads of Paul and Peter, rudely designed and coarsely executed, above them, S.P.A.S.P.E. The two S's stood for Sanctus Paulus et Sanctus Petrus. The seal is now in the possession of that erudite member of the Numismatic Society, W. Crafter, Esq., of the Fort, Gravesend. It is about the size of a twopenny piece, is in beautiful preservation, and has a slit in the centre by which it was appended to the original instrument, now entirely lost. The term Papal Bull was taken from the seals, but was not confined to deeds of Popes, and was derived from *bullo*—a metal ornamented cross. It may be observed that to seal with metal was reckoned an illustrious privilege, consequently the Roman Pontiff's seals or bulls were commonly affixed to their more solemn public instruments impressed in lead, sometimes in gold. These seals varied in form till Urban II., about 1088, since which time they have been as we have described above. Du Cange says that the leaden seals, with the Pope's name only, are as old as Silvester; but the images of Peter and Paul not earlier than Adrian IV., who lived in 1153, some say, commenced with Paschal II. Brief was the term applied to the Papal acts sealed with wax, with the impress of a circle called the Fisherman's Ring.

**Ancient Church Roofs.**—A fine carved timber roof has been lately discovered in the Castle Cary Church, with its bosses, purlins, and principals all moulded, and spandrels filled with elegant tracery. It has been concealed by a flat lath and plaster ceiling for many years. Another roof of carved timber has been lately discovered in Kelvedon Church, Essex, also with its bosses, purlins, and principals all moulded, and spandrels filled with elegant open tracery. This was also concealed by a flat lath and plaster ceiling for, perhaps, nearly two centuries.

A very handsome altar-cloth has been presented to Morwenstow Church, by a lady of Devonshire. It was received on Christmas-day, during the offertory, by one of the churchwardens, and delivered by him in the chancel, with the alms, to the vicar, who laid it reverently on the altar.

**NEW DISTRICT-SURVEYOR.**—JAN. 18.—This day, Mr. George Legg, of Gray's-Inn-place, who for many years superintended the Clerkenwell district for the late Mr. Beazeley, was elected and sworn in district-surveyor for St. Andrew's-above-Bars, St. George the Martyr, and the Liberty of the Rolls.

The Italian architect Canina has lately published a work on the construction of the most ancient Christian churches, which is spoken of highly; it contains fifty-seven engravings on copper, and one hundred and forty-seven folio pages of letter-press.



## RAILWAY INTELLIGENCE.

**York and Scarbro' Railway.**—The plans and other documents being now completed and deposited, we are enabled to describe generally the course of the line, and to mention a few particulars. The line commences by a junction with the York and North Midland Railway, near York city walls, and passing a little to the right of the workshops of the North of England Railway Company, crosses the river Ouse, and then approaches the village of Clifton, near Mr. Robert Bellerby's stack-yard, where a station will be probably made for the convenience of market passengers. From Clifton the line passes across Bootham Stray and Strensall Common, leaving the villages of Haxby and Strensall a little to the left, and crossing the Foss nearly midway between them. The line, which is nearly straight as far as Strensall, now bends towards the east, and after crossing the York and Scarborough road, between Barton-hill Inn and Spittal Inn, passes below the village of Crambe, and winds along the left bank of the Derwent, as far as Huton Ambro, where the line crosses the river and runs along the right-hand side of the valley to Malton. In the parish of Crambe another line is laid down on the plan, for a short distance, called the tunnel line. This line would have the effect of shortening the route, but this advantage would be much more than overbalanced by a long tunnel through Whitwell-hill. At Malton the line closely skirts the river, crossing the Scarborough-road, near the end of Norton Bridge. At Norton it leaves the river to the left, and passes a little to the left of Rillington, near which a branch to join the Whithy and Pickering Railway at Pickering is intended to commence. Passing a little to the left of Scamptston, the line again crosses the Scarborough-road, and passes along the flat ground within a short distance of the villages of Heslerton, Sherbourn, Ganton, and Staxton. At Staxton the line turns to the east, and leaving the village of Seamer on the left, runs along the bottom of the valley, and terminates in a field, a few hundred yards from the end of Newborough-street and the principal hotels of Scarborough. The length of the main line is about forty-one and a half miles—the Pickering branch being about six and a half miles. The estimated cost of the whole is 260,000*l.*—*Hull Packet.*

**Railway Reform.**—Influential parties in the city are forming a society to carry out the plans of the author of the pamphlet on Railway Reform. As all matters relating to railways must possess some interest for your town and neighbourhood, I am glad to be able to give you information of the plans which "The Railway Reform Association" have in view. They are as follows:—

"First.—To induce the Government to purchase for the State all the railway property in the kingdom at its fair market value, the shareholders to be paid in 3 per cent. consols.

"Second.—The consolidation of all the railways under one general management.

"Third.—The adoption of the following uniform scale of fares:—

"Mail trains, travelling at the rate of 35 miles per hour—2*d.* per mile.

"Passenger trains, first division (travelling at the rate of 25 miles per hour), first class, for every 2 miles, one penny; second class, for every 3 miles, one penny. Second division (travelling at the rate of 15 miles per hour), first class, for every 6 miles, one penny; second class, for every 8 miles, one penny.

"The charges for merchandise, cattle, carriages, horses, &c., to be reduced to a rate not exceeding one-sixth of the present average rates."

The association are taking active steps to bring their plan before Parliament in the course of the ensuing session, and they thus enumerate the advantages which they allege would be derived from the adoption of the system of railway reform they recommend. "Its adoption," they say, "would give a great stimulus to trade and commerce—reduce the price of the necessities of life—save the public five millions in direct taxation—enable the Government to carry out completely Mr. Rowland Hill's plan of Post-office reform—and, above all, confer an inestimable benefit on the poor, who are, under the present system, deprived of the advantages of railway travelling by the prohibitory charges."—*London Correspondent of the Hants Independent.*

*Improvement in the Value of Railway Property.*

The comparative want of profitable employment for capital in trade and manufactures, and the small rate of interest offered by the government securities at the present high prices, combined with other causes, have for some time had the effect of directing the public to railway property as the most eligible and favourite investment for their money; and the consequence has been a general improvement in the value of this description of property. The London and Birmingham Railway shares were in January, 1843, 202 per share, and in the last week in December, they were done at 241—showing an increase in value of 38*l.* per share; the Liverpool and Manchester were in January, 1843, 190, in the last week in December 228—showing an increased value of 38*l.* per share; in February, 1843, the Grand Junction shares were 192, and in the last week of December 227—increased value 35*l.*; the London and South-Western were in January, 1843, 62, and last week of December 75*l.*—increased value 13*l.* 10*s.*; the Manchester and Bolton were in February 50, and in December 86*l.*—increased value 36*l.* 10*s.*; the Manchester and Leeds were in February 66, and on the 30th of December 100*l.*—increased value 34*l.* 10*s.*; the Midland Counties in February 60, in December 85—increased value 25*l.*; the North Union in October were at 70, and in December 95*l.*—increased value 35*l.* 10*s.* The York and North Midland have increased in value to the amount of 39*l.* 10*s.* per share since February, having been then 93, and since (in November) 132*l.* The Great Western increased 14*l.* 6*s.* per share in value between the middle of October and the end of December, the prices of the two periods being 85*l.* and 99*l.* Another cause of this improved aspect is of course the increased traffic on the different lines, and the diminished expenditure in keeping them in repair. For instance, in the year ending last July the result of the traffic on the London and Birmingham line was an increase of 16,367*l.* as compared with the previous year; on the Great Western the increase gave a result of 19,557*l.*; the Manchester and Leeds 12,565*l.*; the London and South-Western 7,768*l.*; the Grand Junction 6,899*l.*; the North Midland 6,483*l.*; the Glasgow and Greenock 2,283*l.*; the Manchester, Bolton, and Bury 4,008*l.*; and the Liverpool and Manchester, 1,113*l.*

**Atmospheric Traction on Railways.**—The principle of atmospheric traction, successfully brought into operation on the Dalkeith branch of the Dublin and Kingstown Railway, is likely to be brought into extensive use upon short lines. Among others in which it is said it might be profitably employed are the Blackwall and Greenwich Railways; and one of the projected lines to Gravesend and Rochester, under the superintendence of Mr. Brunel, started on the understanding that the line will be worked by atmospheric traction.

**Croydon and Epsom Railway.**—It appears from a series of resolutions advertised in the daily papers, that a strong opposition has been raised by the Croydon landholders, including the most wealthy proprietors, against the proposed Croydon branch to Epsom; and from the determined course which these parties have taken, a most formidable array in Parliament may be expected when the competing lines bring forward their respective cases. The route by the Southampton line is stated to have the preference, and little or no opposition is anticipated in that quarter.

**Hastings, Rye, and Tenterden Railway.**—The Mayor of Tenterden, in compliance with a very numerous signed requisition, convened a public meeting at the Town-hall for yesterday, at 12 o'clock, and invited the provisional committee to attend.

**Railway Well-drains.**—Wells are now being sunk in various parts of the embankment at Mountnessing, on the Eastern Counties Railway, to carry off the springs, and provide against any disposition in the materials to slip.

The number of presents this Christmas passing to their various destinations has been very large. So considerable were they in amount and bulk one day last week, that a special train was run on the London and Birmingham Railway for their conveyance into the country. On the day in question, upwards of 6,000 barrels of oysters were transmitted by the train.

Upwards of 400 horses, purchased by dealers at the Christmas shows, were forwarded by railway from York last week to London and other southern destinations.

The extension line of the Manchester and Leeds Railway, from Collyhurst to the new Victoria Station at Hunt's Bank, was opened last week.

An atmospheric railway between Margate and Ramsgate is in contemplation.

Glass windows have been introduced in the second-class carriages of the Glasgow and Greenock railway.

The railroad from Naples to Caresta was opened on the 11th ult.

The following are the receipts of railways for the past week—that is to say, up to the date to which the respective returns are made:—

	£.	s.	d.
Birmingham and Derby.....	1,170	17	9
Birmingham and Gloucester .....	1,650	18	10
Eastern Counties .....	3,359	4	8
Edinburgh and Glasgow .....	2,068	17	2
Great Western .....	10,205	15	4
Grand Junction .....	6,218	13	6
Glasgow, Paisley, and Ayr .....	1,548	4	4
Great North of England .....	1,141	14	6
London and Birmingham .....	12,322	12	3
London and South-Western .....	4,847	18	0
London and Blackwall .....	636	10	0
London and Greenwich .....	665	16	4
London and Brighton .....	2,062	9	5
London and Croydon .....	208	0	10
Liverpool and Manchester .....	4,206	4	3
Manchester, Leeds, & Hull, associated .....	5,095	6	8
Midland Counties .....	2,178	7	9
Manchester and Birmingham .....	2,528	8	9
North Midland .....	3,407	14	5
Newcastle and Carlisle .....	1,127	17	3
Paris and Rouen .....	2,892	0	0
Paris and Orleans .....	3,782	10	7
South-Eastern and Dover .....	2,248	13	4
Sheffield and Manchester .....	669	15	1
York and North Midland .....	1,269	10	2

**SCOTCH SETTLERS IN ENGLAND AND ENGLISH IN SCOTLAND.**—The English residing in Scotland are in more striking quantity in proportion to the Scottish population, than are the Scotch residing in England. For our small population of 2,620,184 to contain 37,796 persons of English birth, is very remarkable. It could not have been believed upon any but statistical evidence, that 15 per thousand of the inhabitants of Scotland are English, while only six per thousand of the population of England are from Scotland—a difference as five in two. There is actually a sixteenth of the whole population of Scotland of English or Irish birth. This shows that Scotland, while sending off adventurers to every other part of the world, receives also a number of adventurers from the two other kingdoms. Of the English in Scotland, nearly one-fourth are in Edinburghshire, and somewhat less than another fourth are in Lanarkshire. We trust that none of these results can be the subject of invidious or jealous feeling in any quarter. The Irish are acknowledged to be a useful, though occasionally unruly, set of people amongst us. The Scotch in England are, we believe, generally appreciated for their steady conduct in affairs which require thought and powers of management. We only speak a general sentiment when we remark, that the English settlers in our northern regions are generally held in esteem. They are for the most part tradesmen engaged in lines of business hitherto little known in Scotland; a considerable class are teachers; there is also a large number of working men of superior skill. Any one who casts his eye along one of the principal streets of the New Town of Edinburgh will remark the surprising number of shops occupied by persons with English names. As far as we are aware, these intrusions amongst us are regarded with any thing but a hostile feeling.—*Chambers's Journal.*

The large work on the Etruscan Museum Gregorinum, published at the expense of the Pope, has appeared in two volumes folio, containing upwards of two hundred plates.

**GOVERNMENT FEMALE SCHOOL OF DESIGN.**—It is stated that the wood-engraving branch of this school has been abandoned. On the re-opening of the school after the Christmas holidays, the teacher was dismissed, and the pupils told they were to discontinue their studies.



## COURT OF QUEEN'S BENCH.

(Sittings in Banco.)

## THE QUEEN v. THE COMMISSIONERS FOR BUILDING NEW CHURCHES.

THURSDAY, JAN. 11.—Mr. Kelly said he was instructed to apply for a rule calling upon the commissioners to shew cause why a *mandamus* should not be directed to them, commanding them to appropriate convenient pews and sittings in the new district church of Highgate for the master and governors of Sir Roger Cholmondeley's Free Grammar School at Highgate, and for their families. This institution was created by letters patent granted by Queen Elizabeth, and consisted of a free school for forty scholars, and some fifty or sixty other boys, besides a master and six governors. Before the year 1830 the institution was possessed of a chapel, which would contain 700 persons, and there was, of course, ample accommodation for all the persons in any way connected with the school; but at that period there were some proceedings in Chancery, which ended in a scheme being agreed to and sanctioned by the Lord Chancellor, and an Act of Parliament was passed to carry that scheme into effect. Under that Act of Parliament the chapel was pulled down, and the school had to contribute 2,000l. towards building a new church at Highgate, which was to be erected; but it was enacted that the master and governors and their families, and the scholars, were to have pews and sittings in the church. The commissioners had appropriated a pew containing eight sittings for the master and his family, but only twelve sittings for the governors and their families. He had to urge that this was not a compliance with the Act of Parliament, and therefore this rule was applied for.

Rule granted.

## ASSESSED TAXES CASES.

Determined by the Judges on Appeal.

May 18, 1841.

## Windows—Attorney's Office.

*A house with fourteen rooms, nine used by appellant (an attorney residing in a separate house connected with the other by a covered way), solely as offices in his profession, one not used at all, and the other four used and slept in by his servant and his servant's wife and family, is not exempt for its windows under the 5 Geo. 4, c. 44, s. 4, as persons inhabited therein in the night-time, and the covered way formed a communication with another house.*

At a meeting of the commissioners of assessed taxes, acting for the Holborn division, holden at their board-room in Red Lion-square on the 23rd of October, 1840, for the purpose of hearing appeals against the first assessments (48 Geo. 3, c. 55, sch. (A); 57 Geo. 3, c. 25, ss. 1, 2; 5 Geo. 4, c. 44, s. 4);—Edwin Ward Scadding, of No. 2, Gordon-street, in the parish of St. Pancras, within the said division, attorney-at-law, appealed against a charge from thirty to fifty-three windows made on Nos. 2 and 3, Gordon-street.

The appellant states that he resides at No. 2, which is charged to the window duties. That No. 3 contains fourteen rooms, nine of which are used by him as offices for the purpose of his profession only, one is not used at all, and his man-servant uses the other four—namely, the kitchen, wash-house, and two attics, for the purpose of taking care of the premises. The servant and his family, consisting of a wife and two children, sleep in the attics of No. 3; but throughout the day he is employed, and attends at the house of No. 2, and takes all his meals there, his wife and family remaining at No. 3, in the kitchen.

The servant's wife and family are not subject to the control of the appellant. For the purposes of ingress and egress, from and to the street, they use the area-gate, and not the general entrance to the premises. There is a covered way from No. 3 to No. 2, across the yard or garden of No. 3, for the appellant's own private use, with a distinct and separate door at each end, and distinct locks and keys; the business entrance is at the front door of No. 3. The two houses are separately assessed in the parish rate-books.

The appellant contended that either the twenty-three windows, or at least the windows of that part of No. 3 which is used for the purpose of his profession, should not be added in charge with those of No. 2, inasmuch as the statute 5 Geo. 4, c. 44, s. 4, intended to exempt from the duties "all and every person and persons for and in respect of any house, tenement, or building, or part of a house, tenement, or building, which should be used by such person or persons as offices or counting-houses, for the purposes of exercising or carrying on any profession, vocation, business, or calling by which such person or persons shall seek a livelihood or profit, no person inhabiting, dwelling, or abiding therein except in the day-time, only for the purpose of such profession, vocation, business, or calling,

such person residing in a distinct and separate dwelling-house charged to the said duties." The appellant contended that the word "therein" refers to the house or part of a house (as the case may be) used for the purposes specified, and that he is at least entitled to exemption in respect of the windows of the rooms used for the purposes of his business only.

The commissioners relieved the appellant in respect of the twenty-three windows so charged on No. 3.

The surveyor for the crown being dissatisfied with such determination, contending that the constant residence of the servant's wife and family precludes the exemption sought by the appellant, the words in the 4th clause of the said Act being as follows:—"No person inhabiting, dwelling, or abiding therein except in the day-time only," and further contending that the communication across the yard or garden unites the two houses, and is not such a distinct and separate house as by the provisions of the said Act is contemplated; and in support thereof refers to the case No. 1255, and also to Nos. 400 and 507, decided by her Majesty's judges, demanded a case for the opinion of her Majesty's judges, which we have accordingly stated.

J. MANSFIELD, } Commissioners.  
J. H. MANN, }

We are of opinion that the determination of the commissioners is wrong.

J. PATTESON. J. GURNEY. T. COLTMAN.

## Windows—Surgery.

*The windows of a surgery wherein drugs were exposed for sale, being a distinct building, and not under the same roof as the dwelling-house, though adjoining it and internally communicating with it, and hidden from the road by a wall, and not having appellant's name on the door:—Held, liable to duty.*

At a meeting of the commissioners of assessed taxes, held at the Ship Inn, at Banwell, on the 31st day of August, 1840 (48 Geo. 3, c. 55; 4 Geo. 4, c. 11, s. 1), Mr. Samuel Parsley, of Worle, in the county of Somerset, surgeon, appealed against a charge for thirteen windows. The appellant admitted his liability to twelve windows, but contended that the other window was exempt, being the window of a surgery wherein drugs were exposed for sale, such surgery being a separate and distinct building, and not under the same roof as the dwelling-house, though adjoining thereto.

On the part of the Crown the surveyor contended that inasmuch as there was an internal communication from the appellant's dwelling-house into his surgery, and the surgery, though fronting the same way as the dwelling-house, fronted the court of the appellant, and was not visible from the public road, from which it was hid by the court wall, and inasmuch as the appellant's name was not on the door of his house or surgery, such window was liable to duty.

The appellant, in answer to the surveyor, stated that the court was the only front of his house and entrance to his premises; that his surgery window was so situated as to be necessarily seen by every person going to his house or surgery. The commissioners relieved the appellant; but the surveyor being dissatisfied therewith, demanded a case for the opinion of her Majesty's judges, which we state and sign accordingly.

J. EDGAR, } Commissioners.  
H. SYMONS, }  
HEBERDEN F. EMERY, }

We are of opinion, that the determination of the commissioners is wrong.

J. PATTESON. J. GURNEY. T. COLTMAN.

## Correspondence.

## POSTAGE CHARGES FOR UNSTAMPED COPIES OF "THE BUILDER."

SIR,—A friend of mine to whom I have sent THE BUILDER desires me to discontinue the same on account of what I consider an overcharge of postage. He states that during the last six months he has been charged 4s. for postage; the postmaster demanding 2d. and sometimes 6d. for a single paper, and stating, as a reason for so doing, that they were over weight. Now, as such an extra expense is calculated to injure the sale of your work, as well as to become an annoyance to your country readers, I have thought fit to acquaint you thereof, and if it is an imposition practised by the postmaster, it ought to be exposed.

Most of the copies have had the common post stamp appended by myself to them; for two or three 1d. each has been prepaid, and the others stamped with the news stamp, when I could conveniently get them from your office; but, supposing the penny-post stamp equivalent to the newspaper stamp, and that it would clear further charge for postage, I did not

hesitate in taking the unstamped edition. As such impression prevails with many other persons, it would be well if that question could be set right.

I remain, Sir, your obedient servant,  
London, January, 1844. E. W. B.

[The cheapest and safest plan to adopt would be to purchase a stamped copy, which may be procured at any news-vender's, and to be careful in folding the stamp outside; the paper will be then transmitted free of charge. If the paper does not bear a news stamp, it must be prepaid by postage stamps affixed to it, equal to the weight of the paper, according to the post-office regulations; and if the full amount of stamps are not affixed, a double charge may be made for the difference. Thus the postage of a single paper will sometimes amount to 4d. or 6d. when not prepaid to the full weight; whereas a copy of the stamped edition will cost only one penny extra, and no postmaster can make a charge for delivering it, unless any matter beyond the name and address be written on the envelope, or upon the paper.—Ed.]

## THE ROYAL EXCHANGE.

SIR,—I have always held that no person has a right to take up the time of a public journalist unless the subject he writes upon be of a public nature; I therefore, as you have courted communications, beg to address you upon the subject of the New Royal Exchange, which, if you view it as I do, you will oblige by inserting at your own convenience.

Having dispassionately surveyed that building, I am sorry to find it laid out quite contrary to the rules of architecture. For who but a city committee of taste, who generally spoil every thing they undertake, would have thought of selecting a plan whose sides are at obtuse angles with the front, and thereby sacrificing the beauty of a building (erected to stand as long as the city retains its present elevated situation), for the purpose of making its sides range with two streets, the existence of whose houses cannot be much more than half a century.

And, instead of the powers that will then be in existence being able to throw it open to the public view, they will be compelled to inclose it as now, to hide, if possible, a little of its deformity.

What would have been said, aye! and what would the architect himself have said, of Sir Christopher Wren, had he erected the north and south sides of St. Paul's in a line with Cheapside and Watling-street? and the buildings both stand in a similar manner.

Would not that noble edifice, which is now the pride of the nation (like some others of our national buildings), have been its disgrace, and have been far beneath the talents of that great man?

I should not have intruded, but think it the duty of every professional man to point out the defects of those buildings which are erected as an ornament as well as for utility, that they may be a beacon for those who follow after.

I am, Sir, your obedient servant.  
J. C. ARCHBUTT, &c.  
2, Albany-road, Barnsbury Park, Islington.

## MEASUREMENT OF HEIGHTS.

SIR,—As you so readily inserted my last communication respecting the measuring of distances, I beg leave to trouble you with another on the measurement of heights.

I am, Sir, your most obedient servant,  
N. H.  
Kennewhere, 11th January, 1844.



Suppose the height of the tower A C is required, and you have no other instrument than a foot rule or small scale.

Measure a part of the tower accurately from A to B, which suppose 8 feet, then stand back at any convenient distance with the rule or scale in your hand in a perpendicular position, and observe how much of the scale the space A B occupies, which suppose one division, or one inch upon your scale, and suppose the whole tower occupies 7 inches of your scale, then you have the proportion of A B to the whole height, which would be, 56 feet.



## ARCHITECTURAL GLOSSARY.

SIR,—Allow me to suggest to your notice, the propriety of devoting a portion of your valuable paper to the production of a glossary of terms connected with building and architecture, the compilation of which, while it would afford an opportunity to young aspirants after fame of distinguishing themselves, would be highly useful to the building-art in general, and, at the same time, supply in the form of a complete and accurate glossary of the present style of art, a want which has been long felt.

I would, with all deference, propose the following method of procedure:—Let a notice of your intentions appear in some future number of *THE BUILDER*, with a request to correspondents willing to assist you, to forward definitions of such words as begin with the letters *AB* on or before that day month, the following words in each letter respectively to be sent at least one fortnight before their probable appearance in *THE BUILDER*; these notes would come under your searching inspection, and all approved definitions, or compilations of such, inserted, with the cuts necessary for illustrating the terms.

I have to observe that no notices of competitions for designs have had place in *THE BUILDER* for some time past; even one for two cemetery chapels in London, which was advertised in your own paper, had no notice taken of it. Was it a neglect, or is that part of your proposed arrangement thrown aside? I should hope not, as such notices could scarcely fail to produce many useful and instructive, though probably humiliating lessons to Tyros in the art, while it would be an obvious ladder for the ascent of ability.

I am, Sir, your obedient servant,  
Glasgow, Jan. 14, 1844. Poz.

[We beg to inform our correspondent that the formation of an architectural glossary which he thinks so desirable, has been undertaken by the Freemasons of the Church: at the formation of the institution, the following declaration was made:—

"As a first labour of the College, it is proposed that the present unsatisfactory division and nomenclature of Pointed Architecture shall be remedied, and that all the publications of the society upon that subject shall be issued according to such classification and nomenclature. Not indeed that the perfecting of so desirable a project can be expected at once; but such a nomenclature can be laid down as shall immediately distinguish the different members of the art, which are as numerous as those of heraldry; and these can be superseded by more primitive or more simple and energetic terms, as they shall be recovered from ancient contracts and other documents, or shall be invented by more judicious and mature consideration. But, to prevent doubt or future mistake, it is proposed that a cut of each intended object shall be executed, and that a reference shall be made to where exemplars of it are to be found, and also to its chronology."

No doubt the College will add to the nomenclature of Gothic architecture, all that is previously known on building generally. The institution would, we judge, willingly profit by any suggestions which may be conveyed through our columns. The other subjects mentioned by our correspondent will receive due attention.—*Ed.*]

## THE LEICESTER MEMORIAL.

SIR,—In answer to your correspondent, "Another Competitor," who asks in your publication of to day, whether "my remarks apply to the design No. 40, stated to be the one selected?" I reply that in my letter of the 1st January I specifically alluded to the author of the design selected, when I wrote, "Can it be true that one of the candidates (or perhaps more) personally paraded his designs to many of his friends?"

I now ask again, did not the successful candidate exhibit four designs?

Did he not take two of these designs with him into Norfolk, some day in the week preceding that which was declared to be the last for the receiving of the designs; and then and there exhibit his drawings to many persons previously to their being sent in to the committee? In fact, did he not canvass for those two designs?

Lastly, was not one of those very designs, so exhibited, the successful one?

I assert that the facts are as here stated, and if so, any candidate so canvassing ought, in my opinion, to be disqualified from competing, if honour and straightforward dealing are to be at all considered as directing the fiat of the judges.

For myself, I do not complain of any neglect of my design, which is most probably inferior in merit

to the one selected; but this I do say, that I too had many friends amongst those interested (as subscribers), and, moreover, of much influence, but not one of these was even aware of my intention to compete. I should have scorned to use so unfair an advantage against my less fortunate brethren.

I am well aware, Mr. Editor, of the little weight attached in general (and frequently most properly) to an anonymous assertion. At the same time, I am also fully aware of the folly of running a here endeavouring to expose. I can, therefore, only retire from the presence of the committee with the feeling that I have been unfairly treated in common with many others; and whilst I utterly disclaim every feeling of personal anger, I, as one possessing a high esteem for the character of the late Lord Leicester during his lifetime, cannot but feel sincere sorrow that chicanery and want of candour should be mixed up with the very first act connected with the lasting memory of this fine old English gentleman.

"A COMPETITOR."

And, above all, a lover of fair play.  
London, January 13, 1844.

## NORMAN COTTAGE.

SIR,—In a recent number of your very important paper, you published a design for a Norman cottage, together with some others. Novelty and singularity combined must certainly have prompted the designer in his choice of style, and it is a very good precedent of the indiscriminate use of a peculiar style or order, without any regard to the applicability of the same in execution. Where novelty is governed by a refined taste, and in the hands of a skilful artist, much that is beautiful is likely to be the result. Why should every sense of propriety be sacrificed merely for the untutored mind to revel amid whim and caprice?

Norman architecture has always possessed the admiration of antiquarians and the disciples of our mystic art, but they have never thought that it was applicable to any other than ecclesiastical buildings. The general character of its masses, the form, and, compared with more recent styles, the frequent rudeness and heaviness of its details, afford, in my opinion, a complete barrier to its use for domestic buildings.

In our modern villa residences lightness and beauty are now looked upon as decidedly requisite; but in vain do we search for them in the massy cylindrical columns, or columnar piers of the nave, or the smaller ones of the triforium, in a Norman edifice. Grandeur and solemnity are the sources of our pleasure in viewing these buildings, but turn from such substantial piles to a residence where every part must be suitable to the purpose for which it is built, namely, "to a pretty villa residence." Is it not necessary to design according to the material to be used? for capital cannot be lavished and squandered away merely to give the elevation a good look, while, as in the Norman style, the interior fittings must of necessity be poor and unmeaning. It is, I think, quite a mistaken idea for students in architecture to attempt to design buildings, which answers to the proverb of mere "castles in the air." Architects are not merely called upon to design, but to superintend the carrying out of those designs. Hoping that my attempt to show style is of all importance in designing even the smallest building, will meet your approval,

I am, Sir, your well-wisher,  
Jan. 2, 1844. H. VERNON.

[We insert this letter in order to conclude the series upon the subject. We in general desire correspondence of a more practical nature, but may hereafter ourselves shew wherefore Norman architecture was supplanted by succeeding styles.—*Ed.*]

## ARCHITECTS' COMMISSION.

SIR,—In answer to your correspondent upon this matter, I beg to intimate to him that some years ago I had the unpleasant task of proceeding at law to recover compensation for designing and estimating the cost of buildings to a considerable extent, which were not carried into effect in consequence of the inability of the parties concerned to provide the funds, and to which I was an utter stranger until after the builder's tender was accepted, but then discovered the difficulty of obtaining a verdict for the amount of my bill, calculated at a per-centage on the amount of the estimate, although much under that stated by your correspondent. From the experience I have subsequently had, I can advise that if he intends proceeding at law, the charges that he will be able to substantiate will be a fair remuneration for the time engaged in the business, with incidental expenses, if any, added thereto; of course the skill of the work will be considered. I should say 40l. would be a fair charge, and there can be no doubt he will have the assistance of his brother architects whom he may subpoena to give evidence in support of his claim, provided the designs are properly executed. Proceeding for a

per-centage will be a failure, and but for occupying too great a space in your journal, I could satisfactorily explain that a per-centage, scarcely in any case, is a proper criterion for charging; hence the difficulty of proving the custom. I remember a survey on which I was engaged, where the bills were referred to a Master-in-Chancery, that the account, calculated by a commission on the amount, was returned with instructions that it might be made out according to the number of days engaged in the business, with the travelling and incidental expenses added, and when sent in in that form, amounted to some 40l. more, and was allowed.

I remain, Sir, your obedient servant,  
AN ARCHITECT.

P.S.—In proceeding at law to recover for professional services, the items must be so set forth in the bill that they can be substantiated by the evidence; and in the case of your correspondent, should there be special attendance, or other extra trouble in the course of the business, he may recover for them beyond the designs and estimate; in fact, the great point is to make out the bill properly.

## SCARFING OF TIMBER.

SIR,—If you or any of your readers would favour us in *THE BUILDER* with the best mode of scarfing beams, it would greatly oblige yours,

A WELL-WISHER.

[We intend in the course of the year to give some representations of timber joints, and shall be happy to receive communications on the subject; in the meanwhile we beg to refer our correspondent to "Tredgold's Carpentry."—*Ed.*]

## TIMBER VALUATION.

SIR,—I shall feel obliged if you, or any of your correspondents, can inform me in your next number of *THE BUILDER*, if there is any work published on the valuation of the different kinds of standing timber, and where any such work can be obtained. Your well-wisher and subscriber,  
Duffield, near Derby. D. D.

## Tenders.

TENDERS for completing the works of three houses in Seaford-street, and a workshop in Sutton-street, Clerkenwell, under the superintendence of Messrs. Reed and Son:—

Hawke .....	£787
Vigier .....	760
Arding and Son .....	737

## NOTICES OF CONTRACTS.

ENLARGEMENT OF SUFFOLK LUNATIC ASYLUM.—SPECIFICATIONS, &c.—Dr. Kirkman, the Asylum; J. H. Borton, Clerk of the Peace, Bury St. Edmunds. January 22, 1844.

WORKHOUSE ALTERATIONS, ST. LUKE, MIDDLESEX.—Plans, &c., at Workhouse.—J. Parson, Vestry Clerk. Feb. 7, 1844.

Paving and keeping in repair Foot and Carriage-way Pavements, Goodman's Fields.—Mr. Simmonds, Surveyor, 7, Great Alic-street. Jan. 26, 1844.

ALTERING EAST SUFFOLK COUNTY HALL AND COURTS OF JUSTICE, IPSWICH.—Plans, &c., for inspection.—Mr. Whiting, Surveyor, &c., County Hall, Ipswich; J. H. Borton, Clerk of the Peace, Bury St. Edmunds. January 29, and February 12, 1844.

## NOTICES.

## TO READERS AND CORRESPONDENTS.

As the contributions to the illustrations of *THE BUILDER* are daily becoming more and more frequent, it would be well if our correspondents would send new draughts of size convenient for insertion either as one, two, or three column blocks. This, at the same time that it would spare considerable trouble to the draughtsman, would tend greatly to insure the accuracy, and, consequently, the utility of such contributions.

## TO OUR CORRESPONDENTS.

"W. W.'s request cannot be attended to quite so soon as he mentions, but as soon as we can find time to make the survey, the description asked for shall be given."

We shall take an opportunity of seeing Mr. Fletcher's draughts.



## TO OUR SUBSCRIBERS.

In compliance with the wishes of very many of our Subscribers, we have had prepared a cover for binding the copies of THE BUILDER for those who may be desirous of preserving them in uniform Volumes. These may be had on application at the office, at the price of Two Shillings; or our Publisher will undertake to have sets bound at a charge of Three Shillings per Volume.

We also take this opportunity to inform our Subscribers that, with a view to the additional embellishment of the Volume just completed, we have had printed an ornamental Title-page, which may be had gratis, on application at the Office.

## The Builder.

NO. LI.

SATURDAY, JANUARY 27, 1844.

WHILE stating to our readers that we have in hand many subjects for future appearance in our columns, few, we imagine, will think any thing more pertinent to the present juncture could be chosen (especially as we have promised it), than the consideration of

## Westminster Bridge.

We shall first briefly discuss the taste of altering the external features of this public work, and then proceed to examine

the scientific matters which have been broached upon the subject, the differing opinions relative to which have become matter of public notoriety.

Relative to the TASTE of making any apparent alteration in the external features of the bridge, we must declare ourselves not merely sceptical, not merely doubtful whether there be good taste in altering the outward dress of such a work, but we boldly go further, and, on the score of taste, openly declare all such alterations to be bad in principle, palpably against good taste, and altogether condemnable.\*

\* "It is to be deeply lamented, that from Blackfriars' bridge having been constructed at a time when a flat roadway over a bridge was not deemed of advantage sufficient to lead to raising the abutments much above a low shore, with the attendant expense and disadvantage of that, the unrivalled bridge seems doomed at no distant period to be either destroyed, or to be totally ruined in appearance. Within the author's short memory, the transcendently elegant approaches of this bridge have been most wretchedly mutilated in order to lessen the acclivity, but this improvement is so trifling and ideal, that besides the loss of beauty, it may be doubted whether any one has yet felt any relief in the transit of the bridge: a large mound of earth has been accumulated at each end of the bridge, in the once-beautiful squares, which have also from additions and strutting shared in the general wreck. In the memory of the author, Blackfriars' bridge, with its approaches, and the fine streets leading to it, had no parallel in the world; this it does not appear will be long the case; the desire to be doing seems rapidly fermenting the destruction of Mylne's delightful work: first its balustrades are giving place under the plain parapet masonry, next its columns will be removed in order to widen the roadway, in passing over which many thousand times the author never once saw obstructed; and in the end, the city of London will have a costly but ugly production, which even its maker would be unable to recognize." "The citizens of London should be proud of every one of their fine public works, duly considering how scarce in architecture are both taste and structural excellence combined, and how few modern works, alleged to possess these properties, maintain their rank for even ten or twenty years. The citizens should remember, that they owe to their posterity unpolluted, the architectural beauties which have been received from their fathers. The citizens know well what enormous sums they have in modern times spent, but how few pieces of architecture they have produced. This should lead them to value those works which they have inherited freely."—Bartholomew's Essay on the Decline of Excellence in the Structure, &c., of Modern English Buildings.

We have such a rooted dislike to the mutilation of original designs, that we can very rarely forgive the making any alteration from the intentions of him who generally must know most concerning the propriety of his own work. Much as we admire the talent shown by the artist in his original designs, we like not the alterations which were made by Inigo Jones to old St. Paul's, how great soever may be our reverence for the grandeur and gusto of the portico itself, which he added to the ancient work of Pointed Architecture. We like not the deviations from Chambers's great design made for the buildings of Somerset Place, by forming King's College, in the eastern wing of that fine collection of edifices, in a style and of a form differing from the original conception, and against conformity with the buildings of the western wing, with which they should have corresponded.

We worship not the alterations made either within or without St. Margaret's Church, Westminster; so zealous and jealous are we on this subject, that we see with pain the fine transeptal doors of New St. Paul's clouded over lately with some mean plank-work; and would not have the authorities rest till that and every other inroad, however small, shall, as profanation, be eradicated from the sacred fabric—that this fine structure may remain in its integrity, the gem of Protestant Churches,—an honour to the nation and its pure religion,—of all the cathedrals in the world by an especial divine favour permitted to be the only one, which, like the vesture of Christ, was ever wrought in one texture throughout.

The alteration of an architectural work is indeed laying the destroying axe at its root: when a fabric is made parcel-wise of different tastes, men soon grow tired of it; and if not a very great work, it is then soon succeeded by a new erection all in one style. Francis Milizia, the Italian physician, author of the "Memorials of Ancient and Modern Architects," indeed wrote well when he declared "THESE PRETENDED CORRECTIONS ARE THE WORK OF A MADMAN. EDIFICES SHOULD BE LEFT AS ORIGINALLY BUILT, WHATEVER BE THEIR TASTE, OR THEIR WANT OF TASTE: THEY SERVE AS HISTORIES, AND ENABLE US TO COMPARE AND PURIFY MORE AND MORE THE TASTES OF SUCCEEDING TIMES.\*"

Making such declarations, it is scarcely necessary for us to add that so long as the present Westminster-bridge shall stand, we alike deprecate the masking of it either in the Norman style, or as though it were an edifice of Pointed Architecture. If its acclivities are to be reduced, if its burthens are to be eased, if its piers are to be lengthened, if its roadway is to be rendered more ample, we yet trust, that as far as architectural appearance is concerned, the whole will be done, preserving it as the design of Labeyle,—its piers, cornices, balustrades, alcoves, pedestals, and other visible component parts, being restored exactly as when the work was first executed, except only in the alterations necessarily resulting from the required improvement of its traffic-way.

The architect whose work, under the plea of improvement, is mutilated by a successor, is always amply revenged by that successor's works being destroyed in a similar way; and often in his lifetime, like the man of sin, displaced from his office, he ceases to be overseer, another takes his bishopric, and his children beg their bread. Through following the mutilation-

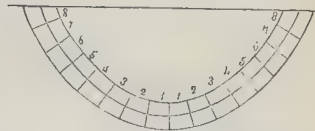
\* Tomo i. p. 146. Queste pretese correzioni fanno rabbia. Si debbono lasciar gli edifizj come sono stati architettati da' loro Autori, di qualunque gusto sieno, o di disgusto: servono di storia, e di confronto, e per depurare sempre più il gusto de' posteri.

system, we have scarcely one-tenth part so many architectural works approaching perfection as we otherwise should have. Half the restorations now being effected, at so much cost, to our churches and other ancient buildings, consist in the removal of the interpolations which have, in a wrongful spirit, been unfeelingly made to them.

Before we go into an examination of the statements which have been put forth relative to the construction and proposed scientific improvements of Westminster-bridge, we shall enter a little into the rationale of bridge-arches, after which we shall proceed to examine the different proposals for altering the work.



Abstractly considered, the CATENARY, or natural curvature which a pendant chain assumes by its own weight, is the true form for an arch: in such an arch of suspension, it is evident that the various parts of the chain so act upon each other, that the quantum of gravity with which one part acts on the other parts, produces, when the whole chain has fallen to a state of rest, the catenarian or chain curve; and it should be equally evident that, were the catenary composed of several cords or strands in their curvature parallel to each other, the tension would be fair and just throughout;



and lines drawn in different places at right angles to the curve, would shew the joints of blocks, which, being hung upon a string, would exactly fit the curvature of the catenary.

If, then, such a model be inverted, it will



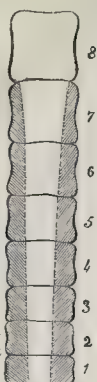
form a true catenarian masonry arch, wherein the just tension of the pendant catenarian arch is changed into compression, fairly and justly extended over the surface of every joint in the work, without any tendency to split the blocks by any partial or angular meeting of the surfaces of the voussoirs or blocks. But an arch so formed, though nearly such as often has been constructed, is very far from being thoroughly scientific, for it is by no means economical.

Nature, in forming pendant things, as icicles, the tails of animals, vegetable twigs, and other like matters, graduates them in dimension and strength; thus, in the tail of an animal, the second of the vertebrae has to sustain the first, the third has to sustain the second and first, and so on till the eighth has to carry all the others. If, however, Nature had made a tail equally thick all over, it is





evident that besides the great waste of material which would be caused by making the lowest of the vertebrae of the same size and weight as the eighth, the eighth would have to carry all that additional weight, and would therefore be much weaker for the purpose. Thus, there may be cases in which materials more than threefold would be consumed; and the eighth of the vertebrae having consequently more than threefold burthen to sustain, the effective strength thus resulting from the materials would be less than a ninth part of that which it naturally should be.



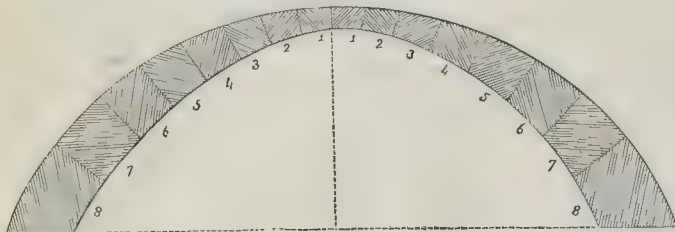
Hence, in suspension-bridges, the chains ought to be thinner in their middle than at the suspension-towers, as practised in Dredge's mode. Great consumption of metal is thus saved, the chains are much more safe and much less likely to break near the suspension-towers, lighter suspension-towers are sufficient, and the foundation of the work is safer, from being much less tried by burthen.

The same rule applies to masonry bridges of the catenarian form, by merely changing the tension of the catenary into the pressure of the voussoirs upon each other; in which case the surfaces of the arch-joints should continually increase in dimension as they recede from the vertex of the arch, so that there may be the same pressure upon every inch of joint-surface throughout the work.



But now comes the burthen of the bridge; and upon that subject we boldly say that many bridges have been formed upon false, wasteful,

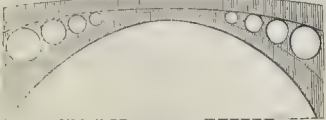
and ruinous theories; for, abstractly, no bridge ought to have on its piers and arches any burthen whatever other than the mere materials



requisite for catenarian construction, with the simple addition of its roadway and traffic.

It is that burthen which costs money,—it is that burthen which occasions excess of dimension in the piers,—and finally, it is that burthen which causes ruin to the work by sinking in its foundation.

The practical man may start at this declaration



ration against burthen, but we say the catenarian vertebrae ought to be split apart or distended, so as to form the line of roadway above and the arch curvature below.

William Edwards, the Welsh country mason, a hundred years ago, made considerable approaches to this perfection of construction, in his bridge of Pont-y-Pridd, over the Taff, the arch of which, though rising only thirty-five feet, has a span of one hundred and forty feet. This bridge is only eleven feet wide; it is, indeed, a stiffened stone rope, proportioned like two animal tails, united at their inferior ends, and distended at their other ends to the forms of the arch and roadway.

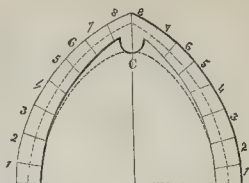
As bridges have mostly parallel sides, the increase of the surfaces of the voussoirs being

restricted that way, the raising of the spandrels to the form of the roadway is the more readily managed.

But great art is requisite in forming the masonry-joints of such a work; and this, we believe, has never yet been perfectly effected: on a future occasion, however, we may go a little into the subject.



The ancient Freemasons appear to have been intimately acquainted with the catenarian principle of construction, as we shall also take occasion hereafter to shew. They found that they could nearly imitate the form of the chain-curve, by drawing, with little trouble, with the compasses, a pointed arch; but, knowing that a weight appended from the centre of the catenary [C in the annexed diagram] draws it still more nearly into the form of the pointed arch: when they reversed the curvature and put it into absolute work, they added to the vertex



of the arch a weight, which they usually carved into the form of an ornamental boss.

Want of space compels us here to break off the subject, which we shall resume in our next number.



#### WESTMINSTER BRIDGE.

SOME statements having lately appeared relative to the present condition of Westminster-bridge calculated to induce doubts of its safety, we have ascertained the real and actual condition of the structure in question.

It appears that after the steps which Mr. Walker had taken to improve and secure the foundations of the bridge, the sixth arch on the Surrey side was observed to settle, both in its pier and its superstructure; and this sinking continued from time to time during the space of nearly eight months, when it at last ceased, and for the last three months has remained stationary without any further alteration of its level.

Upon an investigation into the extent to which this settlement had gone, and of the causes which led to it, it was found that the pier itself had sunk bodily about nine inches, and that even the new extension of the pier, which was founded upon concrete carried down to the level of the blue clay, had participated in the settlement, without, however, affecting the solidity of the pier itself, or, as far as it can be ascertained, of the piling with which it was surrounded, which latter, it seems, still remains perfect and uninjured.

The consequences of such settlement were, that four of the larger masonry courses or arch stones fell some four inches, so that they projected slightly below the curve line described by the under surface of the arch itself.

The steps taken to remedy these evils have been to lower the roadway over the bridge generally, more especially over that part which had given way; the superincumbent load on which was further lightened to the extent of 2,000 tons, by removing the solid superstructure and substituting in its place a series of hollow brick arches.

The injury done to the arch itself was repaired by withdrawing the stones or courses which had become displaced, and replacing them with others; in fact, re-keying the arch by stones adjusted to the altered level occasioned by the settlement of the sunken piers.

That these steps have been perfectly efficacious, is proved by the fact that no further settlement has taken place within these last three months, the foundations of the piers having become completely settled and stationary.

The masonry remains perfectly solid, and although the bridge has been opened now upwards of four weeks, and the traffic over it has been immense, not the slightest vibration or alteration of level can be detected; and for anything at present apparent, the bridge is more firm and solid than ever, and will most likely (if permitted) remain in its present state for ages.

It should here also be remarked that the sinking was almost entirely confined to this one pier (the sixth from the Surrey side); and that the reason so little has been done in the repair of the bridge since Christmas is, that the Commissioners have adopted the recommendation of the engineer to suspend the works during the winter months.

When the works which are now contemplated shall be finished, it is clear that the public will derive great advantage from them,



inasmuch as the general level of the roadway will be reduced 3 feet 6 inches in the centre, and proportionably at the approaches, which will thus eventually become much easier, and the steepness which is now so much felt and complained of will then be removed, or at least be greatly modified.—*Times*, 23rd January.

TO THE EDITOR OF "THE BUILDER."  
SIR,—Having carefully examined the design of "A Practical Observer" in last week's number of your useful publication, I beg to observe that great credit is due to him for the proposal which he has submitted, as well for its elegance as for its stability; and it is to be observed that its practical construction rises above that of the design by Mr. Barry, whose pointed arches, though small, justly brought forth the strictures of Messrs. Walker and Burgess, they each having a tendency by their thrust to throw weight and resistance towards the adjoining arches, and as Messrs. W. and B. have asserted, should "one give way the rest must follow;" but the form selected by your correspondent removes this objection, by partaking of the properties of the ellipsis which concentrates the weight upon the piers. As your correspondent seems to have omitted the mention of this great advantage of his design, it deserves to be noticed.

I am, Sir, your obedient servant,  
A CIVIL ENGINEER,  
of the Great Western Railway.

#### SEWERS OF WESTMINSTER AND PART OF MIDDLESEX.

(From a Correspondent.)

At a meeting of the ROYAL INSTITUTE OF BRITISH ARCHITECTS, held on Monday, the 22nd inst., Mr. Donaldson, V.P., who was in the chair, called the attention of the meeting to a recent examination, which had taken place at the Court of Sewers for Westminster, &c., of candidates for the new appointments of Assistant Surveyor and Clerk of the Works; out of above thirty candidates for the former appointment, only six were found efficient men, and not one of them was an architect or surveyor, but all were engineers. Mr. Donaldson, in alluding to the fact, impressed upon the minds of members of the rising generation the necessity of fully qualifying themselves for all the classes of appointments within the sphere of their professional practice. He inculcated the necessity of their studying mathematics, mechanics, and natural philosophy, in addition to the usual routine of the architect's office, as otherwise they would fall short of the requirements of the present age. If they wished to maintain their position they must not be merely equal to the expectations of society, but should be in advance of them.

The following are the questions which were submitted for solution to the candidates:—

For the situation of Assistant Surveyor.

1. What are the distinctive differences between Dorking Lime, Abergaw or Blue Lias lime, and Sheppy cement, and the causes of those differences?

2. For what constructive purposes is each best adapted?

3. Which is the best process for slaking respectively Dorking lime and Abergaw lime?

4. What is the best proportion of sand to these limes to make good mortar?

5. How is cement most beneficially used, whether with or without sand, or in what proportions?

6. Which are the best bricks to be used for the London sewers, in economical and practical points of view?

7. Which is the best form for the bottom of a sewer?

8. Which is the best mode of laying the bricks of the bottom of a sewer?

9. Imagine a trench which is to be cut for a sewer 25 feet deep, the upper 5 feet loose earth, the next 6 feet hard gravel, and the remaining 14 feet loose sand or silt, how should it be effected, what precautions should be taken, and how should the lower part of the sewer be laid in the running sand?

10. Imagine a sewer in an upper level, which is to be discharged laterally into one 18 feet

lower, how should it be done? Give a sketch, plan, and section. The average depth of water in the upper sewer being 2 feet, and the horizontal distance from the end of this sewer to the side of the lower one 50 feet.

11. A sewer is to be carried through two streets 15 feet wide, the one with houses on one side only, the other with houses on both sides. Make sketches of the best mode of shoring up the houses. The trench required being 6 feet wide and 15 feet deep.

12. In what part of a column of water flowing down a sewer is the velocity the greatest, and where is it the least?

13. When two forces act on the same point in different directions, how can their equivalent be represented?

14. What is the difference between the angle of incidence and the angle of reflection?

15. What is the pressure of the atmosphere on a square inch?

16. Suppose a very flat district, at a distance from an outlet, to be drained so as to reduce the water in the district to be drained as low as possible, and to take the greatest advantage when the tide is down. The water free from deposit. Should the bottom of the new drain be level, or have a fall, and to what extent? State the reasons.

Valves.

17. What is the pressure upon a valve, 3 feet high and 2 feet wide, the top of which is 3 feet under the surface of the water, and of a valve 2 feet high and 3 feet wide, under the like conditions?

18. What is the pressure of water on a circular valve 4 feet in diameter, the top being 5 feet under the surface of the water? What power would raise such a valve (sliding) supposing both the faces of iron? If of iron, what thickness would be sufficient? If of elm, what thickness?

19. Give the sketch of a valve and hinges for excluding the tidal water, the rise being 20 feet above the top of the valve.

20. What "by theory" is the velocity of water through a pipe, or other opening, 1 foot in diameter, the top of the opening being 3 feet 6 inches under the surface? What proportion of this ought to be deducted on account of friction, viscosity, &c.—1st, supposing an iron pipe—2nd, supposing a brick drain.

The Questions for solution by Candidates for the situation of Clerk of the Works, were the same as the first nine and the eleventh of the preceding series, together with the following:—

What is the strongest form for a drain, supposing it pressed equally in all directions?

12. Give the quantity and price of 20 feet run of a full-sized sewer, as per section given herewith, having a central granite keel stone to the invert, 9 inches deep, 8 inches wide at top, and 9½ inches wide at the bottom, instead of the central courses being in brickwork; the brickwork being valued, inclusive of all charges, at per rod 117. 2s. 4d., the granite to be valued according to its cubical quantity, at per foot cube 4s. 9½d.

13. Put the quantities and money to two bills for 20 feet run of sewer each, as per drawings Nos. 1 and 2.

P.S. The Candidates were required not to have any communication with each other, nor to leave the Court-house until they had delivered up to the Surveyor this paper, with their respective answers signed by themselves, and were allowed three hours for their solutions.

In the letter on Sewers by "An Old Commissioner," inserted in your paper of January 6, it was erroneously stated that a map was being prepared by Messrs. Milner and Braithwaite, which is not the case, as the map is in preparation for private purposes by Mr. Frederick Braithwaite, engineer, 1, Bath-place, New Road, who will no doubt be happy to forward a communication on the subject, should the Editor deem it interesting, when the map is complete.

London, Jan. 25th, 1844.

SIGNS OF IMPROVEMENT.—In Lancaster, seventy-one new houses have just been completed, or are in the course of erection.

#### LIGHTNING-CONDUCTORS AT STRASBURG CATHEDRAL.—THEIR COST AND EFFECTS.

BY M. A. FARGEAUD.\*

SCARCELY was Franklin's invention known in Europe, when the idea occurred at Strasburg of protecting the cathedral with a lightning-conductor. It was not, however, until 1780 that a definite proposition was made to the magistrates of the city by Barbier de Tinan, commissary of war. His project, which had been submitted to the examination of Franklin himself, was approved of, in all its details, by the Academy of Sciences. But this proposition was not followed out; the expense was feared.

Forty-seven years afterwards Professor Meunier recalled the attention of the authorities and the learned men of Strasburg to this subject; in his memoir he reverted to the visit which M. Gay-Lussac had just paid to the cathedral, and the wish which the illustrious academicien had expressed, eventually to see this monument protected from the effects of lightning by a properly arranged conductor. An inconceivable opposition had just prevented the erection of a lightning-conductor on the theatre; the demand of M. Meunier was therefore ineffectual.

Such was the state of things when, on the 14th of August, 1833, about 4 p.m., a most violent storm burst over the city; the tower was struck three times within a single quarter of an hour; the third stroke illuminated almost the whole of the building for a few moments: the lead, the copper, the iron, the mortar, the very pavement itself, were burned or melted in several places; the hammers were soldered to several bells, and were not detached without considerable difficulty. The repairs, which this terrible explosion had rendered necessary, cost several thousand francs. Serious accidents might have attended the fall of the fragments of stone, which were driven even into the neighbouring streets. Destruction like this, and the fear which was its natural consequence, were more than sufficient to rouse anew the solicitude of the administration. A commission was named by the mayor, Frederick of Turckheim, to settle these three leading questions:—

1st. Is it right [convenable Fr.] to place the lightning-conductor on the tower of the cathedral?

2nd. What particular arrangements should be adopted in adjusting it?

3rd. What will be the expense?

This commission, which was organized two months after the event, was composed of MM. Lacombe, Husson, Voltz, Meunier, Herrenscheider, Fargeaud, and the architects, Spindler and Fries; it was proved by documents that for thirty years the mean expense for repairing the damage by lightning was 1,000 francs (forty-two guineas) per annum. But in the period preceding this, the existence of one part of the monument had been several times threatened. In 1759, for example, on the 27th of July, a lightning-flash burned all the wood-work of the roof of the church; the same year, in the month of October, the lightning struck the upper part of the tower three times during the same storm, and almost entirely destroyed one of the pillars of the lantern, &c.

I was instructed by my colleagues to draw out a summary of our discussions; my report was signed, and was addressed to the mayor, December 11th, 1833; the administration caused it to be printed, but they did not carry into effect the propositions which were laid down in it. Probably things would have once more remained in this condition, had not an explosion, more terrible even than that which we have just described, occurred on the 19th July in the following summer, most opportunely to call us to order. One of the four turrets was cut, as it were, through the middle; enormous stones were displaced; numerous fragments were transported to considerable distances: it was very evident that we ought to set to work, and so at last we did.

Our colleagues, to whom M. Diebold was joined, were desirous that M. Fries, the architect, and myself should undertake the details of the operation. Some modifications of the original project were easily adopted, and the apparatus was ready for action by the summer

\* Translated by Charles Walker, Esq., for the *Electrician Magazine*.



of 1835. The following is a brief description of it:—

The cathedral, as a whole, is protected by three vertical rods, placed on the summit of the pyramid, on the guard-house, which occupies one end of the platform, and finally, above the choir, beside the telegraph. The conductors, which proceed from the base of these apparatus, communicate with the earth by three wells, about ten metres (eleven yards) deep.

One of these wells was dug at the very foot of the nave and the tower, beside the Place du Château, at the bottom of the passage which separates the walls of the temple from the shops, that hide the lower part. The shop which is nearest to this first well is that of M. Rhein, the tinman.

The second well is placed, symmetrically, on the opposite side, towards the Place du Dôme; the third is behind the choir, also on the side of the Place du Dôme, and near the vestry, distant, therefore, from the other two by almost the whole length of the building. The three wells are also isolated from the public way; and each contains about one metre (a yard +) of water in the most unfavourable weather.

The conductor that protects the telegraph is composed of a brass rope, which, after being bent in various ways, arrives near the mouth of the vestry-well. This rope is then continued by a stout copper bar, terminating, at the bottom of the well, in the shape of a goose's foot.

The conical rod which surmounts the apex of the pyramid, and which constitutes the principal conductor, is at least one metre fifty centimetres (five feet) high. It seemed to me useless to elongate this rod for no other purpose than to attain or exceed the height of the highest pyramid of Egypt, as some amateurs ardently desired. The essential point was to fix it firmly on the narrow space from the middle of which it was to be elevated: its base was five or six centimetres (two to two and a quarter inches) thick. From this point proceeded four conductors formed of rectangular bars of iron, about fifty-five millimetres (two inches) wide, and fifteen (half an inch) thick. These conductors pass between the four arms of the cross, and bend, according to circumstances, in order to follow the form of the crown of the lantern, and to arrive at the summit of the eight spiral staircases; they then descend in the intervals which correspond to the four turrets; on arriving at the upper level of the edifice, they are united by a circle which goes entirely round it, and are completely associated one with the other.

From this metallic girdle, it was thought sufficient to carry two conductors down the length of the turrets on the north and on the east, that is to say, on the right and on the left of the immense copper roof of the nave towards which the lightning is always directed. One of these conductors—that on the north turret—descends, almost in a direct line, from the summit of the pyramid to the well of the Place du Dôme, where it terminates by a bar of copper, the thickness and width of which correspond with those of the iron bars.

The second conductor descends on the side of the east turret, touches the corner of the ridge of the nave, and is bent in order to reach the well of the Place du Château, behind the tinman's shop. By an excess of caution, we thought we had better protect the guard-house on the platform by a separate lightning-rod, the conductor of which is connected, at the mouth of the well, with the conductor that descends from the east turret.

The conductor of the tower, and those of the telegraph, are united by a long bar of iron, which follows the whole length of the ridge of the nave. All the other large metallic surfaces are also connected together, and with the general system of these conductors. The expense of the erection amounted to about 15,000 francs (625*l.*), not including, I believe, the three wells, which were constructed by the workmen attached to the monument.

During the last seven years, it does not appear that any flash of lightning, properly so called, has struck either the building or the conductors. It almost seems that storms had become less frequent and less intense over Strasburg; but on Monday, July 10th, 1843, a very violent storm burst over the town, and the lightning twice struck the cathedral, or rather the conductor.

Some individuals pretend to have seen a globe of fire enveloping the upper conductors of the lightning-rod, and gliding rapidly along their surface; but the man employed at the telegraph, who was better placed than any one else at that moment, assures us that he could only distinguish a luminous train rushing along the conductors from the top of the pyramid to the platform where the conductor became invisible to him.

At the same moment some remarkable phenomena occurred in M. Rhein's, the tinman's shop, the position of which I have mentioned above. Seven or eight persons were assembled there: a considerable number of tin and zinc vessels were ranged on the sides; long bars of iron were resting, in an upright position, against the wall, in the corner which was nearest to one of the conductors. At the moment of the explosion, they thought they saw the lightning enter by the door, which opens on the Place, pass between the legs of the persons who were present, without, however, wounding any one, and burst in a great flame against the bars of iron, going thus directly towards one of the wells. This explosion was accompanied with a noise similar to that which would be produced on striking one of the bars with a great hammer. A minute after this first explosion another thunder-stroke occurred; the electric matter again entered the same shop; but this time they were not aware of the direction in which it came.

Some workmen of the cathedral were, at the same moment, very near the shed which shelters the mouth of the well. One of them, of an advanced age, accustomed, so to speak, to this kind of observation, distinctly observed on the pavement of the little yard behind M. Rhein's workshop, luminous trains similar to those which he often remembers to have seen passing along the walls of the tower. Although he was very near, he did not feel any shock; he could distinguish neither their direction nor their form.

This, then, is the phenomenon which produced so lively an emotion in the neighbourhood of the cathedral.

What could be the cause of this deviation, partial no doubt, but, however, in some degree contrary to laws?

In the evening, after the storm, and especially on the following day, workmen descended in our presence into all the wells. M. Klotz, the architect, and M. Wagner, a clever locksmith, who constructed the lightning-rod, examined all the conductors from below upward to the summit of the pyramid, even to the apex. I did not feel myself called upon to follow these gentlemen to the limits of their aerial peregrination; but I went high enough to be convinced with them that all the conductors were sound at the points of junction, as well as elsewhere. It was impossible to discover along their whole extent the least trace of the passage of the lightning. So far as the monument is concerned, it was not touched,—not a single piece of stone or mortar was detached.

However, the electric matter evidently arrived by the summit of the apparatus, and the quantity must have been very great. In fact, the platinum cone, which was eight centimetres (three inches) long, and about one (two-fifths of an inch) thick at its base, was melted towards the point, to a length of five or six millimetres (a quarter of an inch). The metal sank down on one side, and ran like wax which had been softened at the fire. The part thus rounded, presented, on the first day, the appearance of a small and very brilliant convex mirror. This point, together with the portion of the copper rod which supported it, has been taken down, and it will be preserved in the archives of the cathedral.

My colleague, M. Finck, professor of mathematics, warned by the first explosion, immediately looked towards the summit of the tower. He saw the second flash of lightning arrive horizontally, in order to reach the point of the lightning-rod. The zigzags of this luminous line were not very distinct, and its length appeared to him about fifty metres (fifty-five yards). The cathedral was quite separate from the clouds; no light was observed either on the conductors, or on the body of the rod, the point of which had just received the fluid in so evident a manner.

Thus, then, the electric fluid struck the

lightning-rod at its extremity, certainly in the second explosion, very probably in the first, which was much more powerful. Having arrived there, it had two paths to pursue, in order to reach the earth; one would have conducted it, almost in a straight line, into the first well of the Place du Dôme, with or without luminous appearances; the second path, longer but quite as continuous, would have led it on the opposite side into the well of the Place du Château. In fact, on this side it is that a considerable number of persons profess to have seen brushes of light upon the conductors. There it is that the extraordinary deviation, which I have pointed out, took place.

A particular circumstance seems to us readily to explain the choice of the conductor, if indeed there was no division, and especially the deviation. Behind the workshop of the tinman, on the same side as the two conductors, which unite at the mouth of the well, was collected a large quantity of lead and iron, weighing about 2,000 kilogrammes (two tons), taken from the small roofs of the nave, which, at the present time, were being covered with copper. These pieces of metal were heaped one against the other, like a pile of wood, and presented an apparent volume of about two cubic metres, (six and a half cubic feet).

Very probably some of the sheets of lead touched the conductor; but it was impossible for us to verify this fact. On our arrival, the workmen had already removed a considerable portion in order to clear the mouth of the well. Admitting the contact, we see that the great surface of extraneous metal had the power of drawing off a portion of the current from its principal direction, and directing it towards the most vicinal exterior conductors. The masses of tin, zinc, or iron, which crowded the workshop and the loft above, certainly favoured this deviation.

If contact did not take place, we must suppose that, at the moment before the explosion, all the conductors vicinal to the lightning-rod, but not connected with it, were electrized by induction. When the explosion took place, a true return shock must have been produced in a locality prepared, so to speak, in the best possible manner for a phenomenon of this kind. Further, while attaching some degree of importance to the direction of the fluid, we need not trouble ourselves about the direction in which some persons say they saw it travel; we know how very easy it is to be deceived in this point.

If, in reference to certain electric sparks, I have been induced to enter into lengthened detail, it is, first, because it seems to me that we have yet much to learn respecting thunder; it is also to show that the lightning-rod acted with success, and that the only members of the Commission yet alive, M. Fries and myself, have not to reproach ourselves with negligence in the arrangement of the different parts of the protecting apparatus. I am very desirous that M. Arago, who has rendered so much service to electro-meteorology, should take some interest in this long recital.

**ENLARGEMENT OF THE LONDON DOCKS.**—The extensive alterations making in this great emporium of shipping, wealth, and the produce of all parts of the globe, are proceeding rapidly. The splendid entrance will soon be finished, as the foundation is now nearly completed, and workmen are busily engaged in pulling down the building recently occupied by the government emigration agent, Lieutenant James Sedgwick Lean, of the royal navy, to make way for the improvements. The old entrance and the store shops on the southern side will be levelled to the ground as soon as the new buildings are so far advanced as to permit of their being demolished; on whose site will be erected a most commodious range of warehouses. The building for the commissioners, committee-room, and superintendent's offices are to be on a very large scale, and, when finished, the London Dock will be one of the finest commercial buildings in the world.

**PORTSEA ISLAND UNION WORKHOUSE.**—The tender accepted by the board of guardians amounting to 16,780*l.* has fallen into the hands of that spirited contractor, Mr. Nicholson, of Wandsworth.



## CITY IMPROVEMENTS.

At a meeting of the Common Council on the 18th instant,

Mr. R. L. Jones (the chairman of the London-bridge Approaches Committee) brought up a report from that committee, "On the state of the funds connected with the approaches to London-bridge, and for authorizing the raising of the sum of 50,000*l.* for completing the same; and for the completion of the improvement by the removal of the west block of Bank-buildings, in the vicinity of the Royal Exchange;" and said his object at present was to point out the necessity of immediately empowering the committee to direct the Controller to serve certain parties with notices with respect to premises which were required for the further improvement of the city of London, as the Act which gave the committee power would expire in August, and if immediate measures were not adopted, it would be necessary to apply again to Parliament. (Hear, hear.) He thought it was due to the committee to state, that, after a period of 20 years during which it had existed, and expended upwards of two millions of money in the erection of the bridge and the formation of its approaches, the present was the first time it had come to the Court to state any deficiency in its estimates. (Cheers.) He felt pride in asserting such a fact, the more so as he was able to shew, he trusted to the satisfaction of the Court, that no blame was imputable to the committee. What were the facts of the case? After the committee had finished the various streets which it had been intrusted with the power to form, and which constituted so noble a mass of improvements, it considered that a surplus would remain sufficient to carry out the great object of making a street from the Bank to the Post-office. The conduct of the Bank of England was, he regretted to say, in direct contrast to the liberality which there had been reason to expect from such a body, and which the Governor and Deputy-Governor several years ago had given the committee every ground for supposing would have been exercised. (Hear, hear.) It was natural to suppose that the promise then held out that improvements which in so many respects benefited that building would, to a certain extent, receive its patronage and assistance; but, instead of helping the corporation in promoting the grand design which the committee was labouring to carry out, every thing had been done by the establishment to which he alluded to shew their indifference to the exertions which had been made. (Hear.) The committee had been called upon from all quarters of the city to extend to them the vast advantages which had been already completed. The law expenses in investments became greater than had been calculated upon, and the interest upon the sums required to complete the purchases which were indispensable in effecting the improvements was what the committee had never been subjected to upon former occasions. (Hear, hear.) The necessity for improvement became every day more and more apparent. The largest item in the report related to the block of Bank-buildings, the freeholders of which were the Governors and Company of the Bank of England, who had repudiated by their illiberality the evidence of the former Governor and Deputy-Governor, Mr. Curtis and Sir J. Reid, before the House of Commons' Committee. That committee pressed upon these gentlemen the necessity which existed for giving up that block of buildings, as no buildings were to be erected on the site, and the Bank would be itself thrown open to public view by so splendid an improvement. Their answer was, that they could not think of recommending such a gift, as the Bank would be put to a very large expense in throwing open Bartholomew-lane and Threadneedle-street, but they would be liberal in their views with the corporation upon the subject. Now, the Bank had made no improvements in Bartholomew-lane or Threadneedle-street, and their liberal views amounted to an evasion of every thing like liberality. (Hear, hear.) He felt that the Court were determined to do justice to the labours, and instructions, and integrity of the committee. (Loud cheers from all parts of the Court.) (A general cry was then raised of "Move that the report be received.")

Sir J. Duke called the attention of the

chairman to the state of the eastern end of the Royal Exchange, and asked whether it was likely that the improvement which the public had frequently called for, in the throwing back of the houses in Freeman's-court, would be effected? (Hear.)

Mr. Jones said he regretted that the ground in the spot described was unfortunately out of the hands of the corporation. In fact, the ground was never in their hands. Morden College had a clause giving that institution a right of pre-emption, and it had been appropriated accordingly. It would be, indeed, a most important addition to the splendid improvement of the Royal Exchange; but the committee congratulated itself upon what it had already accomplished, and would not relax its exertion to gain every possible advantage. (Hear, hear.) He would venture to say that the ground at the eastern end of the building would be made a fine pathway 47 feet in width. (Hear, hear.)

Alderman Humphrey said, that every one in the city would be delighted to see the block of houses at the eastern end of the building removed, and he thought the committee might beneficially make the experiment of applying to the Commissioners for the Improvement of the Metropolis, who were about to wait upon her Majesty, and were to meet on Wednesday next to sign their report, to represent the fact alluded to in the proper quarter. (Hear.) A sum of money was about to be raised by a tax of 6*d.* per ton upon coals, and, as the city would be very large contributors, they had a right to expect a share of the advantages. (Hear.)

The report was then received and unanimously agreed to, and ordered to be printed.

## DESTRUCTION BY FIRE OF KING WILLIAM'S COLLEGE, ISLE OF MAN.

It is our painful duty, on the present occasion, to record the total destruction by fire of this beautiful, modern, and extensive edifice. The origin of the fire is as yet unknown, but it is ascertained to have broken out in the western wing, either in the class-rooms of the English department or in the boys' dining-room immediately below. Shortly after 2 o'clock the first alarm was given; but for many hours after this there was no fire-engine, ladder, or supply of water that could be used with any effect; and the flames, having thus unchecked progress, rapidly spread through the corridors and the entire of the vast building, including the class-rooms, the dwelling-house of the Rev. Mr. Dixon, the principal, the beautiful chapel, and the great tower, which, with the exception of the apartments of the Rev. Mr. Cumming, the vice-principal, situated in the eastern wing, were totally destroyed. The first alarm was given by two boys who were sick of the measles, separated from the other boys, and sleeping immediately over the English class-rooms, who, having experienced a strong smell of fire, gave the alarm to the principal and vice-principal, who, with their families, servants, and about 50 boys boarding at the College, were aroused from their slumbers, although, we understand, some of the servants and children of the Rev. Mr. Dixon escaped with difficulty.

His Excellency the Lieutenant-Governor, the Clerk of the Rolls, the High Bailiff, and nearly all the respectable inhabitants of Castletown and the neighbourhood, were shortly on the spot; also the company of the 6th Foot, presently stationed at Castletown, headed by their captain; and every thing that could be done was adopted; but in the absence of an engine for several hours—the essential requisite being wanted—the devouring element spread with uncontrolled fury, and every thing that could be done was to secure as much of the furniture, books, and other property as possible; but even here the want of ladders, whereby an entrance might have been effected into the upper stories, without traversing the corridors of the building, was severely felt, and much valuable property has consequently been lost, that otherwise might have been saved. The greater part of the private library of the principal, a portion of the wines, and some articles of furniture in the front rooms, were saved by great exertions; but the very valuable library of the College, containing many works of great value, and a curious collection of Bibles, from the time of Coverdale, in

upwards of 50 different languages, many unique MSS. relating to Manx ecclesiastical affairs, and the very valuable military models and plans, maps, mathematical and other instruments, many of which cannot be replaced without much labour and expense, belonging to Mr. Browne, the professor of English and Modern Literature, were completely destroyed.

The building, we understand, was insured in the Sun-office for 2,000*l.*, and Mr. Dixon's property for 2,000*l.*; but the loss to the building alone cannot be under 4,000*l.* Mr. Cumming, it appears, was uninsured. We have not been able to learn precisely, but have been given to understand, that the principal's policy is for his own property and "goods in trust," which, we suppose, will include the property of the servants, the boys, and that of the other masters in the class-rooms, in which case, if the sum were insufficient to cover the entire loss, some compensation would be awarded; the servants can especially ill afford to lose their all.

We cannot conclude these remarks without adverting to the obvious fact, that had there been an efficient fire-engine on the premises, or even in Castletown, the building could easily have been saved; instead of losing 4,000*l.* the Sun-office would probably not have lost 200*l.*; and at an expense of a few hundred pounds they might, as they ought even for their own interest, furnish an efficient engine to each of the four towns. This office draws large sums annually from this island, and we must say the paltry garden engine they have stationed in Douglas, and its slovenly and inefficient management, are any thing but creditable to an office of such respectability. The inhabitants of the four towns ought to bestir themselves in the matter; they have a practical example that in cases of fire they are absolutely without protection. Probably the other offices who do business in the island would contribute, and the inhabitants themselves might do something. What is 100*l.* laid out in such an investment, to avoid being exposed to such serious calamities?

King William's College was a modern erection. The first stone was laid by the late Lieutenant-Governor Smelt, on the 23rd of April, 1830, and it was opened in the summer of 1833. The building is partly in the early English and partly in the Elizabethan style, forming a spacious and cruciform structure, 210 feet in length from east to west, and 135 feet from north to south; from the intersection rises the embattled tower, 115 feet high, strengthened with buttresses, and surmounted by an octagonal turret, intended for an observatory, having in each of its sides an elegant and lofty window, and crowned with a parapet. The edifice cost about 6,000*l.*, of which 2,000*l.* was from the accumulated fund from property granted by Bishop Barrow in 1663, for the education of young men for the ministry in the Manx Church. From subscriptions raised chiefly in the island, 2,000*l.* was obtained, and the remaining 2,000*l.* was supplied by mortgaging the funds. The original draught of the design was furnished by Messrs. Hanson and Welsh, architects; but the execution of the works, including the alterations and additions and the design for the great tower—a beautiful specimen of masonry—were under the direction of Mr. Welsh. The contractor was the late Mr. Fitzsimmons, who, it is said, lost 1,500*l.* by the contract. The property is vested in the hands of trustees, who are the Lieutenant-Governor, the Lord Bishop, the Clerk of the Rolls, the Archdeacon, Deemster Christian, one Vicar-General, and the Attorney-General. The present number of boarders, we learn, was with the principal 37, with the vice principal 11, and the entire number attending the seminary, besides day pupils, 110.—*Morning Herald.*

NAPHTHA AND THE FIRE OFFICES.—The Imperial and other fire offices have issued a notice to their agents that naphtha or liquid gas lamps, recently introduced into manufactories and other premises, are attended with considerable hazard, and that in effecting all future insurances on such premises, a warranty must be given that these lamps are not used therein; and the agents are required to decline all insurances of premises lighted with them.—*Carlisle Patriot.*



## DESIGN FOR A MANSION.

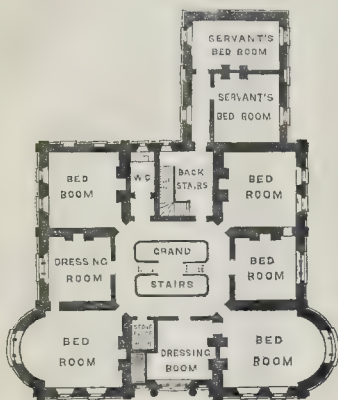


FRONT ELEVATION.

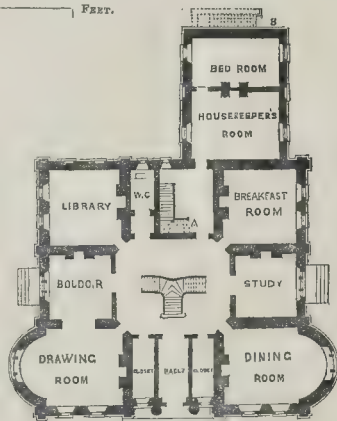


SOUTHERN ELEVATION.

10 5 0 10 20  
SCALE. FEET.



PLAN OF THE CHAMBER-STORY.



PLAN OF THE GROUND-STORY.

10 5 0 10 20 30 40 50  
SCALE. FEET.

## DESIGN FOR A MANSION IN THE PLAIN GRECIAN IONIC STYLE.

TO THE EDITOR OF THE BUILDER.

SIR,—Noticing in an early part of your valuable magazine an article headed "On Seeking Employment," and wishing myself, solely for the purpose of improvement in practical knowledge, to get employed as an architectural draughtsman under some builder extensively engaged in London, I have been induced by the success of "A. B." to send the accompanying design to you for insertion in THE BUILDER, as a specimen of my work in

drawing and designing, and to obtain the benefit of your kind advice on the subject.

I have been brought up to the study of architecture, and am well experienced in measuring, framing estimates, geometry, all kinds of architectural drawing, as well as sketching from nature; but my object is to get employed in a builder's establishment, that I may improve my knowledge of the working part of the profession; and I have no doubt, with the acquirements I possess, and salary being a secondary consideration, such a situation is attainable.

The estimated cost of the above house, built

of brick and cement, would be from 1,800*l.* to 2,000*l.*

There would be a kitchen, cellars, a pantry, a scullery, and other offices in a basement story, underneath the housekeeper's apartments breakfast-room and back-stairs; and a stone staircase leading to them from the ground-floor at letter A, and also a back entrance leading to them from outside at letter B.

The principal staircase I propose shall be lighted by an ornamented cupola in the roof, with side-lights adapted for shewing to advantage pictures hung around the gallery on the chamber-story.

BUILDER



Trusting you will find room in *THE BUILDER* to insert this design, which I have drawn to small scales for the purpose, I remain, Sir, your very obedient servant,  
January 10th, 1844. AGANTHUS.

[We think this design not discreditable to our correspondent. We should have, however, preferred it if it had contained on its ground story fewer and better apartments. A principal staircase, practice shews, is best removed to an external wall, leaving quite free the space up to it, as by such a disposition, entanglement with all doorways is avoided. Thus would be obtained a much handsomer hall, which could be lighted by a well-hole in its ceiling, leaving around it, on the one-pair story, a broad gallery. A butler's pantry near the dining-room is required; but a portion of the housekeeper's room (which is over large for the scale of the other apartments) might be cut off for that purpose; and at the same time a passage might be obtained to the adjoining bed-room, which could then be very properly assigned for use to a man-servant; or these three apartments could be arranged so as to be opposite the three windows.

We should have avoided all irregularity in

the rooms caused by cutting off their corners; deeming one of the requisites of a perfect plan to lie in making every apartment regular, even though the general form of the whole building be not so. The elevations we should re-arrange, avoiding the receding of the entablature over the principal entrance, and the forming of central piers in the different component masses of the design, which we hold to be against one of the elementary principles of taste, a chapter upon which head we propose giving hereafter. We should have avoided the introduction of a large Venetian window to an apartment so small as the dressing-room over the entrance-hall, and also as not being an article of very good taste, though now so often used. Moreover, we should have omitted the two blanked sashed-windows which flank it, perfect architectural design not allowing any parts for mere shew, but requiring the whole work to come together elegantly with every requisite, and without any such sacrifice. The chimney-shafts we should, both for effect and just operation, have liked better if they had not been paneled, but formed in some way with detached flues. We should be happy to receive another design from our obliging correspondent.—ED.]

#### VAULTING OF KING'S COLLEGE CHAPEL, CAMBRIDGE.

TO THE EDITOR OF "THE BUILDER."  
SIR,—In the article on King's College Chapel, which appeared in *THE BUILDER* for Dec. 9, it is asserted that the great key-stones of the roof "may actually be removed without endangering the safety of the vaulting."

It is scarcely feasible that the building would have been encumbered with those immense additional weights, had there not been an absolute necessity for their insertion; that such a necessity existed, will, I trust, be sufficiently proved by the following explanation of the principles on which the roof is constructed:—

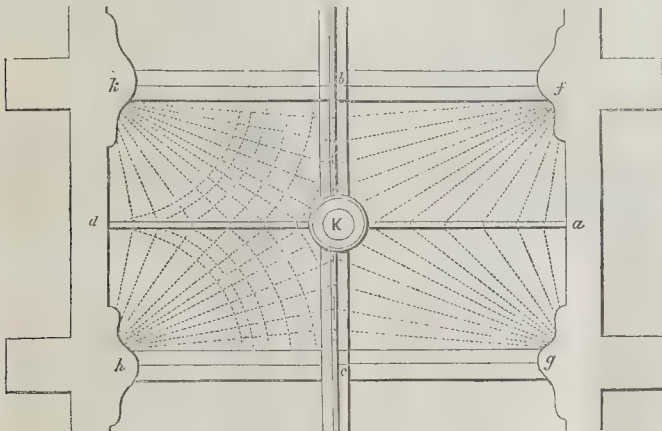


Fig. 1.

Fig. 1 represents a projection upon a horizontal plane of one compartment of the roof included between the four buttresses  $fghk$ ; and Fig. 2 represents the projection of half this compartment upon the vertical plane of one of the windows on the south side; the same letters in the two figures refer to the same points.

The rib  $bc$  runs from the east to the west end of the chapel, the stones which form it lie in the same horizontal line, and at a greater elevation from the ground, than any other part of the roof;  $K$  is the central stone of the compartment, and is the upper part of one of the ornamented drops seen from below hanging from the roof of the interior. The stones in  $aKd$  lie in an arch of which  $K$  is the keystone; it is clear that the tendency of this arch is to sink at the crown,  $K$ , and thrust down the walls at  $a$  and  $d$ . I shall proceed, then, to explain how the stones in this arch are supported; and also the stones in the rib  $bc$ ; and in the course of the explanation it will be seen that I shew how every stone in the compartment  $fghk$  is supported.

On examining the roof carefully, it will be found that the stones are placed in semi-arches in vertical planes through the buttresses; the spring of all the semi-arches in the space  $ba$  being at  $f$ , and their crowns or key-stones in

the courses  $bK$  or  $Ka$ ; this is best seen in Fig. 2. Now, any stone  $S$  in the arch  $aKd$  is

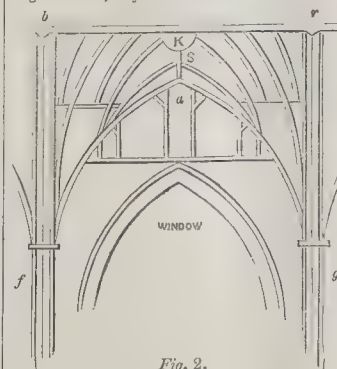


Fig. 2.

the key-stone of the two semi-arches  $Sf$  and  $Sg$ ; and the thrust of the stones in  $KS$  is propagated down the semi-arches  $Sf$  and  $Sg$ , and ultimately acts upon the buttresses at  $f$  and  $g$ ; the same is true of every stone in  $Ka$ ; likewise on the other side of  $bc$  the stones in  $Kd$  are supported by the semi-arches of which they are the key-stones, and which spring from the buttresses  $h$  and  $k$ . Again, any stone  $r$  in  $Kb$

is the key-stone of two semi-arches  $rk$  and  $rf$ , and is held in its place by the thrust in the stones in  $Kr$ ; and this thrust is propagated down the semi-arches,  $rk$  and  $rf$ , and acts ultimately upon the buttresses  $k$  and  $f$ ; the masonry of the rib  $bc$  is sufficiently heavy to prevent these semi-arches from sinking by their key-stone rising. It will be clearly seen, then, how every stone in  $bc$  and  $aKd$  is supported; it will also be seen that every other stone in the roof is sustained by being a member of a semi-arch springing from one of the buttresses, and having its key-stone in  $bc$  or  $aKd$ . The pressure of the compartments  $fghk$  upon the buttresses acts obliquely: for instance, that on  $f$  will act downwards in a line whose projection on the horizontal plane will lie towards the south-east. But the compartment east of  $fghk$  will press upon the buttress  $f$  in a line whose horizontal projection lies towards the south-west; and consequently the resultant of these pressures will act in a line whose horizontal projection runs due south. Let  $fF$  be this line (Fig. 3); this figure represents one of the buttresses. The dimensions of the buttress are so arranged that  $fF$  shall lie within the masonry and pass into the foundation within the foot of the buttress.

Fig. 3.

The resultant pressure of the roof on the walls at each of the four angles of the whole building acts obliquely, consequently instead of buttresses of the ordinary form at these four angles, towers crowned with lofty turrets are erected, of such a weight as to deflect the line of pressure of the roof, and cause it to pass into the ground through the masonry.\*

Mr. Bland, in his work on piers, arches, &c., speaking of this building says, "the key-stone, which is of great weight, is placed in the centre of every four buttresses, and is most essential, not only as a wedge, but from its great weight, locking up, as it were, the lighter parts of the roof in perfect safety against being displaced by the fortuitous pressure of any person's foot."

I am, Sir, your obedient servant,

C. J. HUTT.

Cambridge, January 16, 1844.

#### PUBLIC BATHS AT NEWARK.

WE are glad to announce that the little town of Newark is about to have erected in it public baths for the accommodation of all who may be desirous of availing themselves of the healthiness of bathing. The site chosen for the baths is within the walls of the ancient and venerable castle. To those who are unacquainted with Newark, it may not perhaps be uninteresting to add, that the Castle stood three sieges, and was the last of the king's fortresses in the north to surrender, and surrendered then only by the express command of his Majesty Charles the First, in 1646. It is recorded that one Lord Ballasye, the heroic governor of Newark Castle, communicating the king's orders for surrendering the Castle and town of Newark, Major Smith (a brave officer) urged the governor with tears to trust to God and SALLY (the name of a famous piece of ordnance in the Castle), rather than think of yielding the town to the Parliamentary forces; and also that the citizens, with the mayor at their head, beseeched the governor on their knees to disobey the king's orders for surrendering the Castle. The Crown having agreed to grant a lease of the Castle and Bowling Green, for the purpose before mentioned, in consideration of the lessees laying out a certain sum, the expense is proposed to be defrayed by subscriptions in shares of 5*l.* each, to be transferrable. We hope shortly to witness the commencement of the baths and their erection, considering, as we do, that such will be an improvement as well as an advantage to the town, which, in point of situation, with land and water carriage to all parts of the kingdom, excellent roads and well-supplied markets, yields to none in the realm.—(From a Correspondent to the Nottingham Journal.)

\* Pratt's Mathematical Principles of Mechanical Philosophy.



## Literature.

*Ecclesiastical Edifices of the Olden Time: a Series of Etchings, with Ground Plans and Fine-smiles of Hollier's Views of the Cathedral and Conventual Churches, Monasteries, Abbeys, Priories, and other Ecclesiastical Edifices of England and Wales.* By JOHN CONEY, in 2 vols. folio. London: James Bohn, 12, King William-street, Strand, 1842.

THIS work, consisting of a profusion of beautiful and boldly-executed etchings, the work of the late Mr. Coney, is one of the finest architectural productions which ever issued from the press. It is particularly valuable to all who have the care of designing architectural works, and from the large scale of the plates, their details may be easily seen, and when the sections of Gothic mouldings in their various styles come to be properly understood, the plates of these fine volumes will afford nearly enough information upon their subjects.

The following list of the edifices delineated in this work will afford valuable knowledge to those who desire to know where information upon them is to be found:—

## VOL. I.

- Dunstable Priory, Bedfordshire, 1 plate.  
 Burnham Abbey, Bucks, 1 plate.  
 Ely Cathedral, 4 plates.  
 Thorney Abbey, Cambridge, 1 plate.  
 Chester Cathedral, 2 plates.  
 Carlisle Cathedral, 1 plate.  
 St. Bees Priory, Cumberland, 1 plate.  
 Calder Abbey, Cumberland, 1 plate.  
 Holm Cultram Abbey, Cumberland, 1 plate.  
 Lanercost Priory, Cumberland, 1 plate.  
 Exeter Cathedral, 3 plates.  
 Tavistock Priory, Devon, 1 plate.  
 Crediton Collegiate Church, Devon, 1 plate.  
 Sherborne Minster, Dorset, 1 plate.  
 Wimborne Minster, Dorset, 1 plate.  
 Durham Cathedral, 3 plates.  
 Gateshead Monastery, Durham, 1 plate.  
 Finchale Priory, Durham, 1 plate.  
 St. John's Abbey, Colchester, 1 plate.  
 St. Botolph's Priory, Colchester, 1 plate.  
 Tilney Abbey, Essex, 1 plate.  
 Waltham Abbey, Essex, 2 plates.  
 Chiche Abbey, Essex, 1 plate.  
 Gloucester Cathedral, 4 plates.  
 Tewkesbury Abbey, 3 plates.  
 Lanthony Priory Gloucester, 1 plate.  
 Cirencester Abbey, Gloucester, 1 plate.  
 Winchester Cathedral, 4 plates.  
 Hospital of St. Cross, Hants, 2 plates.  
 Netley Abbey, Hants, 1 plate.  
 Rumsey Nunnery, Hants, 1 plate.  
 Beaulieu Abbey, Hants, 1 plate.  
 Christ Church Priory, Hants, 1 plate.  
 Hereford Cathedral, 4 plates.  
 Blackfriars' Monastery and Cross, Hereford, 1 plate.  
 Bromyard Collegiate Church, Herefordshire, 1 plate.  
 Collegiate Church of Leominster, Herefordshire, 1 plate.  
 St. Alban's Abbey, 3 plates.  
 Canterbury Cathedral, 4 plates.  
 St. Augustine's Monastery, Canterbury, 3 plates.  
 Rochester Cathedral, 3 plates.  
 Malling Nunnery, Kent, 1 plate.  
 Furness Abbey, Lancashire, 1 plate.  
 Cartmel Priory, Lancashire, 1 plate.  
 Leicester Abbey, 1 plate.  
 Ulverscroft Priory, Leicestershire, 1 plate.  
 Lincoln Cathedral, 5 plates.  
 Sempringham Priory, Lincolnshire, 1 plate.  
 Barling's Abbey, Lincolnshire, 1 plate.  
 Bourn Abbey, Lincolnshire, 1 plate.  
 Thornham Abbey, Lincolnshire, 1 plate.  
 Croyland Abbey, Lincolnshire, 1 plate.  
 Westminster Abbey, 4 plates.  
 Temple Church, London, 1 plate.  
 Knights Hospitallers' Priory, Clerkenwell, 1 plate.  
 St. Bartholomew's Priory, London, 1 plate.  
 Austin Friars' Monastery, London, 1 plate.  
 St. Saviour's Church, Southwark, 1 plate.  
 Tintern Abbey, Monmouthshire, 1 plate.  
 Lantony Priory, Monmouthshire, 1 plate.  
 Collegiate Church of Higham Ferrers, 1 plate.  
 Hexham Abbey, 1 plate.  
 Seals of Monasteries of the Benedictine Order, 27 plates.
- Norwich Cathedral, 2 plates.  
 Bisham Priory, Norfolk, 1 plate.  
 Castle-Acre Priory, Norfolk, 1 plate.  
 Walsingham Priory, Norfolk, 1 plate.  
 Gray Friars' Monastery, Lynn Regis, Norfolk, 1 plate.  
 Peterborough Cathedral, 4 plates.  
 Collegiate Church of Irthlingborough, Northamptonshire, 1 plate.  
 Lindisfarne Monastery, Northumberland, 1 plate.  
 Brinkburn Priory, Northumberland, 1 plate.  
 Tynemouth Priory, 1 plate.  
 Collegiate Church of Southwell, Nottinghamshire, 2 plates.  
 Newstead Abbey, Nottinghamshire, 1 plate.  
 Oxford Cathedral, 3 plates.  
 Shrewsbury Abbey, Shropshire, 1 plate.  
 Wenlock Abbey, Shropshire, 1 plate.  
 Buildwas Abbey, Shropshire, 1 plate.  
 Haghmon Abbey, Shropshire, 1 plate.  
 Hales-Owen Abbey, Shropshire, 1 plate.  
 Bristol Cathedral, Somersetshire, 3 plates.  
 Wells Cathedral, Somersetshire, 5 plates.  
 Bath Abbey, Somersetshire, 3 plates.  
 Glastonbury Monastery and Abbey, with views of Glastonbury, Somersetshire, 4 plates.  
 Litchfield Cathedral, Staffordshire, 3 plates.  
 Dudley Priory, Staffordshire, 1 plate.  
 Abbey Tower, Bury St. Edmunds, Suffolk, 1 plate.  
 Butley Priory, Suffolk, 1 plate.  
 Chichester Cathedral, Sussex, 4 plates.  
 Battle Abbey, Sussex, 1 plate.  
 Boxgrave Priory, Sussex, 1 plate.  
 Bayham Abbey, Sussex, 1 plate.  
 Collegiate Church, Bosham, Sussex, 1 plate.  
 Salisbury Cathedral, Wiltshire, 5 plates.  
 Malmesbury Monastery, Wiltshire, 3 plates.  
 Worcester Cathedral, 3 plates.  
 Evesham Abbey, Worcester, 1 plate.  
 Pershore Monastery, Worcestershire, 1 plate (containing some most remarkable buttresses).  
 Priory of Great Malvern, Worcestershire, 1 plate.  
 York Minster, 6 plates.  
 Grey Friars' Tower, Richmond, Yorkshire, 1 plate.  
 St. Agatha's Monastery, Yorkshire, 1 plate.  
 St. Mary's Abbey, York, 1 plate.  
 Whitby Abbey, Yorkshire, 2 plates.  
 Selby Abbey, Yorkshire, 1 plate.  
 Fountain's Abbey, Yorkshire, 1 plate.  
 Byland Abbey, Yorkshire, 1 plate.  
 Rivaux Abbey, Yorkshire, 1 plate.  
 Kirkstall Abbey, Yorkshire, 2 plates.  
 Bolton Priory, Yorkshire, 1 plate.  
 Ripon Cathedral, Yorkshire, 1 plate.  
 Kirkham Priory, Yorkshire, 1 plate.  
 Gisburn Priory, Yorkshire, 2 plates.  
 Bridlington Priory, Yorkshire, 1 plate.  
 Coverham Abbey, Yorkshire, 1 plate.  
 Old Malton Priory Church, Yorkshire, 1 plate.  
 Eglington Abbey, Yorkshire, 1 plate.  
 Beverley Minster, Yorkshire, 2 plates.  
 Collegiate Church of Howden, Yorkshire, 1 plate.  
 Costumes of religious bodies, 16 plates.  
 Arms of religious houses, 2 plates, 126 subjects.

The seals, arms, and costumes of the religious houses which are given in this work are particularly interesting.

## e.

## THE FOREST OF DEAN.

ALTHOUGH this noble domain forms part of the southern boundary of Herefordshire, and is in fact within a few hours' ride of most parts of it, it is, we believe, in a measure an "unknown land" to many of our readers.

Nominally belonging to the Crown, it is in reality (adopting the words of one of the Forest Commissioners) "public property," and its surface is, for the most part, devoted to the rearing of oak timber for the "wooden walls of Old England."

Interested as all must be and are in it, we may well spare a little space for some scattered notices, as well of this romantic region as of its inhabitants.

From north to south it extends no less than eight miles, and about the same distance from east to west, its boundary forming a circuit of upwards of thirty miles, and the heights within it vary from a hundred to nearly a thousand

feet. The noble timber on its surface is rivalled in value by its mineral wealth in coal and iron ore. One of the numerous seams of coal (the Coleford High Delf), of which only a comparatively small part has yet been worked, extends over no less than sixteen thousand acres; this forms part of the lowest series, the middle series extending over seven thousand.

The different seams of coal vary in thickness from one or two to six feet, and in some places attain, for a limited area, eight, ten, or even twelve feet, but are then subject to "faults," which either diminish or wholly destroy them.

In the solitudes of the forest the bittern and the other rarer British birds still find a secure asylum, having seldom other companions than the deer. In some parts a considerable distance might be traversed without meeting any human being or approaching any habitation, the interior being nearly uninhabited.

Nor does its assimilation to the wilds of Canada and here, for, like them, the forest has its "Squatter;" and it is to its internal government with regard to this race of intruders that we mean chiefly to confine the present notice.

As early as the reign of Charles II. the attention of the legislature was attracted to the keeping of the forest in all its integrity, for in the twentieth year of the reign of that monarch an Act was passed rendering invalid all future grants of land within its boundary. This Act had in later years an effect which was not contemplated at its enactment, it being held, as regarded the vast extent of encroachments which still continued to be made round the boundary of the forest, that the property being in the Crown, the ostensible owner could not recover, even from a stranger, if he once got out of possession. Thus "possession," which is popularly held as "nine points of the law," was, with regard to what was called "Forest land," the law itself—it was, in fact, "the law."

In this extraordinary state, and shut out from all legal protection, matters remained till 1838, when the Crown wholly gave up its title to about fifteen hundred acres, encroached upon in the period between the passing of the Act of Charles II. and the year 1787. It also abandoned its title to a tract of about six hundred acres, encroached upon subsequent to the last-named period, on favourable conditions, proportionate to the length of occupation of its numerous possessors, leaving about twenty-three thousand acres devoted to public uses, of which by much the larger portion is under enclosure for timber.

The anomalous state of the population cannot be said to have ended with the setting at rest the feuds regarding the right of property, nearly all the tract within the Forest boundary being extra-parochial, and county rates, therefore, never collected, no constables appointed, and the destitute poor, sick, maimed, and aged left unprovided for.

It was in July, 1842, that provision was first made in the latter respect, an Act being then passed by which the Poor Laws were for the first time extended over this vast tract of land to a most industrious and deserving population, nearly ten thousand in number.

## INCORPORATED SOCIETY FOR BUILDING, ENLARGING, &amp;c., CHURCHES AND CHAPELS.

ON Monday last, a meeting of this society was held at their chambers in St. Martin's-place, Trafalgar-square. His Grace the Archbishop of Canterbury was in the chair. There was also a very good attendance of members, amongst whom were the Lord Bishops of London and Landaff, Sir R. H. Inglis, Bart., M.P., the Very Rev. the Dean of Chichester; the Rev. Drs. Spry, J. Jennings, and Benjamin Harrison; and Messrs. James Cocks, N. Connop, J. S. Salt, W. Davis, E. Baddeley, Powell, and W. Cotton.

After some preliminary business, grants of money were voted towards building churches at Seacroft, in the parish of Whitehurst, Yorkshire; at the Link, in the parish of Leigh, Worcestershire; at Blaydon, in the parish of Ryton and Wilmston, Durham; at Thorpe Acre, Peterborough; at Great Wysley, in the parish of Cannock, Staffordshire, and at The Groves, in the parish of Sutton, near Hull, Yorkshire; also, towards enlarging, by rebuilding, the church at Bidnath, Staffordshire; and towards enlarging and otherwise increas-

## VOL. II.

Wymondham Abbey, Norfolk, 1 plate.



ing the accommodation in existing churches at Usk, Monmouthshire; Hunmanby, Yorkshire; Spinnall, Warwickshire; Lewes, St. Ann; Buckley, in the parish of Hawarden, and Stoke St. Gregory, Somersetshire.

The above-named 11 parishes contain a population of 34,831 souls, and possess church accommodation in 17 churches and chapels for only 7,611 persons, including 2,149 free seats, of which provision of church accommodation 3,826 sittings will be added, by the erection of the seven new churches, and the rebuilding, enlarging, and otherwise increasing the sittings in several existing churches and chapels; of this additional accommodation 2,942 will be free and unappropriated sittings.

The committee next examined the certificates relating to the completion of three new churches and chapels, and of the increase of accommodation in seven existing churches and chapels; and orders was issued for the trustees to pay over to the treasurer the sum awarded in each case.

It should be remarked here that the population of the 10 parishes just alluded to is 85,115 persons, for whom church accommodation to the extent of only 7,729 sittings was provided previously to the execution of the works now certified as completed; of that number not more than 2,580 were free; the number of seats added to the church room before provided is 3,796, of these 2,560 are free and unappropriated.

Since the committee last met the society has lost a valuable officer in the late Rev. Mr. Rodber, M.A., who had been for many years the secretary to the institution.

The Rev. Thomas Bowdler has been appointed to succeed him.

#### CHURCH BUILDING INTELLIGENCE.

**Heversham Church.**—This fine old structure has been just repaired and restored by means of the liberal contributions of the principal persons connected with the parish. A dreadful conflagration in the beginning of the reign of James I. destroyed the north aisle, and did much damage to the nave and south aisle. The north aisle was consequently rebuilt in a style unsuitable to the original plan, and both this and the patchwork which they made of the rest was covered with a thick coat of whitewash. This has all been removed, the walls stone-finished, capitals added to the rude columns of the north aisle in proportion to their diameters, the square windows in the north clerestory replaced by new after the model and originals in the south. The beautiful south arcade of the nave, which is of the 12th century, has been restored, and the bold and elegant works of the chancel, which is of the 15th century, have been laid open in the original rich colour of native stone. The front of the gallery at the west-end has been brought into harmony with the rest of the building. But, above all, the large east-window, which is one of no common elegance, and a most interesting specimen of the transition from the decorated to the perpendicular style, has been filled with stained glass of wonderful richness and beauty, [so as quite to match the best ancient specimens], by Mr. Warrington, of London. The five lower bays contain the figures of our Lord and the Evangelists, under rich canopies. In the compartments above are the figures of St. Peter and St. Paul, and in the central that of the Virgin Mary, to whom the church is dedicated. The rest contain various most appropriate emblems. The effect of the whole is very striking; and the beauty and simplicity of the figures, and the harmony of the colouring, by which the richness of it is at once sobered down, and yet displayed to the utmost advantage, cannot be appreciated but by an eye-witness. Mr. Warrington may well be proud of his work. The fine old chancel, with its roof, recalling forcibly to mind, on a small scale, that of the nave of Ely Cathedral, is now filled with a mellow light, which adds a deep solemnity to its architectural features. Thus, this church has become one of the most interesting objects of our neighbourhood, and doubtless will attract the notice of many of our summer visitants, and tell them that the north will not quietly yield to the south the palm of good taste and good spirit.

#### RAILWAY INTELLIGENCE.

**Hull and Beverley Railway.**—An application will, it is said, be made in the session of 1845, under the auspices of the Manchester, Leeds, and Hull Associated Company, for an Act to make a railway from Hull to Beverley.

Glass windows have been introduced in the second-class carriages of the North Midland, and the Glasgow and Greenock Railway, as had previously been done on the Manchester and Leeds, and on all the Belgian lines. We should like to see the same thing done on the London and Birmingham, the Midland Counties and the Hull and Selby lines.

#### GERMAN RAILWAYS.

The following table of the German railways now open is taken from the *Allgemeine Zeitung*. It gives the length in miles of each, with the number of passengers for the month of September, and for the first nine months of the year:—

Name.	Length.	Passen. in Sept.	Passen. in 9 months.
Linz—Budweis .....	77½	2,195	13,104
Linz—Gmunden .....	42½	16,994	105,720
Ferdinand's North Road .....	187½	68,705	502,112
Vienne—Glognitz .....	46	166,543	1,025,353
Munich—Augsburg .....	37½	23,876	159,285
Nurnburg—Furth .....	33	42,761	322,709
Frankfort—Wiesbaden .....	26½	100,902	614,342
Carlsruhe—Manheim .....	42½	90,452	606,847
Hamburg—Bergedorf .....	12	23,438	163,109
Berlin—Anhalt .....	93½	37,430	262,146
Berlin—Potsdam .....	16	45,905	359,393
Berlin—Stettin .....	82½	29,542	170,241
Berlin—Frankfort .....	49½	23,965	189,479
Breslau—Oppeln .....	49½	25,170	181,544
Leipzig—Altenburg .....	24	23,008	130,372
Leipzig—Dresden .....	71½	47,835	315,913
Magdeburg—Leipzig .....	67½	73,391	478,904
Magdeburg—Halberstadt .....	35½	19,563	59,542
Brunswick—Oschersleben .....	59	37,492	253,864
Dusseldorf—Elberfeld .....	16	33,415	212,403
Cologne—Aachen .....	43	33,953	217,843

Total length, 1,083 miles.

The following railways are in progress:—From Carlsruhe to Kehl, to be finished in April; also one from Kehl to Basle. When this is completed, there will be a direct communication from Ostend to Switzerland.

From Stettin to Stargard.

From Berlin to Hamburg.

From Frankfort on the Oder to Breslau in Silesia.

From Oppeln in Silesia to the Austrian frontier; and another in continuation to Olmutz in Moravia.

From Frankfort to Posen.

From Posen to Konigsberg—a distance exceeding 200 miles.

The whole of these lines will extend to a length of 700 or 800 miles.

A line through Wirtemberg and Bavaria.

One from Bavaria to Dresden.

Lines from the French territory to the Maine, from Cassel to Berlin, and from Berlin to Dresden.

These will extend to a further length of 800 or 1,000 miles. The surveys have been made, and it is supposed that they will all be finished in six or eight years, if not earlier.

It may not perhaps be out of place here to remark some peculiarities in the German railways:—

1st. A great number of them have been undertaken either directly at the expense of the state, or upon security being given by the state for 3 per cent. interest on the capital invested. To prevent jobbing in railway shares, in most German states a law has been enacted that 10 per cent. of the sum must be paid forth with after subscribing. Yet so great seems the spirit of speculation to be, that some months ago, when the railway from Dresden to — was resolved upon, 5,000,000 dollars (nearly 900,000£) were subscribed in two days.

2nd. German railways pay better than the English ones. It is said that two yield 15 per cent. clear profit, some others from 7 to 10 per cent., and none has begun with less than 4 per cent. This may be owing to the rates of German railways being proportionally lower than those of Britain, and the want of good means of communication otherwise.

3rd. The propensity to travel for amusement is greater among the Germans than among any other people.

#### ABERGAVENNY IRON TRADE.

NOTWITHSTANDING the daily reports which appear of the progressive improvement going on in the northern manufacturing districts, we are not able to add that the cheering influence has had any effect upon the demand for iron, which branch of trade remains, we regret to understand, in an almost torpid state. A few months back, it is true, a slight improvement was perceptible, which, in accordance with former experience of recovery from a state of depression, was put down as a commencement of better times; visions of prosperity, at no very distant period, once more flitted across the minds of many individuals inhabiting the vast iron district, and dependent upon its progress for a subsistence; but visions have vanished, and despair again broods over the district. Yet, from being situated in a position which has enabled us to watch for a great number of years the progress and vicissitudes of the iron-trade, during which period two or three depressions have occurred, whilst on the other hand the most unexampled prosperity has followed, we are not amongst those who would despond and not hope to see even in this important branch of our manufactures an improvement of a permanent nature, and that too very shortly. It is an established and well-known fact that the iron-trade generally ranks amongst the last to feel the effect of depression, which was evinced prior to the stagnation at present existing, from the circumstance that during the year 1839 and part of 1840, when the cotton and woollen branches were suffering to an unknown extent, the mineral district was in its best days, and the supply of iron was nothing like equal to the demand. Again it has, in most instances, proved that the first-named branches, after recovery from inaction, have been for several months, and in one or more periods for a year or so, participating in returned prosperity, whilst the iron trade has remained depressed, and has further required longer time to enter within the pale of improvement. Our hopes are grounded on the above facts, and we firmly believe the anticipation would, in all probability, be much sooner realized, did Government, by making reasonable treaties with foreign Powers, induce them to rescind their lately made tariffs, which have, in some measure, tended to lay prostrate one of the most vital and important manufacturing commodities of this great empire.—*Hereford Times.*

#### SCIENCE OF ANCIENT ARCHES, AND DEFECTS OF MODERN ARCHES.

*Of the Faulty Modern English Method of covering over the External Apertures of Edifices, and of the Destruction of Property to which this Fault Leads.*

ANOTHER cause of the vast inferiority of modern English edifices, particularly of private edifices, is the modern method of covering over their external apertures; the author sometimes goes through the streets of London, and becomes worked up into a fit of melancholy nervousness, at observing such a multitude of structures, literally dropping to pieces from fractures in the arches or other coverings of their external openings; whether built by common bricklayers, or by masons, or by surveyors, by jobbing speculators, or by wealthy bankers, little difference is to be found. As a professional man, the author feels humbled and more sunk into littleness. An incredible number of our edifices are in this condition; nor indeed is the difference very great, where pier is erected over pier, and window over window, a property of construction often lost sight of.

If those who have the conducting of our buildings will not take other and more proper means, one could almost wish resort were had, to the old-fashioned unsightly method, of supporting the window-arches by wooden framework; for however settled and out of level may be the brickwork of old houses with external wooden frames, their arches are comparatively seldom fractured or dropped.

But perhaps the most scandalous instance of modern ignorance, or culpable imprudence, is the covering over of the apertures of structures, otherwise good, with an arrangement of bricks, possessing none of the properties of an arch. Some call the





brickwork so placed, a French arch; the author is unacquainted with any name for it; and were he disposed to give it one, it might be no-arch or flaw-wall.

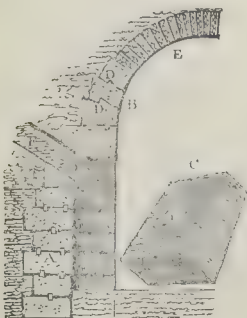
Almost all our new buildings, which are intended to have their sins hidden by external plaster, are endowed with this kind of malformation; even over Venetian windows eight or ten feet wide, the same silly freak is repeated; sometimes these pieces of brickwork, are set in Parker's cement, but are even then little better. The truth is, they are un-geometrically absurd; they depend upon nothing but the tenacity of the cement, or the violent friction of the bricks one against another; even if they otherwise escape fracture, the slightest settlement at the foundation is sufficient to destroy the whole of them in a building.

When the author was a youth, he first observed a whole row of houses being erected, with fifty of these sham arches; he imagined at the time, that they might be some new scientific discovery in construction; but passing the same houses a year afterwards, he found that thirty of them were hideously cracked and displaced, although they had been coloured to appear like cut radiated gauged arches.

When a review is taken of the works of the Egyptians and Greeks, and of the care which they exhibit in the spanning of apertures with masses of solid material next to eternal,—when we behold the advances in science exhibited by the architecture of the Romans, and behold that after two thousand years arches of even contemptible materials are still firm and free from flaw,—and again when we lose ourselves in admiration of the still more economical, safe, and tasteful arches of the middle ages,—we find that down to our own times, anxious care if not refined science of the very first quality which the respective ages afforded, always presided in its most advanced state over the practice of building, and that it ever employed a chief part of its ability in covering over the apertures of buildings; we thence become the more surprised that at the present day, England, London its capital, the capital of the world's wealth, should be the seat of the most reckless modes of structure, caused by the corruption and inattention which have at once taken possession of the whole building art, and particularly in the use of pseudo-arches; a fact too the more remarkable, from England at the present day possessing literary and graphic works upon architecture, an immeasurable deal more illustrious than were possessed by any former age, or are now possessed by any other nation.

In order to exhibit the more visibly ancient care and modern inferiority in this particular, the author brings together a few of the modes followed in times past, the meanest of which is as honourable as the frequent abuse whereof he complains is dishonourable,—an abuse which has rendered the church, the palace, the hospital, the public hall, and many other public buildings, crazy alike with the meanest and most obscure private dwelling.

No. 1.



B. Lower part of the Vaulting, formed of three courses of travertine stone voussoirs, joggled together.

C. View of one of the stone Voussoirs, drawn to a larger scale.

D. D. Joggles in the form of wedges, rising from the upper side of one Voussoir into the under side of the Voussoir immediately above it, so as to prevent one archstone from sliding upon another.

The first example here given is from a Roman sepulchre upon the Appian Way, and exhibits not only archstones of a proper wedge shape, but with a curious invention, the

result of great care and skill, by which one course of the vaulting is prevented from sliding upon another: it much resembles the joggle-joints made use of in the pendent parts of a modern stone architrave.

The second example is taken from the abutments of an arch over the doorway of another Roman sepulchre, also upon the Appian Way, and exhibits even an advance in care and skill.

The third example (probably of later date), is perhaps the earliest existing instance of a curious mode of preventing the Voussoirs of level stone architraves or lintels from settling downwardly, which became prevalent in various parts of Europe during the middle ages: it is from Diocletian's palace at Spalato, in Dalmatia, which has so often been referred to as exhibiting some germs of the peculiar ornaments which afterwards became prevalent in the Romanesque, Norman, or Byzantine style of architecture; and the gradual western spread of this same method, till it at length reached England, seems almost to furnish another argument for the Oriental origin of some particular parts at least of Gothic architecture.

The fourth example is taken from the lower story of the reputed tomb of Theodoric, at Ravenna, and exhibits a semi-circular arch with its Voussoirs joggled or refracted as those of the third example.

The fifth example is taken from the upper part of the reputed tomb of Theodoric, at Ravenna, and is similar to the third example, but displays double precaution.

No. 6.



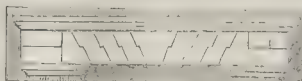
The sixth example is taken from the Transom of the Norman work of the Western doorway of Rochester Cathedral.

No. 7.



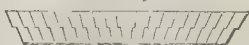
The seventh example is from the mantel of a fire-place in Edlingham Castle, Northumberland.

No. 8.



The eighth example is from the mantel of a fire-place in Conisborough Castle, Kent, and is exactly similar to that at Diocletian's Palace shown in the third example.\*

No. 9.



The ninth example from the Gate of the Alhambra is copied from the magnificent Spanish Work published at Madrid, A.D. 1804, entitled "Antigüedades Arabes de España." There is even below this arch another of the Moresco horse-shoe shape: and Mr. Murphy gives two instances of the same kind of construction in the first plate of his superb work on the Church of Batalah.

The tenth and eleventh examples are from

\* The immediately preceding three specimens were kindly communicated to the author by W. Twopenny, Esq., the eminent architectural antiquary.

the fifth chapter of the fourth book of Sebastian Serlio's "Opere d'Architettura," and are both very excellent: the following is their author's description of them (with the ancient orthography preserved):—

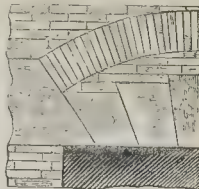
"Et perche la maggior parte de' supercilli, o architravi che dir vogliamo, che sono posti sopra alcune porte, ouero botteghe, per la larghezza dell' apertura se la pietra non è di buonissima grossezza non puo resistere al peso, & per questo in processo di tempo si uiene a rompere, si come in moltissimi luoghi si puo uedere; si potrà per gran distanza che si sia, pur che le spalle dalle bande siano forti, far tal cosa di pezzi, nel modo qui disotto in due modi designato, che indubitatamente tal opera sarà fortissima;" but experience will withhold the reader from following Serlio's further observation, "e quanto il carico disopra sarà più grande l'opera andera a maggior perpetuità."

The twelfth example is taken from Mylne's work of Blackfriars' Bridge, London, and exhibits an excellent and economical piece of construction more applicable to ordinary cases than any of the preceding examples: in this example the joggles consist each of a cubic foot of hard stone. In small works copper plugs would be more proper, from requiring the removal of less of the substance of the arch-stones in order to admit the joggles.

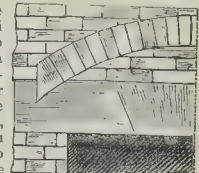
It is hardly necessary to observe that whatever ingenuity is displayed by each of the above examples, the Gothic architects made still greater advances in the science of constructing arches, for their pointed arches, as has been already observed, were formed without any of their parts being in jeopardy, and that they therefore needed no other means for preventing their voussoirs slipping from each other; whereas the pseudo-arches have none of their parts which are out of jeopardy. Another excellence of the pointed arches is, that they may be formed well of such small stones as to be scarcely either curved or wedged in form; and it is probable that the workman, by narrowly observing the natural inaccuracy and oblique angles of the blocks of stone as roughly quarried, was enabled to shape them to his purpose without any waste whatever; whereas whoever knows any thing of modern masonry, is well aware of the enormous consumption both of material and labour necessary for the production of the stones of a modern arch, or even of a piece of plain square masonry.

There is yet another method of forming arches which is indeed still practised in masonry: it consists in joining by an elbow to each voussoir a portion of the neighbouring horizontal course of the work. At first sight this method appears to be more excellent than any other; but observation upon its practical effect will tend considerably to lower that high estimate; as the angle of the elbow will not yield, irregular settlement will cause the horizontal parts to fracture from the radial parts of the voussoirs; specimens of this mode of fracture are to be seen at the "London Institution," Moorfields, which stands on a foundation so swampy, that its side colonnades and portals have settled away from the main building, although they have been once rebuilt on the same account. In the northern gate of St. Bartholomew's Hospital, London, there

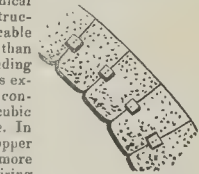
No. 10.



No. 11.



No. 12.





are examples of the same kind of fracture; and even at the side of the north portal of St. Paul's Cathedral there are in the small apertures which light the crypt, some specimens of similar rupture; in the last case the arches have above them an altitude of one hundred feet of solid masonry, and a quick sand below them. It must be confessed that the rustic channels of arches wrought in this form have a beautiful effect.

When a moderate estimate is made of the number of arches and pseudo-arches in the metropolis, which are broken from carelessness and inattention in their structure, it appears that there cannot be less than 500,000 of them; many of them from immediate fracture require repair as soon as formed, many more of them lead sooner or later to very extensive general repairs of the buildings which they should have upheld; but even considering that in their broken condition they on an average go twenty years before they are repaired, so that only 25,000 of them are repaired in any one year, and that they lead to an expense of only ten shillings each for their repair, it appears that the sum of 12,500*l.* is annually spent in the mere repair of that work which without one shilling further outlay at first, but by the mere exercise of common discretion, might have been wholly saved: such an outlay, well applied, might annually enrich the metropolis with an additional church such as the beautiful little new structure at Forty Hill, near Enfield, but something larger; and a hundred years of such judicious useful and tasteful economy, might double the churches of the metropolis.\*

But without instances be given, few will believe that the mischiefs of this fault are such as the author represents, and the evil may consequently perhaps be perpetuated, the author feels himself compelled to arm his observations with real facts: with great pleasure he would have concealed these instances, but concealing them, the mischief would become greater and greater; whereas in performing the unpleasant duty of directing attention to them, he flatters himself that no repetition of such severity will require to be made: and in order to shew that the fault is rather the result of general bad system than of individual incapacity, the instances given are as much varied as possible, and are by men of all degrees of repute, and they are confined to only a few instances of Public Buildings.

First, then, the New Palace at Piccadilly contains many broken window-heads, both in the original building, and in the subsequent additions to it; secondly, St. Bartholomew's Hospital, London, possesses only about fifty of them, while a plastered metropolitan hospital, erected only a few years ago, contains more than fourscore of them; thirdly, of the twenty-four doorways and lower windows of the new church at Bryanston-square, London, eighteen of them have their stone architrave-lintels broken; fourthly, of the ten lower windows of St. Mark's Church, at Clerkenwell, not one of their heads has escaped fracture; fifthly, of sixty windows of the new buildings in the Middle Temple, London, fifteen are broken; and sixthly, of seventy-one stone window-heads

\* For those who are curious to know how such a calculation could be formed, the following particulars are subjoined of the fractured window-heads in some of the streets in which the author reckoned their number: these include only such as are in the principal fronts of the houses from the ground upwards; to them must therefore be added those in the basement stories, in the backs, in the interior, and in the other parts of the houses—

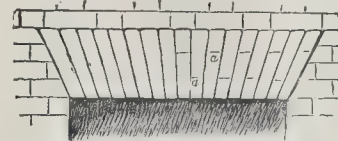
Battle Bridge	22
Bagnigge Wells Road	83
New Road	171
Great Surrey Street	240
Westminster Road	108
Circus, St. George's Roads	20
Skinners Street	33
Holborn	175
High-street, St. Giles's	13
Broad-street, St. Giles's	36
Tottenham Court Road	92
Compton Street, Burton Crescent, containing only thirty-five houses	45
Regent-street, although coloured and repainted on an average every three years	250

Total taken on the same day in only thirteen streets, 1269. From the above, it appears that in those streets which are the newest, and are covered with stucco, and have their constantly-recurring fractures stopped the oftener, there is a far greater proportion of fracture than is to be found in older streets, however ill-built they may be; thus Tottenham-court-road, which is principally of naked brick-work, and is one of the very meanest-built in the metropolis, does not contain two-fifths of the fractures subsisting in Regent-street between its periodical whitewashings, although in number of houses they are not greatly different: taking into account the more frequent repairs of Regent-street, the balance of superiority will be seven-fold against it, although it is all pretended to be architecture. These mischiefs are independent of those resulting from the shrinking and subsidence of breast-summers, which have in some cases crippled the whole walls.

to the new Westminster Hospital, sixty-one are fractured. It is useless to pursue the inquiry any farther; of modern private building, it is sufficient to say, that in the new houses alone which have within the last four or five years sprung up in the neighbourhood of the new London Bridge, there are already one hundred and fifty fractured window-heads, some of them in desperate condition, although most of these houses are built at great expense.

The author has had the flat external arches of various brick buildings erected under his direction prevented from fracturing or dropping by means of cradle-bars of wrought-iron placed invisibly below the arch-soffits, especially where he has suspected any uncertainty of foundation; and in all the buildings in which he has made the application, not the slightest symptom of defect has occurred; emboldened by this success, he feels greatly disposed to follow the same method, in all brick buildings whatsoever. The universal fracturing of modern buildings is certainly an unadulterated disgrace to us as a profession.

Gauged arches, that is, arches of cut and rubbed bricks, are of all things used in building the least capable of duration, and of the resistance of fracture: made of the softest, and therefore of the worst possible bricks, the soffit or under-side of the arch being usually



a. Cross lines merely drawn on the surface of the arch.

only four inches thick, the bricks carelessly jarred away except in front, and the joints not half filled with mortar, and that mortar of no durable quality, they hardly bear their own weight: they should upon every possible occasion be discarded. But not so those arches which are used in the counties where the best white bricks are made: they are as excellent and commendable in every respect as those of London are bad and absurd; the arches alluded to are composed of very long, hard, and fine white bricks, burnt of a wedge-shape; these are not shattered by the process of cutting, and require little besides grinding to a perfect surface; they do not lose their hard outward crust for a porous texture, while, from their considerable length and wedge-like upward increase, they never from any ordinary circumstance slip or fracture; and in colour, and perfection of surface and joint, they almost resemble the finest marble, while they are in this climate more durable than marble. Surely, if the same method were universally adopted, less first cost would be incurred than by the use of the present pieces of mutilated brickwork misnamed gauged arches.

It would be well, if in an amended Building Act, the external apertures of buildings were required (with some exceptions) to be made of long ledges of white or yellow brick, or of the substance of clinkers, or of that of Mahm paving-bricks. And external arches would be still more secure from fracture and settlement if two copper plugs were inserted in every arch-joint.—*From Essay on the Decline of Excellence, &c., of Modern English Buildings.* By Alfred Bartholomew, Esq., F.A.S., Architect, Secretary to the Free-Masons of the Church.

HOUSES ABROAD AS WELL AS AT HOME FALL.—According to a letter in the *Journal de Francfort* from Meurs, in Prussia, a short time ago, a house which was being built about a quarter of a league from the town suddenly fell down while the workmen were putting on the framework of the roof. Thirteen men were at the time employed as masons and carpenters about the building, and all of them were buried in the ruins. A thousand men came from all parts to aid in their release, but, although these all laboured incessantly, it was not until twelve hours afterwards that the tenth and last dead body was recovered from the fatal pile. Five of these were fathers of families, and have left widows, with, between them, 25 children. The other three were not dead, but so dreadfully injured that little hopes are entertained of their recovery.

## MONUMENT TO THE REV. DR. WATTS.

On the 13th inst. a public meeting was held at the King's Head, Poultry, for the purpose of considering and adopting measures for erecting a public monument to the memory of the late Dr. Isaac Watts, in the new cemetery at Abney Park, Newington, the suggestion having arisen from the circumstance of the house at Newington which this eminent divine occupied for some years immediately previous to his decease (Nov. 20, 1748) having lately been taken down for the purposes of the cemetery. Mr. W. Alers Hankey, the banker, presided, and in stating the object of the meeting, expressed his conviction that the design of erecting a suitable monument to the memory of the late Dr. Watts, would, even at this distant day, be hailed with sincere approbation by, and receive the cordial support of, the religious public of every denomination, the episcopalian as well as the dissenter. It were needless at this day to expatiate on the piety, the learning, the talents, and the zeal of this truly eminent man, seeing that his works were still universally read and admired, and that they were even at this time looked upon as the best and most engaging media through which religious and moral instruction of the highest order could be imparted to the mind of youth. His religious poetry, especially, from its pleasing simplicity, at once attracted the attention of the youthful mind, and, once read, became indelibly fixed in his memory and thoughts, and indeed often served as a moral guide to his actions in after-life. After some further observations, the chairman concluded by expressing his cordial concurrence in the object of the meeting, and recommending its immediate adoption. The Rev. Dr. Freeman, Rev. Messrs. Sharman and Smith, Dr. Kemps, and others then addressed the meeting. Resolutions were agreed to, and a committee was appointed to carry into effect the proposed design. A subscription in aid was commenced, and, after a vote of thanks to the chairman, the meeting separated.

## BAIL COURT.

(In Banco, before Mr. Justice WILLIAMS.)

## ST. MAGNUS CHURCH, LONDON-BRIDGE.

THE QUEEN V. THE CORPORATION OF LONDON.

Mr. KELLY applied to the Court for a rule, calling upon the Mayor, commonalty, and citizens of the city of London, to shew cause why a *mandamus* should not issue, commanding them to pay to the parish officers of St. Magnus, London-bridge, and St. Margaret, New Fish-street, the arrears of an annuity of 8*l.*, which are payable to those parishes, and which are charged upon what are called the Bridge-house Estates. It appeared from the statement of the learned counsel, that in the great fire of 1666 the church of St. Magnus was destroyed, and that the church of St. Margaret, which was then close to that of St. Magnus, shared the same fate. Instead of the two churches which had been destroyed one was built; the two parishes were united by Act of Parliament, and the new church became the parish church of the united parishes. This was the state of affairs until the second year of the reign of George III., when it became necessary to improve the approaches to old London-bridge as well as the bridge itself, and to make a new footway on a level with the new balustrade. The church at that time had two towers at the north and south ends, and also a piece of land, which was used for interment. For the purposes of the proposed improvements it became necessary to take the land and the two towers, as well as a passage under one of them, and for the injury done and loss sustained by the parish, the Act of Parliament provided that the corporation should pay them for ever an annuity of 13*l.*, to be charged upon all the manors, lands, tenements, &c., of the corporation, commonly called the Bridge-house Estates. Of the sum thus awarded by the Act, 5*l.* were to be paid to the rector, and about this there was no question at present. The remaining 8*l.* were to be paid to the churchwardens for the sustentation of the works and ornaments of the church. The first payment of the annuity was appointed by the Act for Michaelmas, 1762, and the annuity had been regularly paid from that period until 1832, when the officers of the corporation refused to pay the annuity any longer, for considerations arising out of the following circumstances:—Under the Acts of Parliament for the building of new London-bridge, it became necessary to take a part of the new churchyard for the purposes of the new approaches, and the corporation were obliged to provide the parish with other ground instead. Several "sub-arrangements" were made, with a



view to carrying this arrangement into effect, but the learned counsel said that he thought it unnecessary to enter into the details of those transactions upon the present occasion. In part-performance of the liability which was imposed upon the corporation for the benefit of the parish, the corporation assigned for the use of the parish the very piece of ground which the corporation itself had upon the former occasion taken from the parish. The land was taken possession of by the parish officers, and the corporation allege as an excuse for the non-payment of the 8*l.* a year, that as the parish had now got the land in reference to which the corporation had been obliged to pay the annuity, they would no longer be compelled to pay the annuity itself.

Mr. Justice Williams inquired how it was that the parish authorities had for so long a time acquiesced in the refusal of the corporation?

Mr. Kelly said that there had been any acquiescence in fact. It was very difficult to compel such a body as the corporation of London to comply with any request. There had, in fact, been a great number of applications to the corporation, and several attempts to induce them peaceably to pay the arrears, as the sum in question was so small and the costs of proceeding at law so great, that nothing but an imperative sense of duty could induce the parish authorities to adopt legal proceedings. The negotiations had been for a long time going on, and it was only very lately that such a refusal had been given as would support an application like the present. The claim was at last brought before the Committee of the Bridge-house Estates, and they came to a resolution not to pay the money; but even if the officers of the parish had been guilty of *laches*, he (Mr. Kelly) submitted that it was not the neglect of one or two sets of churchwardens which could have the effect of taking away the rights of the parish. The money was due to the public of the parish, and was applicable to public parochial purposes, and a fresh instalment became due every year. There was, therefore, no *laches* in fact, and even if there had been, the *laches* could not prejudice the rights of the parish.

The application was granted.

### Miscellaneous.

**FINE ARTS.**—A paragraph found its way into circulation a few days ago, respecting some additions which have recently been made to the Print-room of the British Museum. As some inaccuracies were contained in the paragraph alluded to, it may be as well to lay before the public a more correct statement of the circumstances. Since the appointment of Mr. José to the keepership of the collection of prints and drawings in the British Museum, not only have great and very important additions been made to it, but the whole has lately been removed to a room built expressly for the purpose, and nearly all the prints and drawings have been arranged and placed in magnificent portfolios. The more recent acquisitions alluded to above, are a most perfect collection of the works of Raffaele Morghen, consisting of the various etchings, unfinished and finished proofs, which he retained for his own use, and which, after his decease, passed into the possession of Signor Bardi, of Florence. From him they were purchased by Messrs. Colnaghi and Co., of Pall Mall East (not Messrs. Colnaghi and Puckle, of Cockspur street, as erroneously stated), and sold by them to the Trustees of the British Museum for 1,575*l.* The etchings by Rembrandt, recently purchased from Messrs. Smith, of Lisle-street, consisted chiefly of prints of somewhat minor importance, but still available for all artistic purposes. These have been added to a second collection of that artist's works, which has lately been judiciously formed in order to obviate any possibility of injury happening to the magnificent collection of Rembrandt's etchings already there, which has, under Mr. José's auspices, become, instead of the third or fourth, undoubtedly the first collection in Europe. But among the prints furnished by Messrs. Smith are some of very considerable importance, of which may be mentioned unique and undescribed early states of Rembrandt's portraits of Copppoli the writing-master, of Vander Linden, and some of his landscapes, together with many very important prints by early German and Dutch masters, several curious early mezzotints, and some fine engravings by Faithorn and Hollar. —*Morning Herald.*

Sir Thomas G. Cullum, Bart., purchased the estate of Hanstead Lodge, near Bury on Saturday week, for 10,650*l.*, it being just a century that day since it passed out of the hands of his ancestors. —*Maidstone Journal.*

**IMPROVEMENTS OF THE MINT IN THE BOROUGH.**—The long contemplated improvements in that densely populated *localité*—the Mint in Southwark, are now, it would seem, at once to take place. The same plan for a new street, which was approved of at a meeting held at the Town Hall, on September 17, 1840, designed by Mr. Attischocks, the surveyor, is to undergo little or no modification or alteration. It runs in a slightly curved line from Blackman-street, St. George the Martyr, and joins Charlotte-street, Christchurch, thus cutting through the very heart of the miserable dens and those hotbeds of crime in the Borough Mint. The line will intersect Harrow-street, Red-cross-street, Duke-street, and King-street, embracing Mint-square, and widening Queen-street, Southwark Bridge-road, to upwards of three times its present width. After crossing the Southwark Bridge-road it leaves a portion on the north of Norfolk-street standing, and quitting it at Pavious's-alley, intersects Prince's-street and crosses Gravel-lane into Charlotte-street, only a corner of which will have to come down. The whole extent is a little more than 5,600 yards. A question naturally suggests itself—beneficial as the vast improvements at present proceeding must be allowed to be,—what is to become of the poor who have so long inhabited St. Giles's, the Mint, and other localities which are now daily being razed to the ground?

The results of the last journey made by the celebrated archaeologist, Karl Ottfried Müller, are in course of publication at Frankfurt-on-the-Maine. The first part, which is already published, contains *The Antiquarian Collections of Athens*; the second will comprise in it the *architecture and sculpture* of that city; and the third will contain an account of the author's travels in the Morea and Rumelia.

The Lords of the Admiralty have purchased the working model from which the statue of Lord Nelson upon the column in Trafalgar-square was executed. The model is five feet ten inches high, and is to be placed in a niche in the vestibule of the Admiralty, immediately facing the principal entrance to that building.

**NEW SQUARE AT PIMLICO.**—There is a new square in course of being laid out and planted in the Belgrave-road, to be called Warwick-square, which will be the most extensive square on the Grosvenor estate. Where the Lock Hospital formerly stood there are erected several splendid mansions.

**ROAD-SURVEYORS' TITLE OF DIGNITY.**—A gay young lady from a neighbouring village, being on board of a steam-bent on the Clyde, was courting distinction among a party by a display of flippant volubility, intended to indicate to them her superior status and accomplishments. On her ever and anon remarking "My father did this," "My father did that," one of the party, a stranger, in innocent admiration, asked, "Pray, what is your father?" To which this fair pretender to excellence, after a little hesitation, replied, "He is a-a-a-highwayman." Road-surveyor is the term that would have been employed by a plain person on that occasion. —*Glasgow Paper.*

**A HINT TO GAS COMPANIES.**—At Sheffield, the charge is 4*s.* 2*d.* per 1,000 feet; Leeds, 6*s.* 8*d.*; Liverpool, 6*s.*; Cheltenham, Glasgow, and Bradford, 7*s.*; Paisley and Newcastle, 7*s.* 6*d.* The effect which lowering the price of an article like gas has upon its consumption was, perhaps, never better exemplified than in the statistics of Manchester, when, in 1833, the charge was 10*s.* 6*d.* per 1,000 feet, the profits then were 8,292*l.*; in 1834 it was 10*s.* 3*d.*, the profits 10,191*l.*; in 1835, 10*s.*, profits 13,510*l.*; in 1836, 9*s.*, profits 16,196*l.*; in 1837, 8*s.* 6*d.*, profits 18,712*l.*; in 1838 it was again lowered to 8*s.*, and the profits realized 19,376*l.*; in 1839 the price was 7*s.* 6*d.*, the profits 24,658*l.*; the last reduction, in 1840, to 7*s.*, and the profits increased to 24,738*l.*; in 1841, to 29,694*l.*; and in 1842, to 34,232*l.* These facts speak for themselves.

**RAILWAY TRAFFIC.**—The last weekly returns of 42 railways, 1,544 miles in length, will be of interest.—Number of passengers on 29 railways, 300,153. The receipts for passengers on 42 railways, 58,660*l.*; ditto for goods on 37 railways, 21,776*l.*; total, 80,436*l.* This is an average of 65*l.* per mile per week. We have not received the traffic returns this week of the following railways:—Dundee and Arbroath and Brandling Junction. —*Railway Magazine.*

**THE ISLAND OF LEWIS.**—Mr. James Matheson, M.P., has purchased from the family of Seaforth the princely property of the Lewis, one of the largest islands in the Hebrides, with a population of about 15,000, and included in the county of Ross. The purchase-money was 190,000*l.* Mr. Matheson and his lady are at present on a tour in Italy; but improvements will soon be commenced, for the new proprietor intends, we understand, to devote a further sum of 40,000*l.* or 50,000*l.* towards establishing a regular steam communication with the island, forming roads, and otherwise improving his extensive territory. —*Inverness Courier.*

A deputation of the Metropolitan Association for Improving the Dwellings of the Industrious Classes, consisting of Mr. J. D. Powles, Dr. Southwood Smith, M.D., Mr. W. A. Wilkinson, the Rev. W. W. Champneys, Mr. F. A. M'Geachy, M.P., Mr. John Dunlop, Mr. P. E. Gibson, Mr. J. W. Tottie, and Mr. Charles Gattiff, had an interview with Sir Robert Peel on the 23rd instant, at his official residence in Downing-street.

### Tenders.

**TENDERS** delivered for the new Union House at Portsea, Hants.— Livezey, Esq., Architect.—January 11, 1844.

Hendy .....	£19,930
Hicks .....	19,780
Wells and Co. ....	19,591
Kirk (Lincoln) .....	19,300
Ploughman and Luck .....	18,994
Hill (Arundel) .....	18,500
Abalsom (Portsea) .....	17,980
King and Voller (Portsea) .....	17,800
Diggle .....	16,990
Nicholson (Wandswoth) .....	16,780

Mr. Nicholson's Tender was accepted.

### NOTICES OF CONTRACTS.

KEEPING in repair for three years, at a sum to be paid annually, all Pumps, Drains, Water-closets, Troughs, Cisterns, Glass Windows, Locks, &c., of Plumagegate Union Workhouse, Wickham Market. —Specification at the Clerk's Office.—J. Dallenger, Clerk to Board of Guardians. Jan. 29.

Constructing various Stations at Gateshead and other places, Newcastle and Darlington Junction Railway.—Plans, &c., after 1st of February, at Railway Office, York.—Further particulars on application to Mr. Andrews, Architect, York.—G. Hudson, Esq., Chairman. Feb. 13.

BUILDING A COUNTY LUNATIC ASYLUM AT LITTLEMORE, OXFORD.—Plans, &c., at Mr. R. Clarke's, Architect, Clinton-street, Nottingham, or at the Office of the Clerk of the Peace, Oxford.—J. M. Davenport, Clerk of the Peace. February 22, 1844.

BRIDGLINGTON PIERS AND HARBOUR.—Erection of a new south pier, removal of present pier, and other works for enlargement of Harbour.—Plans and Specifications at Mr. Sidney Taylor, Solicitor, Bridlington, after Jan. 1, 1844. March 1, 1844.

ALTERING EAST SUFFOLK COUNTY HALL AND COURTS OF JUSTICE, IPSWICH.—Plans, &c., for inspection on application to Mr. Whiting, Surveyor, &c., County Hall, Ipswich, on Monday Jan. 29; J. H. Borton, Clerk of the Peace, Bury St. Edmunds. February 12, 1844.

WORKHOUSE ALTERATIONS, ST. LUKE, MIDDLESEX.—Plans, &c., at Workhouse.—J. Parson, Vestry Clerk. Feb. 7, 1844.

### NOTICES.

#### TO READERS AND CORRESPONDENTS.

As the contributions to the illustrations of THE BUILDER are daily becoming more and more frequent, it would be well if our correspondents would send new draughts of size convenient for insertion either as one, two, or three column blocks. This, at the same time that it would spare considerable trouble to the draughtsmen, would tend greatly to insure the accuracy, and, consequently, the utility of such contributions.

#### TO OUR CORRESPONDENTS.

We beg to inform "C. D." that his design for a school is engraved, and will appear in our next.

We think the letter of "A Third Competitor" cannot be inserted without publishing a libel.

"A Constant Reader's" request will be attended to in our next.

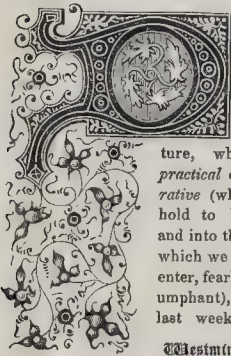
We beg to thank "J. H. P." for his poetical contribution, but think it not sufficiently architectural for our publication.



# The Builder.

NO. LII.

SATURDAY, FEBRUARY 3, 1844.

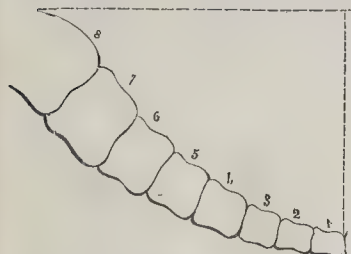


**EEMING** that scarcely of greater importance can be any subject of architecture,

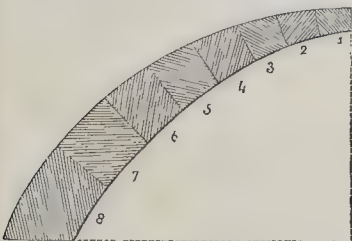
whether simply practical or simply decorative (which indeed we hold to be inseparable, and into the discussion of which we shall by-and-by enter, fearless of being triumphant), we resume our last week's paper upon Westminster Bridge.

Before going further, we beg to say, fanciful theories have retarded infinitely the science of arches; most of those broached have in succession been given up, though very artificial, yet as very untenable; very few of them have effected even partially that which they purported to perform, while the greater part of them have violated that great object of science, TO DO THINGS WISELY WITH THE LEAST REQUISITE MEANS.

In the pendant catenarian construction,



every link or vertebra is strained by the weight of all the others beneath it in the series; and in the inverted masonry catenary, every voussoir is compressed by the weight of all the voussoirs



above it. Therefore, all arches whatever, whether of masonry or brickwork, have their voussoirs compressed in this manner, though from their imperfect design and formation, gravity deranges their component parts, distorts their curves, and brings them to ruin. All the theories on the equilibrium of arches, by which an attempt is made to balance the voussoirs by causing them to slide together on their arch-joints towards a centre, are erroneous; no such effect ever takes place in arches, unless they be in jeopardy, ill at ease in their parts, settling through defective foundation, or from some other cause tending to bring them to a state of ruin.

On the contrary, great address has been often used to prevent utterly such sliding, as in the case of Blackfriars' bridge, where the voussoirs are joggled by a cubic foot of hardstone being let into each arch-joint. In all arches of brickwork set in Parker's, or any other quickly-setting cement (which mode of practice we, for various reasons, deprecate, except in arches formed in old work), no sliding to a centre can take place without such crisping cements fracturing, as, indeed, they do, simply from the curvature of an arch altering in form, through the work settling to a state of rest. If, then, pains and expense be employed in the endeavour to effect the equilibrium of an arch, by causing its voussoirs to slide upon each other, and equal pains and expense be resorted to for preventing them from so sliding, it must be evident that such pains and expense neutralize each other; and it will be fortunate if they leave the arch as well off as it would have been without their use, and with no weakness caused by casting extra burthen upon the foundation.

But what says Dr. Robison on this very subject?—

"This much will serve, we hope, to give the reader a clear notion of this celebrated theory of the equilibrium of arches, one of the most delicate and important applications of mathematical science. Volumes have been written on the subject, and it still occupies the attention of mathematicians. But we beg leave to say, with great deference to the eminent persons who have prosecuted this theory, that their speculations have been of little service, and are little attended to by the practitioner. Nay, we may add, that Sir Christopher Wren, perhaps the most accomplished architect that Europe has seen, seems to have thought it of little value: for, among the fragments which have been preserved of his studies, there are to be seen some imperfect dissertations on this very subject, in which he takes no notice of this theory, and considers the balance of arches in quite another way. These are collected by the author of the Account of Sir Christopher Wren's family. This man's great sagacity, and his great experience in building, and still more his experience in the repairs of old and crazy fabrics, had shewn him many things very inconsistent with this theory, which appears so specious and safe. The general facts which occur in the failure of old arches are highly instructive, and deserve the most careful attention of the engineer; for it is in this state that their defects, and the process of nature in their destruction, are most distinctly seen. We venture to affirm, that a very great majority of these facts are irreconcilable to the theory. The way in which circular arches commonly fail, is by the sinking of the crown and the rising of the flanks. It will be found by calculation, that in most of the cases it ought to have been just the contrary. But the clearest proof is, that arches very rarely fail where their load differs most remarkably from that which this theory allows. Semicircular arches have stood the power of ages, as may be seen in the bridges of ancient Rome, and in the numerous arcades which the ancient inhabitants have erected. Now all arches which spring perpendicularly from the horizontal line, require by this theory, a load of infinite height; and, even to a considerable distance from the springing of the arch, the load necessary for the theoretical equilibrium is many times greater than what is ever laid on those parts; yet a failure in the immediate neighbourhood of the spring of an arch is a most rare phenomenon, if it ever was observed. Here is a most remarkable deviation from the theory; for, as is already observed, the load is frequently not the fourth part of what the theory requires."

"Many other facts might be adduced which shew great deviations from the legitimate results of the theory. We hope to be excused, therefore, by the mathematicians for doubting of the justness of this theory. We do not think it erroneous, but defective, leaving out circumstances which we apprehend to be of great importance; and we imagine that the defects have arisen from the very anxiety of the mathematicians to make it perfect. The arch-stones are supposed to be perfectly smooth or polished, and not to be connected by any cement, and therefore to sustain each other merely by the equilibrium of their vertical pressure. The theory insures this

equilibrium, and this only, leaving unnoticed any other causes of mutual action."—*System of Mechanical Philosophy, Brewster's Edition, Edinburgh, A.D. 1822.*

After very mature consideration of the subject, we have come to the conclusion, that DRIFT is the active force in arches and vaults; the exercise of this principle lies in the avoidance of all cross strain and the pressing of every stone to its neighbours: by this free-masonry principle stand all the buildings of Pointed Architecture which approach perfection. Drift commences at the summit of every vault and pinnacle, and is carried through every stone of a fabric till it reaches the ground at the feet of the buttresses, walls, and columns.

All the address of a master is called forth to cause the drift or gravitation of materials to operate exactly at right-angles to each stone which receives pressure. Hence the bed-jointing of each course in a work should be formed exactly at right-angles to the direction of the active drift, in order that, as in the suspension-catenary, the risk lies in failure through the tension of the chains, so in the catenarian masonry arch, THE RISK MAY BE CONCENTRATED SOLELY IN THE FRANGIBILITY OF THE MATERIALS, no failure occurring till they become pulverized.

Our deductions from these theories, and their application to the subject engaging our attention, will be given in our next.



## MEETING OF THE MASTER CARPENTERS' SOCIETY.

A MEETING of the Master Carpenters was held on Wednesday evening last, at the Freemasons' Tavern, Great Queen Street, being the first of the new year, for the purpose, among other matters, of appointing a committee to watch in its progress through Parliament the proposed New Metropolitan Building Act, and to give notice of a proposed amendment in the Rules of the Society for the election of members.

The minutes of the last meeting having been read by the secretary, and unanimously confirmed, Mr. Biers, the chairman, proposed the confirmation of the election of a member that took place at the last meeting, which was seconded by Mr. Knight, and carried without opposition.

Mr. Biers then said he thought there ought to be some alteration in the laws of the society for the election of members; for the delay he considered too great from the time they were proposed to the time they were admitted as members of the society. He had two new members to propose at the present meeting; and, according to the regulation then in existence, it would be four months before those two gentlemen could sit as members, although there could be no objection made to their joining the society. This delay was too great; and what he would suggest as an amendment was, that it should be sufficient for any eligible person wishing to become a member, to write to the secretary, signifying such his desire, and that his name being written in the circular to the members, if any one of the society knew any reason why he should not be admitted a member, he might oppose his election; and thus, by such an arrangement, two months would be saved.



After some remarks from Mr. Stephens and Mr. Harris, as to the proceedings requisite for altering their present laws, notice was given that the motion for amending the laws of the society, respecting the election of new members, would be brought on at the next meeting.

The chairman then nominated Messrs. Crow and C. Harbert as candidates for election at the next meeting, and was therein seconded by Mr. Knight.

Upon inquiry, the average price of the best Crown Memel fir was quoted at 90s. per load, and the best 12 feet 3 inch Christiana yellow deals 36l. per hundred.

The chairman proceeded to inform the meeting that the bill which was brought into Parliament last year, was entirely laid aside, and a new one was in preparation for introduction this session. He had received a letter from Lord Lincoln (who had so kindly brought their objections to the late bill under the consideration of the government), stating that the new bill was much altered in form and substance; that he would have sent a copy of it, but it was not yet out of the printer's hands. He then read the following letter:—

Whitehall Place, Dec. 25, 1843.

Sir,—The bill, which I hope to introduce very soon after the meeting of Parliament, for the regulation of buildings in the metropolis, will be a good deal altered in substance, and still more in form, from that which was printed at the end of last session, after being "amended in Committee."

I will send you a copy of the bill as soon as it is printed; and in the mean time, I beg leave to express my thanks to you, and the other members of the Master Carpenters' Society, for the assurance of your readiness to consider its provisions in a fair and candid spirit—a course which my past experience would lead me fully to anticipate from you.

I am, Sir, your obedient Servant,  
H. Biers, Esq. (Signed) LINCOLN.

Mr. Biers, in continuation, said they had only to work with a single impulse for the benefit of the community. All the suggestions which they had made to the crown surveyors had been attended to; and the crown solicitors said that the referees should be paid out of the county rate instead of by fees. Referees will be of very great assistance, that is, if care be taken to appoint proper persons. It appeared to him (Mr. B.) probable that the referees were to be selected from architects. He would suggest the propriety of their getting the word "architect" struck out, and replaced by the words, "from competent persons." Under these circumstances he begged to leave in the hands of the meeting the appointment of a committee to watch the bill through parliament.

Mr. Knight proposed the following gentlemen as the committee:—Messrs. Biers, Lever, Sparkes, C. W. Knight, Stephens, Harris, Higgs, Grissell, Peto, W. Cabitt, Burstall, sen., Allen, Lawrence, Stokes, and Lock, which was seconded by Mr. Burstall, jun., and carried unanimously.

The other business being concluded, the second meeting-day was named for two months hence.

**NEW FIELD OF COAL.**—For some time back, workmen belonging to the Duke of Hamilton have been employed boring for coal at Brighams, in the immediate vicinity of the railway station, on the Edinburgh and Glasgow Railway. Their labours have been rewarded by the discovery of a seam of coal of considerable thickness, and which it is understood extends to upwards of 3,000 acres. The coal has been burned in a small gas-work, and from the quality of the light it is evident it must be a first-rate household coal.—*Scotch Reformers' Gazette.*

#### DR. KEENAN'S LECTURE.

THE HUMAN BODY A GALVANIC BATTERY.

GREAT excitement having been evinced in consequence of the first of a series of lectures, now delivering by Dr. Keenan at the Royal Polytechnic Institution, on the function of the lungs being considered as a galvanic battery, we cannot refrain from furnishing our scientific readers with some of the prominent ideas of the lecturer, as being new and original. That in order to prove the human body is an electro-motive machine, propelled by the lungs (like a steam-engine), it was to be remembered, 1st, That in all chemical actions electricity is evolved; 2nd, That the chemical action which takes place in the lungs by the union of the oxygen of the air with the carbon and hydrogen of the blood, is highly fitted for the extrication of electricity, which accordingly takes place in great abundance; and 3rd, That the electric fluid is an adequate cause of motion, being proved to be so by the fact that thereby respiration is re-established in a drowned person after it has wholly ceased, whilst the limbs, and even the trunk, are by it put in motion after life is gone,—phenomena which, to the same extent, cannot be produced by any other known agent. It was to be observed that all living and moving bodies agree in two essential particulars, viz., in requiring a stream of air and a supply of food; the use of food being twofold; 1st, To sustain the formation of the body, and 2nd, To supply the blood with carbon and hydrogen for the purpose of generating, with the oxygen of the air, the moving power of the lungs. Dr. Keenan then gave several instances to prove that exhaustion from want of food arises more from the deficiency of moving power than from loss of substance, and that, consequently, food is required to supply the former rather than the latter; that the constitution of our food is of two kinds—one consisting principally of the oxydizable materials, viz. carbon and hydrogen for producing with oxygen the moving power, and might hence be called the *respiratory food*, whilst the other is mainly of nitrogen and the salts, and is the *plastic material* for composing the animal body. So long as food was supposed to be for nutrition alone, it was not easy to perceive what became of it; because the body did not continue to increase although a man continued to eat. To account for this paradox, an hypothesis was adopted which has no foundation in nature, viz. that there is a constant removal of old and a constant deposition of new particles, so that the whole of the body was renewed every seven years. The reasons given to shew this idea is a fallacy would take more room than can be given to this article; and we shall, therefore, content ourselves by stating the arguments of the Doctor, who remarked, that when a fat man takes a fever, and becomes emaciated, his emaciation is no proof of the real staminal parts of his body having changed; because fat is no part of the body, as such, but is merely a depository of digested food (charcoal and hydrogen) which, in the absence of eating, the constitution gives up to the air, to combine with the oxygen for the production of force to keep the blood in circulation, and to maintain other natural actions. Neither is there any proof in the famous experiment of feeding animals on madder; for although in time the dyed textures of the animal become white, this is to be attributed to the absorption of this colouring matter as a *foreign material*, and not to the removal of the coloured textures themselves. Neither are experiments made upon starved animals of any value, because it is easy to shew that certain changes must have then taken place, which could not have occurred if the animals had been naturally fed. To us appeared to be of great importance the remarks to the following effect:—Why man breathes differently from a fish, is a question not yet answered by comparative anatomists.

Why does a man in the process of breathing expend so much of the force generated in breathing? Is the maximum force produced by combining the carbon and hydrogen with oxygen in a vacuum? If so, why should not the conditions of the maximum effect be realized by practical engineers, who, in producing the greatest heat from the least inflammable matter, might, in imitation of nature, effect it in a vacuum like the thoracic, and not only so, but bring the inflammable matter and

air (as in breathing) in contact through a great number of capillary tubes.

Dr. Keenan concluded his address, which lasted for an hour and a quarter, and of which this is but an abstract report, by repeated *applaudissements* from a crowded and scientific audience; and, in conclusion, we may declare we never recollect having heard a more ingenious and extraordinary lecture. The course will be continued this evening at eight o'clock, and at the same hour on the evenings of the following four Saturdays.

#### MR. GODWIN'S LECTURE ON ARCHITECTURE.

On Thursday, Jan. 25, George Godwin, Esq., F.R.S. and S.A., delivered a lecture in the theatre of the Western Literary Society, on the progress of architecture, from the earliest times that present any evidence of the efforts of man having been directed to the construction of edifices for domestic or sacred purposes. The lecturer prefaced his view of the course of architecture downwards by some observations on its paramount interest as a fine art—as affording us the landmarks of history, and incontrovertible evidence of the degree of refinement and intellectual culture existing among nations that, even thousands of years ago, have been merged in the inevitable tide of the perpetually progressive change to which the surface of the globe is subject. The historian, amid the gloom and desolation of regions that have once been famous, finds nothing now there to trim his lamp by save those monuments which their inhabitants have set up as if to compete with time; to these, therefore, must all turn who would consider the state of the earlier races of mankind, for thus have they described themselves in imperishable characters of stone. The lecturer alluded to the primitive state of man as pastoral and dwelling in tents, and as living in caves. After ascertaining the next care of every animal is shelter; and in the barbarous state, but one remove from beasts of prey, caves and tents served as shelter from the rays of the sun and the inclemency of the weather. The latter of these habitations is that to which mankind has most tenaciously clung; since dwellers in tents have existed in all countries, and still inhabit large tracts of country, and are now the same as they were thousands of years ago. Those, on the contrary, who dwell in caves or "in the rock," aimed at something beyond the rude burrow, and attempted architectural embellishment: the banks of the Nile present examples of their efforts to this end in the excavations found there. Rocks were hollowed for habitations and the exercise of sacred mysteries; many such dwellings and temples yet remain, showing us that men inhabited the "living rock," and also found sepulture therein. Having touched upon many of the records in Scripture bearing upon his subject, Mr. Godwin spoke of the Druidical remains in Britain, and the various absurd theories adduced to account for such an assemblage of huge stones, which, it is not difficult to shew, attest in themselves that their arrangement is in nowise owing to chance, since those which are placed horizontally upon others, are hollowed to receive the tops of the latter in such a manner as at once to proclaim human agency. Altars were the first and simplest attempts at construction. They were formed of a few stones piled together; they were afterwards more elaborately constructed, and at length covered in by edifices upon which every magnificence was lavished, figuring in history as the great temples of the world. Besides Stonehenge, remarkable Druidical remains exist, as at Urswick and other places, which are, with much probability, supposed to have been places appointed for the periodical assemblages of the people on occasions of great religious festivals. In South America relies very similar in arrangement and construction are found. It has been a matter of question as to how such immense blocks of stone could be moved into and adjusted in the positions they occupy. This is accounted for, most probably, by supposing that a mound of earth was formed, to the top of which they were gradually moved, and thence tilted over to their intended site. Of the many extraordinary edifices mentioned in sacred history, there are but few of them of which we can have any just conception. It has been remarked by more than one writer, that the abodes of the living have been destroyed,



while the resting-places of the dead in so many cases remain perfect: of these the most remarkable are the Pyramids of Egypt, which, in size, are proportionate to the length of the reign of the king whom they were intended to entomb. Of the base of the great pyramid some idea may be formed from Lincoln's Inn-Fields, the area of which is about equal to the site of the pyramid of Cheops. Mr. Godwin closed his lecture with a detailed description of Egyptian architectural remains, and on Thursday the 6th of February the subject will be concluded with an account of modern architecture. He has contrived to render the subject deeply interesting and popular.

## SOCIETY OF ANTIQUARIES.

JAN. 11.—HENRY HALLAM, Esq., V.P., in the chair.

Albert Way, Esq., director, exhibited a rubbing from a very fine foreign sepulchral brass, now in the hands of Mr. Pratt of Bond-street. It came from a family chapel in Germany or Flanders, and represents Ludovic Corteville and his lady.

Mr. Doubleday, of the British Museum, exhibited a small oval seal (in sulphur) inscribed S. Mag'r'i Simonis Langeton, and bearing a finely-executed head, which may be supposed to be the portrait of its owner, Simon Langeton, Archdeacon of Canterbury, and brother to the Archbishop, Stephen Langton. He founded a hospital for poor priests at Canterbury circ. 1243.

Mr. Doubleday also exhibited plaster casts of the seal of King Charles the Second for the counties of Carmarthen, Cardigan, and Pembroke. The obverse has the King's effigy on horseback, and the legend CAROLUS II. DEI GRACIA MAG. BRITANNIE FRANCIE ET HIBERNIE REX FIDEI DEFENSOR. The obverse has the arms of France and England quarterly, quartering Scotland and Ireland; supporters, the dragon and the spotted panther. Above the shield a crown, and below a plume of three ostrich feathers, and the motto ICH DIEN. Legend, SIG. PRO CANCELLARIA PRO COMITATIBUS CARMARTHEN CARDIGAN ET PEMBROK.

Two coloured drawings were exhibited by Mr. W. Beak, of Roman tessellated pavements, the one preserved in the park of Earl Bathurst, the other in the garden of Mr. Brevin of Cirencester.

J. Y. Akerman, Esq., F.S.A., communicated a note in illustration of a representation of the head of St. John the Baptist on a leaden ouche or ornament found at Abbeville; he noticed the analogy between the figure of the head and that on the coins of King John, and gave instances of the veneration in which the head of the saint was held in the middle ages.

Sir Henry Ellis read a very interesting report of the seizure and examination of a Jesuit under the disguise of a Puritan in the reign of Elizabeth, singularly illustrative of the Machiavellic doctrines and practices of that order, and the activity of the Jesuit missionaries in England at that time.

He then concluded the reading of the translation, by George Stephens, Esq., (author of the Translation of Frithiof's Saga from the Swedish,) of "The King of Birds, or the Lay of the Phoenix; an Anglo-Saxon song of the Tenth or Eleventh century, translated into the metre and alliteration of the original;" followed by a description, by the same gentleman, of an English medical manuscript, apparently of the end of the fourteenth century, preserved at Stockholm.

JAN. 18.—Lord Viscount MAHON, M.P., in the chair.

John Brodrick Bergne, Esq., was elected a Fellow of the Society.

Albert Way, Esq., director, exhibited a combination of several prints from Mr. J. G. Nichols's "Specimens of Encaustic Tiles," shewing the effect of the wall-tiles with which the church of Great Malvern was formerly ornamented, in the manner of wainscoting, and many of which still remain in the pavement. They are rendered more interesting by bearing a date, the 26th Henry VI.

W. R. Hamilton, Esq., V.P., made a communication relative to various ancient weapons, found in the bed of the Thames, immediately above Kingston, seven feet below a bed of

gravel. They were chiefly of brass metal and cast, and therefore supposed to be Roman.

Mr. Way contributed some further observations on the leaden ornament bearing the head of John the Baptist, exhibited at the previous meeting of the society. It appears that the head of John the Baptist was preserved among the relics at Amiens, and that it was a favourite object of pilgrimage; and Mr. Way gave strong reasons for believing that these leaden ouches, which rudely represent the ferretary, or keeper of the shrine, exhibiting the head, attended by his two acolytes, were given to pilgrims, who carried them about their persons as amulets to preserve them from the disease of epilepsy, or the falling evil (*le mal de Saint Jean, or morbus Sancti Johannis*), which that saint was believed to have the power of curing.

Thomas Wright, Esq., F.S.A., communicated a mediæval list of engraved gems, with descriptions of the magical virtues they were believed to possess; and an introductory essay on the excavations and researches for antiquities by the monks in the middle ages. The Anglo-Saxons appear to have been assiduous in opening ancient tombs, and digging among ruins, and in this manner they collected together great numbers of Roman articles. The ancient Christian rituals contain forms for blessing vases and other vessels dug up from the earth, in order to render them fit for Christian use. A curious account is given in the early lives of the Abbots of St. Alban's, of the extensive excavations made by two abbots in the tenth century among the ruins of Verulamium, and of the numerous curiosities they found. Among these curiosities there were many engraved stones. There were numerous collections of engraved gems in the middle ages, and many instances were cited. The virtues attributed to these articles are strange enough. One is stated to have the quality of rendering the bearer liable to be frequently invited out to dinner, and to be much feasted; another to make the bearer invisible; and so on with the rest.

JAN. 25.—Henry HALLAM, Esq. V.P.

Mons. Edouard Frere, of Rouen, and Mons. Léchaudé d'Anisy, of Caen (the associate of the late Marquis de St. Marie in "Recherches sur le Domesday d'Angleterre,") were elected Foreign Members of the Society.

The Directors exhibited a large plate, printed in chromo-lithography, for Mons. Dusommerard's Histoire des Arts du Moyen Age, of the enamelled tablet of Geoffrey le Bel (Plantagenet), at Mans (which was engraved in a smaller scale by the late C. A. Stothard.)

Mr. Rogers exhibited an Etruscan instrument of bronze in the form of a small pair of fire-tongs, fitted with two little wheels.

Albert Way, Esq., Director, exhibited a deed now in the possession of Richard Almack, Esq., of Long Melford, being a lease of the Earl of Bedford, in the year 1570 to Sir William Cecil, afterwards Lord Burghley, of a pasture at the east end of Covent Garden, on the site of which Lord Burghley afterwards erected his town mansion. Mr. Way made some remarks upon the description of the boundaries of the land, in which mud walls and "stulps, or rails," are mentioned.

Sir Henry Ellis, Secretary, communicated three historical documents: 1. A note of the good uses to which the Companies of London applied their grants of Chantry Lands, which it appears they purchased of the Crown to the extent of 18,714*l*. 2. A letter written in 1588 by William Benett, priest, to the Earl of Arundel, begging his forgiveness for the "false charge" against the Earl which had been extorted from him, to the effect that the Earl had ordered a mass of the Holy Ghost for the good success of the Spanish fleet, and offering to deny the same at all hazards. 3. A statement of Affairs Ecclesiastical in Guernsey and Jersey in the time of James the First, describing the innovation of the Book of Common Prayer which had taken place upon the influx of French Protestants who came to the channel islands after the massacre of St. Bartholomew, and substituted a Book of Discipline of their own. The memoir proceeded to recommend a restoration of the liturgy, and the appointment of a Dean of Jersey, both which prayers were shortly after granted.

## INSTITUTE OF BRITISH ARCHITECTS.

JAN. 24.—T. L. Donaldson, V.P., in the chair.—A communication was read from Dr. Brömet, relative to the New Bridge lately erected over the River Moine, at Clifton, near Nantes, in Brittany.—The river runs in a deep ravine, is at all times shallow and consequently unnavigable, and is seldom frozen. In the design of the structure, it was necessary for the architect to consider it less as a bridge than as a viaduct for the more easy passage of the ravine. The length of the bridge between the abutments is about 350 English feet, the width of the carriage-road and two footways together, 27 feet, making the entire width, including the thickness of the parapet walls, 30 feet. The arches are fifteen in number, of 19 feet 4 inches span, and of a semicircular form (eight being land arches), the whole supported by fourteen lofty piers, and a long abutment at either end, following the slope of the banks or sides of the ravine; the springing line of the arches is about 33 feet 3 inches above the bed of the river. The total height, from the bed of the river to the top of the parapets, is about 54 feet 3 inches. The foundations of the piers of the seven principal arches are carried about 6 feet 9 inches below the bed. The piers and abutments are founded on the dark-coloured granitic rock, of which the banks are composed, which being too coarse for architectural purposes, the superstructure has been built of a white granite, found in the vicinity. The stones are all of a large size, well squared and dressed, and closely jointed with fine white mortar. The piers, at their lower extremities, present faces of 5 feet, with returns or sides of 30 feet in extent. The chief peculiarity of the construction consists in each of these piers, at the height of about 13 feet from the bed of the river, being pierced with an arched aperture, of a pointed form, 14 feet in width; these arches having the same springing line as the semicircular arches, and intersecting the cylindrical intradoses of the semicircular arches, and thereby forming a series of groined vaultings, which, when viewed longitudinally, from under either of the abutment arches, produces an effect somewhat similar to that of the nave of a Gothic church.

Mr. R. W. Billings read a paper, descriptive of some peculiarities in the arrangement of the plan and in the construction of the church of St. Peter and St. Paul at Kettering, in Northamptonshire, and exhibited numerous diagrams in illustration thereof, and of the forms of the doors and windows, and the principles on which the tracery and ornaments had been designed. He likewise noticed the unusual height of the spire as compared with the body of the church, by which the importance of the latter (really of large dimensions) is much diminished; a circumstance not uncommon in the churches of this district.

NEW STREET TO THE LINKS.—On Friday week a meeting of the committee appointed to consider this subject was held in the Town-hall, when a lithographic sketch of the proposed street, from the design of Mr. Abernethy, civil engineer, was submitted to the meeting, and warmly approved of by all the gentlemen present. It is proposed by Mr. Abernethy that the approach to the Links shall commence at the south-east corner of Castle-street, from whence, by a circular sweep under the terrace in front of the Barracks, the new road shall cross Commerce-street and the Canal, and run in a direct line to the Links. We were happy to see so numerous an attendance of gentlemen anxious to promote this very desirable improvement. It is admitted that our Links form a place of public resort and recreation the most extensive and agreeable, perhaps, to be found in the neighbourhood of any large town in the kingdom; and nothing is wanting but a good road to render it available to all classes of the citizens. We would, therefore, urge upon the committee the importance of immediate exertion to procure the necessary funds. If each member of the committee (as suggested by Mr. James Hadden, Jun.) were to obtain subscriptions, from amongst his own circle of friends, to the extent of 10*l*., the plan would speedily be carried into execution; and we would hope that, if the gentlemen who have undertaken this duty would make an effort, the requisite sum might be raised in a few weeks. The citizens, we trust, will come forward generally and generously.—*Aberdeen Herald*.



## ETHNOLOGICAL SOCIETY.

THE PERMANENT HOUSES AND HUTS OF THE  
ESQUIMAUX.\*

By Richard King, M.D. Read before the Society.

Of the arts and manufactures of the Esquimaux, the houses, from their construction, and the variety of the material of which they are composed, display, perhaps, the greatest ingenuity. This race of fishermen inhabit the northern coast of America, from Prince William's Sound on the Pacific, to Labrador on the Atlantic; and although their hunting-grounds extend about a degree of latitude inland, their dwellings are almost invariably raised near the sea-shore, and are either permanent or temporary, the character of them depending upon the locality and the material at the workman's disposal. But even those who have fixed dwellings leave them in the summer for tents suited to their migratory habits. The Esquimaux of Greenland inhabit a low hut, built with stones two or three yards high, with a flat roof of wood covered with turf, and the same plentiful material is crammed between the stones forming the walls. It has neither door nor chimney, the use of both being supplied by a vaulted passage, made of stone and earth, two or three fathoms long, entering through the middle of the house. The floor is divided into several departments, resembling horses' stalls, by skins reaching from the posts that support the roof to the wall. Each family has its separate room, and each room in front a window formed of seal-skin parchment, which is white and transparent. The ceiling and walls are lined with seal skins, which once formed the covering of their boats, but rendered by age useless for that purpose. In the room beneath the window, attached to the whole length of the wall, is a deal bench raised half a yard from the ground, and reserved, as we do best rooms, for visitors. A similar bench is attached to the back wall of the room as sleeping places for the family, the bedding consisting of rein-deer skins. These benches are also used as sofas by day, the women sitting in the rear cross-legged like tailors, and the men in the ordinary sitting position.

In Gilbert's Sound, instead of the walls being formed of stone, John Davis informs us that they are made of wood; while at Regent's Bay, according to Sir John Ross, who obtained his information from hearsay, stone-built houses are again used, and the roof, instead of being flat, is arched, and the floor sunk three feet in the earth, a description which exactly answers for the habitations of the Esquimaux of Labrador.

From the Coppermine river along the coast westward, and thence to Prince William's Sound, the winter houses are built of drift wood, which is found along the whole route in more or less abundance. At Norton Sound, a sloping roof without any side walls is the fashion, and instead of raised benches, the floor is formed of logs, the entrance being at one end, with a fireplace just within it, and a small hole to let the smoke out. From Norton Sound to Point Barrow, the houses vary in their construction according to the nature of the ground and the taste of the inhabitants. Some are wholly above ground, some have the roof scarcely raised above it, and others resemble those of the natives of Norton and Prince William's Sounds; but they all agree in being constructed with drift wood covered with peat, and in having the light admitted through a hole in the roof, covered with the intestines of sea animals, for a window. They are said by those who have seen them, to be very comfortable abodes, and now and then of considerable size. One, situated between the Mackenzie and Coppermine rivers, was in the interior found to be a square of 27 feet, having the log roof supported on two strong ridge poles, two feet apart, and resting on four upright posts. The floor in the centre, formed of split logs, dressed and laid with great care, was surrounded by a raised border about three feet wide, intended for seats. The walls, three feet high, were inclined outwards for the convenience of leaning the back against them, and the ascent to the door, which was on the south side, was formed of logs. The outside, covered with earth, had

nearly an hemispherical form, and around its base were arranged the skulls of twenty-one whales. There was a square hole in the roof, and the centre log of the floor had a basin-shaped cavity, one foot in diameter, probably intended for a lamp.

The most extraordinary permanent edifices of the Esquimaux are those constructed of the bones of whales, walruses, and other animals. Sir Martin Frobisher first makes mention of this kind of dwelling as existing at Labrador, and Sir Edward Parry and Captain Lyon afterwards found the same style of house adopted by the natives of Melville Peninsula and of Igloodik. They are built circular, and of a dome-like form; the lower part or foundation being of stones, and the rest of bones gradually inclining inwards and meeting at the top. The crevices as well as the whole of the outside are then covered with turf, which with the additional coating of snow in the winter serves most effectually to exclude the cold air. It is about 17 or 18 feet at its base, and about 9 feet in height. The entrance is towards the south, and consists of a passage ten feet long, and not more than two feet in height and breadth; it is built of flat slabs of stone, and has the same external covering as that of the hut. The beds are raised by stones two feet from the ground, and occupy about one-third of the apartment at the inner end. Near the huts when they were discovered were large tumuli, which had been formerly dwellings, but which were then solid moss-covered mounds.

Although during winter the Esquimaux generally occupy permanent dwellings, it not unfrequently happens, from scarcity of provision, or some other calamity, that it is necessary for them before spring arrives to seek a new home. When we consider the low temperature of the country which many of the communities inhabit; that in many parts it is destitute of wood even for fuel; that the fixed habitations being cemented together by frost cannot be removed, and that the summer tents from their construction are not calculated to withstand the cold, we are at first led to suppose that, if driven at the inclement season from his accustomed haunts, death must soon close the sufferings of the poor inhabitants of the Pole. But this is far from being the case, for these ingenious people have learnt to convert snow into building materials, by which means they can raise an establishment for their families in a few hours; an establishment which, from the purity of the material of which it is composed, the elegance of its construction, and the translucency of its walls, gives it an appearance far superior to a marble building. "One may survey it," says Sir J. Franklin, "with feelings somewhat akin to those produced by the contemplation of a Grecian temple reared by Phidias; both are triumphs of art, inimicable of their kind."

Having selected a spot where the snow is sufficiently compact, they commence by tracing out a circle of from eight to fifteen feet in diameter, proportioned to the number of occupants the hut is to contain. They then prepare a number of oblong slabs of snow of six or seven inches thick and about two feet in length, which are tenacious enough to admit of being moved without breaking or even losing the sharpness of their angles. These slabs, which have a slight degree of curvature corresponding with the circular foundation, are piled upon each other exactly like courses of hewn stone, and care is taken to make them fit closely to each other by running a knife adroitly along the under part and sides, and to cut them so as to give the wall a slight inclination inwards. Tier after tier is thus laid on by one man standing within the wall, who is supplied with material by one or more assistants from without. But for the better convenience of transmitting this supply to the workman, when the wall has attained a height of five or six feet, a hole is cut on the south side close to the ground. Thus they continue labouring till they have brought the sides nearly to meet in a perfect and well-constructed dome, sometimes nine or ten feet high in the centre; and this they take particular care in finishing, by fitting the last block or key-stone very nicely in the centre, dropping it into its place from the outside, though it is still done by the man within. The people outside are in the meantime occupied in throwing up snow with the snow-shovel, and in stuffing in little wedges of snow where holes have been accidentally left.

The builder next proceeds to let himself out by enlarging the hole on the south side into the form of a Gothic arch, intended as a doorway, three feet high and two feet and a half wide at the bottom; communicating with which he constructs two passages, each from ten to twelve feet long and from four to five feet in height, the lowest being that next the hut. The roofs of these passages are sometimes arched, but more generally made flat by slabs laid on horizontally. In first digging the snow for building the hut, the workmen take it principally from the part where the passages are to be made, which purposely brings the floor of the latter considerably lower than that of the hut, but in no part do they dig till the bare ground appears.

The work just described completes the walls of a hut, if a single apartment only be required; but if, on account of relationship, or from any other cause, several families are to reside under one roof, the passages are made common to all, and the first apartment, in that case made smaller, forms a kind of ante-chamber, from which the entrance is through an arched doorway, five feet high, into the inhabited apartments. When there are three of these, which is generally the case, the whole building, with its adjacent passages, forms a tolerably regular cross.

For the admission of light into the huts, a round hole is cut on one side of the roof of each apartment, and a circular plate of fresh-water ice, three or four inches thick and two feet in diameter, let into it. The light is soft and pleasant, like that transmitted through ground glass, and is quite sufficient for every purpose. If fresh-water ice is not within reach, melted snow is poured into a vessel and thus frozen into a transparent plate.

When after some time these edifices become surrounded by drift, it is only by the windows that they can be recognized as human habitations, and but for them one might walk completely over them without suspecting the little hive of human beings that is comfortably established below. This, however, is not always done with impunity when the thawing within has too much weakened the roofs, in which case a leg sometimes makes its way through, to the no small terror of the inmates.

The next thing to be done is to raise a bank of snow two feet six inches high, all round the interior of each apartment, except on the side next the door. This bank, which is neatly squared off, forms their beds and fire-place, the former occupying the sides, and the latter the end opposite the door. The passage left open up to the fire-place is between three and four feet wide. The beds are arranged by first covering the snow with a quantity of small stones, over which are laid their paddles, tent-poles, and some blades of whalebone. Above these they place a number of pieces of network, made of thin slips of whalebone, and lastly a quantity of twigs of birch. Their deer skins, which are very numerous, can now be spread without risk of their touching the snow; and such a bed is capable of affording not merely comfort but luxurious repose, in spite of the rigour of the climate.

With the lamps lighted and the hut full of people and dogs, a thermometer placed on the net over the fire indicates a temperature of 33°, when removed two or three feet from this situation it falls to 32°, and placed close to the wall stands at 23°, the temperature of the open air at the time being 25° below zero. A greater degree of warmth than this produces extreme inconvenience by the dropping from the roofs. This they endeavour to obviate by applying a little piece of snow to the place from which the drop proceeds, and this adhering is for a short time an effectual remedy; but for several weeks in the spring, when the weather is too warm for these edifices, and still too cold for tents, they suffer much on this account.

The interior appearance of these habitations is rendered more beautiful when they are situated on the ice, which, being cleared of the snow, presents a flooring of that splendid blue, which is perhaps one of the richest colours in nature.

If it should happen that the family is increased by births or by the system of adoption in use amongst them, they have to enlarge their buildings, which they effect by adding another apartment, or by building a more roomy house over the old one, and as it were

\* The author of the above interesting communication was one of the party who went out in the Arctic Land Expedition, under direction of the British Government, in search of Captain Sir John Ross. The information it contains therefore is valuable, as being the result of personal observation and inquiry.



concentric with it; and when completed the old one is removed from within.

As the spring advances the snow walls melt and freeze alternately, forming innumerable icicles, which reflect the light like radiant diamonds. Although this is very beautiful, it is a source of great trouble to the poor inhabitants, whose lungs become affected from repeated colds and coughs. For this reason, although the houses are formed of snow, coolness is the object always kept in view; and from the inexhaustible building materials always at hand, but little time and labour are required to effect any alterations or additions that may be requisite to effect the purpose. Sir John Ross relates a case of a native of Boothia who had closed in his roof within 45 minutes.

Equal in beauty to the snow-houses are those constructed of fresh-water ice. When this is the material employed, it is collected in large transparent slabs, which are arranged in somewhat an octagonal form, and plastered together with snow. The roofs of some are formed of walrus skins, and others have the regular dome-tops of snow. These dwellings are so transparent that even at some paces distance it is possible to distinguish those who stand within them, yet they are so completely air-tight as to be perfectly warm. A passage of the same pure material forms the entry to the hut.

#### PROJECTED JUNCTION OF THE RED SEA AND THE MEDITERRANEAN BY A SHIP-CANAL THROUGH THE ISTHMUS OF SUZ.

This important project is attracting considerable attention in the commercial, political, and scientific circles. Several pamphlets have been recently put forth, to shew its practicability; but that which affords the most detailed and comprehensive view of the subject in all its bearings, is one from the pen of Mr. Arthur Anderson, of the Peninsular and Oriental Steam Company, of the contents of which may be reduced the following analysis:—Mr. Anderson, it appears, visited Egypt about two years since, when he effected some important arrangements with the Pacha, relative to the transit of the communications with India; and, as would appear from one part of his pamphlet, he must have acquired some share of Mehemet Ali's confidence, having been recently intrusted with a communication on behalf of the Pacha to Sir Robert Peel, the nature of which, however, does not transpire.

During his stay in Egypt, Mr. Anderson devoted much attention to investigate the feasibility of improving the communications with India, *via* the Red Sea, by re-opening the ancient canal, said to have once joined the Red Sea and the Mediterranean.

He obtained much valuable information on the subject from M. Linant, of Cairo, a French civil engineer, holding the important office of chief surveyor of roads and bridges to the Pacha, who had shortly previous made an elaborate survey of the isthmus with a view to ascertain the practicability of making a canal through it; and of which, from the extract of his report, given in the pamphlet, there would appear to be little doubt.

Mr. Anderson is not, however, satisfied with this part of the subject merely, but examines the whole question under the following heads:—

1. Its physical practicability.
2. Political arrangements necessary to its accomplishment.
3. Financial considerations.
4. Advantages or disadvantages of navigating by the canal route, as compared with that *via* the Cape of Good Hope.
5. General observations on its political, commercial, and moral utility.

Under the first head it is shewn by M. Linant's report, that in consequence of the Red Sea being 32 feet higher than the level of the Mediterranean, the nature of the soil—a considerable part of the bed of the ancient canal remaining—together with a chain of lakes lying in the proposed track, the excavation of a canal of sufficient depth and width to admit vessels of large burden to pass from one sea to the other may easily be effected; and that, once opened, a salt-water river would be formed, flowing continually from the Red Sea to the Mediterranean, at a velocity of from three to four miles an hour. M. Linant estimates the whole expense of making this canal,

including a pier or breakwater at its embouchure in the Mediterranean, at only 175,000*l.*, which Mr. Anderson considers much below the outlay that would be required. This is a point, however, of no great importance, as it is subsequently shewn that the canal, if opened so as to admit a general intercourse through it, would, at a moderate toll, yield a revenue sufficient to repay the outlay of several millions.

Under the second head, Mr. Anderson considers it doubtful whether Mehemet Ali would be induced to enter upon such undertaking, except through the intervention of some of the leading European powers, and under such guarantees from them as would secure to his descendants a permanent benefit from the tolls of the canal. He then shews the interest which each of the European powers would have in promoting the object.

Under the head of "Financial considerations," he shews, from the value of the trade with the East, and the tonnage of shipping required to carry it on, together with the advantage to be gained by the shorter route, that, estimating only one-fourth of the trade to pass through the canal, and at a very moderate toll, it would yield a revenue of 200,000*l.* per annum—equal to five per cent. on a capital of four millions, whereas M. Linant's estimate of the required outlay is only 175,000*l.*

Mr. Anderson, under the fourth head, enters into a detailed comparison of the advantages or difficulties of navigating by the proposed canal and the Red Sea, as contrasted with the present route *via* the Cape of Good Hope, and also points out some obvious and most important advantages which the canal would afford to steam navigation with India, &c.; and he concludes with some general observations as to its utility in a political point of view, as well as in promoting the interests of commerce and civilization throughout the East, which every one must concur in.

The object of his publication Mr. Anderson states to be to draw the attention of the public and the government to the expediency of having the surveys already made verified by British engineers of such eminence as to settle the question of the physical practicability of making the canal, and particularly of constructing a harbour at its entrance in the Mediterranean; and also to ascertain by what means and to what extent the Pacha of Egypt would be induced to undertake or co-operate in it: two points which Mr. Anderson considers must precede any other proceedings, and ought to be taken up by, or under the auspices of, government, under whose notice, it appears, he some time since brought the matter.

The time chosen for calling public attention to it is opportune. The new relations established with China—the increasing development of the resources of our vast Indian empire, and the growing importance of our Australasian colonies, all tend to enhance the importance of so improved a route for oriental commerce; and when the immense influence which it would exercise in civilizing the East is also considered, its accomplishment would, no doubt, be one of the most splendid as well as most useful achievements of modern enterprise. —*Morning Herald.*

#### PRESTON INSTITUTION FOR THE DIFFUSION OF KNOWLEDGE.

##### PROPOSED NEW BUILDING.

THE present establishment, in Cannon-street, comprising the usual objects of a Mechanics' Institution, was founded in the year 1828. It now possesses a valuable library of more than 3,300 volumes, in different branches of literature and science, besides philosophical instruments, works of art, a numerous collection of natural curiosities, and other articles, forming a museum well worthy of inspection; but the entire property of the institution being crowded together in one room, of very inadequate size, which is also at the same time necessarily used by the members for reading, the utility and interest of the whole are consequently much diminished. The only other room in the present building is fitted up as a lecture-room, being also used by different classes of the members in their meetings for mutual instruction, and it is much too small for either of those purposes. This want of accommodation, in every department, not only forms a bar to

the increase of the library and museum, but many of the working-classes, for whom the institution was principally intended, are thereby prevented from availing themselves of the benefits which it might otherwise afford, and for which there is now an increasing desire.

A proposal was very recently made to the committee by several musical amateurs, members of this institution, and others, for the formation of a choral class, in connection with the institution; they undertaking to provide music and instruments at their own expense, upon condition that any additions made by them to the property of the institution, should only circulate amongst those who are or who should become members of such choral class, as well as members of the institution. The committee having deemed expedient to accept this offer, the choral class has been formed upon those terms, and upwards of fifty names are already entered as having joined it, being also members of the institution.

It is proposed that the intended new building shall comprise suitable apartments for a library, a museum, a reading-room, a lecture-hall, and class-rooms, in accordance with the original objects of the institution; and also a music-hall, wherein sacred music and miscellaneous concerts may be performed every week, as for some time past has been the case at similar institutions in Liverpool, Manchester, and other large towns; and which is found to engage the attention of great numbers of both sexes in innocent recreation, who might otherwise have been induced to spend their evenings at public-houses, or in still worse places.

The funds at present applicable to the purchase of land, and the erection of a new building, have arisen from the surplus receipts at an exhibition in the Corn-Exchange four years ago; and a legacy of 100*l.* (minus duty) from the late Mr. Hamer Hargraves, amounting, together with the interest allowed by the bankers, to nearly 400*l.*; exclusive of the profits of the late ball, not yet ascertained; and about 45*l.* collected within the few last weeks amongst the working-classes, of which a separate account is kept under the designation of "The Operative Building Fund," and which is expected to be considerably increased within a short time. These resources are, however, very insufficient for the providing and fitting up of a suitable building to comprise all the above-mentioned desirable objects, upon an adequate scale, with a view to the numerous and increasing population of Preston. Contributions are, therefore, respectfully solicited from the public at large, and especially from the wealthier and middle classes of inhabitants and others, who are interested in the town and neighbourhood of Preston.

The present funds are placed in the bank of Messrs. Lawe, Hudson, and Lawe, in the names of the following trustees, *viz.*—R. W. Hopkins, Esq., John Addison, Esq., Thomas German, Esq., John Paley, Esq., George Jackson, Esq., Charles Buck, Esq., and B. F. Allen, Esq.; and all future subscriptions will be placed to the same account.

Contributions may be paid or remitted to Robert Lawe, Esq., Treasurer of the Institution, at the above bank; Mr. J. R. Allen, Secretary; or any of the members of the committee.

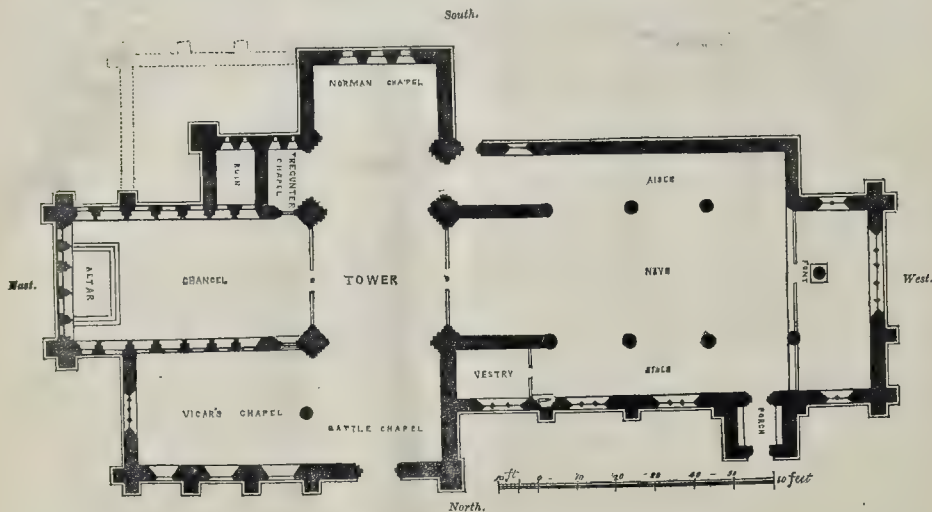
**MOLIERE'S MONUMENT—AN AWKWARD BLUNDER.**—The *National* notices a fault of orthography on the monument of Molière, which was only perceived after its inauguration. The figure placed to the left of the fountain, and representing a muse, holds in its hands a list of Molière's comedies, on which the *Avare* is written with two r's. "What," asks the *National*, "can the Committee of Surveillance say for itself? It cannot plead want of time nor want of spectacles. The word is written in black capital letters on a white marble, as clearly and visibly as possible. The committee consisted of 20 members, some filling the highest offices in the Administration, and the others occupying seats in the Academy or belonging to the French Theatre. One would naturally suppose those gentlemen to be competent judges. If they did not sin through ignorance of grammar, how have they accomplished their mission? What did they oversee? A fault of orthography on a literary monument, between the hands of a muse and by the side of Molière! A fault of orthography saluted by all the learned bodies in Paris! Such a mistake is certainly calculated to rejoice critics; and the epigrams to which it gives rise are assuredly well-merited.



## PRIORIAL CHURCH OF THE HOLY CROSS, BRECON.



NORTH-EASTERN VIEW.



GROUND-PLAN.

TO THE EDITOR OF THE BUILDER.

SIR,—Having a short time ago sent you for insertion in *THE BUILDER*, a sketch of a Saxon font, I beg now to forward you a perspective view and a ground-plan of the church in which it is placed, from my own sketch and actual measurement; and if you can find room in an early Number for them, and the interesting particulars I have gathered respecting the first erection of the church, you would greatly oblige, Sir, your most obedient servant,

J. L. T.

Berkeley-place, Brecon, December, 1843.

St. John the Evangelist's, formerly from its cross aisles and chapels called *Ecclesia Sanctæ Crucis*, and sometimes the Church of the Holy Rood, stands upon a hill above the river Howden. It is certainly most romantically situated on the verge of a thick wood intersected with delightful walks, below which the murmuring stream, bursting over many natural and artificial falls, hides itself in the thick and ample foliage, and here and there reveals itself again with increased force and beauty; and being surrounded by a chain of stupendous mountains, amongst which are prominently

seen the celebrated Brecknock Beacons, it forms upon the whole a picture on which the eye would dwell long with interest and admiration. The church formerly, like the precinct of the priory, was surrounded by a lofty and strong embattled wall, still remaining on the western side. Some suppose it was built, and others think it was only repaired, by Bernard Newmarch, the Norman conqueror of Brecknockshire, who entered the county in the year of our Lord 1092, and, by the superior discipline of his Norman soldiers, prevailed against the sturdy bravery of the Welsh, under their king, the courageous but unfortunate Bleddin ap Meenarch, who opposing him,



was slain gallantly defending his life, his liberty, and his country against a horde of robbers, who had no pretence for hostilities except a savage and unjustifiable love of plunder, and no argument but the sword to support them. However, as regards the church, it is probable there was one here before the conqueror's time, from the above-mentioned Saxon font, and some slight remains in the present building of the architecture of that age; but it is certain he so far improved and enlarged it, and caused it to be dedicated to the honour of St. John the Evangelist, that he may very properly be called its founder. Since his days it has undergone so many changes, in consequence of the injuries of time and unavoidable dilapidations during the lapse of nearly eight hundred years, and the "beautifications" (to use a Gothic term to describe a Gothic act) the interior has lately received, that little of its original form remains; and at present it has a venerable, though rather a motley, appearance to the eye of the man of taste.

The outward walls of the nave beneath the tiles are what is termed embattled, and within runs a gutter to carry off the water. The windows are the "pointed" of the 15th century, and divided at their tops by ramifications; the western one only excepted, which has a circle near the top, within which are quatrefoils conjoined at the centre. The aisles, which appear to have been added subsequently to the erection of the most ancient part of the fabric, have windows of a later date. The arch of the north eastern door is of the same date as the windows in the nave. Proceeding eastward a different style prevails; so that it appears from the long lancet windows divided on the inside by slender clustered columns, and externally by narrow compartments, that the chancel and cross aisles, on the junction of which is placed the tower or steeple—a building of the same age—are of much higher antiquity.

At first the structure was perfectly cruciform, as there formerly stood a chapel on the site, marked on the plan by dotted lines, out of the ruins of which the two small chapels were built some three centuries ago. To describe the interior of the church in its present state, I begin at the western end, near which is the beautiful circular stone font before-mentioned. The nave of the church, which is very lofty, is in length from the western end to the entrance into the chancel, one hundred and thirty-seven feet. On each side are the aisles divided from the nave by lofty pointed arches on round piers. It is intersected by two cross aisles, or transepts, forming the Chapel of the Men of Battle and the chapel of the Norman or Red-haired Race, in the vernacular, Capel Cochaid; they are each about 40 feet in length by 30 feet.

The chancel is 64 feet in length by 30 feet in breadth; and here time and his apparent adversary (though frequently too powerful coadjutor), *innovation*, have failed in their attempts to efface more than a portion of the ancient magnificence of the Brecknock Priory Church. On each side are rows of light and beautiful clustered columns, broken off just above the corbels, though they shew parts of the ribs springing to support the roof; these were, doubtless, continued originally throughout the nave; for though the ceiling which preceded the present one was of early date, I should not suppose it was coeval with the foundation of the fabric.

Those who have seen structures of the same description as Westminster Abbey, know how to appreciate the grandeur and sublimity of this style of architecture; and admitting the varied excellences of the different classic styles—the elegance of the Grecian, and the boldness of the Roman—yet what is so strangely called the Gothic arch, has something peculiarly attracting in its sweeping curve and finely-pointed termination. The long rows of slender columns, shooting loftily up and at once bursting in the richest and most fanciful foliage, or mingling in the labyrinth of the intersecting groin, and all the varied details appertaining to this most interesting style, naturally and forcibly elevate the human mind, tend to impress the soul with devotion, and powerfully assist and promote religious awe and holy rapture, when—

"Through the long-drawn aisle and fretted vault  
The pealing anthem swells the note of praise."

J. L. T.

# DESIGN FOR AN INFANTS' SCHOOL.



ELEVATION OF THE SCHOOL ENTRANCE FRONT.

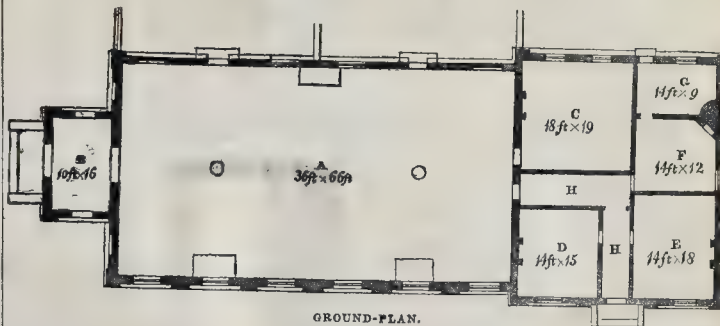


Porch.

School-Room.

Dwelling.

LONGITUDINAL ELEVATION.



GROUND-PLAN.

## TO THE EDITOR OF THE BUILDER.

In the ground-plan, A, is the school-room; B, a lobby open at the sides and front; E, parlour; D, bed-room; F, kitchen; and G, a wash-house, communicating with a small yard at the back; H H, are passages; C is a committee-room, which might also be used in the day time as a repository for books, &c. The school-room would accommodate 330 children, and be kept at a proper temperature by two stoves in the centre; the ventilation would be ensured by the top sashes being made to swing on pivots; no ceiling would be necessary. If intended to be used also as a Sunday school, a moveable partition may be constructed so as effectually to divide it when requisite into two separate rooms.

In the elevations I have endeavoured to unite economy with propriety. The dwelling-house ought in the design to form a feature distinct from the school. The pilasters, plinth, entablature, chimney-shafts, and the dressings to the doors and windows should be of cement jointed, the other parts might be of brick. A wall may surround the play-grounds; their size depending on the plot of ground intended for the site. The building ought to be at some distance from the footpath, and should be surrounded by an iron railing, with piers and gates.

C. D.

London, January 2, 1844.

[We do not approve of the mass of building containing the porch being set before the end of the school-room, finished with a pediment, which latter it would partly conceal in every view; the flank of the school-room containing six bays and six windows, we hold would be improved by continuing the roof of the school-room quite over the porch, so as that an unobscured pediment might then be formed over the end elevation of the whole building; and also that the flank elevation might contain seven bays and seven windows, and two closets might then be formed at the sides of the porch. We do not particularly like the dwelling-house as attached to the main building, making the latter merely as an irregular wing, without being picturesque, although uniformity has been sacrificed. We do not approve of a public building being unsubstantially decorated with cement; but prefer the adoption of a style of architecture which can be executed with a moderate proportion of dressed stone, or with moulded brick. We do not think strict economy has been followed in making the dwelling, which consists of small apartments, one of them only 14 feet by 9 feet, in a building, of the same altitude as the school-room, which is 66 feet long and 33 feet wide. By the adoption of domestic Gothic architecture in school-buildings, all these sacrifices and anomalies may be effectually evaded, and the feelings of most people be better consulted. Nor is there any reason why school-buildings should be of the very latest kind of the Gothic, or of the latest Tudor style, from whence "the vital spark" of architecture "had fled," but the more ancient and more scientific style, of assimilation with the parish churches, may be successfully adopted.—Ed.]



## Literature.

*New Experiments on Building Materials, in Reference to their Conducting Power, Dryness, and Resistance to the Progress of Fire; as read before the Chemical Society of London.* By JOHN HUTCHINSON, M.R.C.S. F.S.S. London: Taylor and Walton, Upper Gower-street, 1843. 8vo. p.p. 48. 1 lithograph.

THE author of this tract sets out with declaring that "having been, for some time past, engaged in the study of Medical Police, or Public Hygiene, I found upon following out one of the branches of that science (the section of warming) a great want of information respecting the relative conducting power of the various materials used in building. I therefore conceived it absolutely necessary to examine this subject, as it appeared to me impossible, or at least unwise, to put forth rules to the public for the best mode of warming buildings, with a view both to economy and safety, until I ascertained the natural relative power of the different substances used in their construction for confining heat or permitting its escape. Hence I instituted an extensive series of experiments for that object, which I now venture to lay before this society, with a few remarks relating thereto.

"To be brief, I may therefore say that the present memoir is an inquiry into the relative power of conducting caloric, of all or most of those materials used in the construction of our habitations, whether private or public, together with their relative specific heat.

"The substances which I have examined are the following, viz:—

"Of Woods.—Oak, beech, and fir.

"Of Bricks.—Common or Cowley stock brick, facing or malm brick, and fire brick.

"Of Compositions.—Asphalt, hair and lime, lath and plaster, Roman cement, plaster and sand, plaster of Paris, and Keene's cement.

"Of Rocks.—Slate, Yorkshire flag stone, Leunelle marble, Napoleon marble, Portland stone, Bath stone, chalk, and three specimens of the stones used in building the new Houses of Parliament, namely, Norfolk, Bolsover, and Painswick.

"Of Metals.—Lead.

"The annexed table No. II.\* will shew the times of the passage of caloric as to velocity through the various substances. It is here designated the 'resistance to the passage of heat inwards,' in contradistinction to another class of experiments, of heat passing outwards, established by the laws of cooling. In the last column of Table II., the mean time of every 10 degrees rise, is calculated. It will be here observed, that the resistance afforded to the passage of heat for the first degree, i.e., from 55 to 56°, is 71°/5, and the first ten degrees only 82°/58, and the two following ten degrees progressively less; it is not until the 100° that the time materially increases, and from thence it continues to increase up to 200°.

"ON THE RELATIVE DRYNESS OF BUILDING MATERIALS.

"This portion of the present memoir has been added after the foregoing experiments were read before the Chemical Society. Finding the subject of the natural absorbing power of these substances for water easily obtained, and believing also the inquiry to be of no less importance as regards Hygiene than that of their conducting power for heat, is the reason I assign for subjoining this matter, as it may thereby enable builders to correct, in a great measure, the evil attending that dampness natural to certain localities, which affects the foundations of buildings, to the great inconvenience of their proprietors.

"Eight other substances have also been added to twenty-two of the materials before examined. I am indebted to the kindness of my friend, Mr. Robert Robinson, of Newcastle-upon-Tyne, for forwarding to me some different specimens of flag stone now much used in that town, which has been so remarkably altered of late years; some of them will be seen by the table to resist the passing of moisture most completely; also a specimen of Maulmien teak, a wood which is now rapidly coming into use from the many advantages it possesses over oak, especially that of its not destroying iron. A specimen has also been for-

\* We have not space for the insertion of these valuable tables.

warded to me of Messrs. Mann & Co.'s 'Patent stucco paint cement,' which, I understand, is extensively employed by engineers and conductors of public works, from its property of resisting the transmission of moisture in exposed and damp situations. It also adheres with great firmness to any smooth surface, and hence is well adapted to encase brick houses. I am told the principal ingredients used in its composition are linseed oil, resin, and a sand stone, of the oolite kind, from Rouen.

"Five hundred grains of each of these materials were reduced to coarse fragments of uniform size, and laid between thick cloths, perfectly saturated with water, for a given number of hours, and afterwards weighed; the increase of their weight signifying the quantity of water absorbed by each substance. In the following table the substances are ranged in gradation; the driest, or that which absorbs least water, placed first, and that which absorbs most water at the bottom of the list, with the others arranged between in their respective order. The first column gives the absorption by equal weights, and the second column the absorption by equal bulks; and the third column the specific gravity, or their relative weight as compared with water.

TABLE X.  
Absorption of Moisture, by Weight.

Name of Substance.	Absorption of moisture by weight.	Absorption of moisture by bulk.	Specific gravity.
Aberdeen Granite ..	2.00	5.416	2.708
Napoleon Marble ..	3.00	9.85	3.284
Carrara White do. . .	3.10	8.42	2.717
Shetland Flag Stone	3.25	8.74	2.691
Caithness ditto . . .	3.27	8.62	2.638
Slate . . . . .	3.50	97.58	2.788
Leunelle Marble ..	4.00	10.71	2.678
Asphalt . . . . .	5.00	12.86	2.572
Carrara hard Marble	8.50	23.09	2.717
Mann & Co.'s Stucco	16.00	35.56	2.223
Arbroth Flag Stone	20.50	50.77	2.477
Heworthburn ditto . .	23.00	56.85	2.422
Fire Brick . . . . .	32.00	70.43	2.201
Norfolk . . . . .	33.50	74.33	2.219
Portland . . . . .	34.25	73.87	2.157
Yorkshire Flag . . . .	40.00	91.40	2.360
Bolsover . . . . .	40.10	86.77	2.164
Painswick . . . . .	58.00	129.80	2.238
Bath Stone . . . . .	78.00	141.12	1.858
Maulmien Teak . . . .	82.50	61.85	.7498
Stock Brick . . . . .	109.00	199.57	1.831
Hair and Lime . . . .	109.12	184.52	.691
Malm Brick . . . . .	116.50	186.63	1.602
Keene's Cement . . . .	126.50	155.59	1.230
Chalk . . . . .	133.50	206.79	1.549
Roman Cement . . . .	133.56	208.35	1.560
Plaster and Sand . . .	147.00	192.27	1.308
Beech Wood . . . . .	185.50	138.04	.7442
Plaster of Paris . . . .	187.50	220.50	1.176
Oak . . . . .	224.75	128.04	.5697
Fir Wood . . . . .	622.75	265.41	.4262

## PRACTICAL DEDUCTIONS.

"Asphalt stands as the best composition for resisting moisture; it is a slow conductor of heat, and hence is well adapted for flooring, as in cells of prisons, where economy of heat and dryness, the most important advantages, are obtained. Slate will be seen to stand as a very dry substance, but from its quick conducting power (Table IX.)\* it is very unfavourable to flooring where warmth is required; but when the one property is sought for and not the other, as preventing the ascent of moisture up the walls of houses, it is well calculated to be useful, by forming a layer in the wall a few inches above the ground. The absorbing power of common brick appears very great, being more than  $\frac{1}{2}$  of its own weight; whereas Mann & Co.'s cement is not greater than  $\frac{1}{4}$  of its own weight, and hence more than six times better adapted to resist moisture than brick; therefore the advantage to be derived by covering brick houses in exposed situations with this substance is considerable, while Roman cement resists moisture even worse than brick. I wish it to be borne in mind that I only speak of this stucco as regards its power of resisting the transmission of water, being the only property of it which I have examined.

"Keene's cement and plaster of Paris stand as the warmest substances, therefore are well adapted to line rooms with; while hair and lime is a remarkably quick conductor, and therefore a cold substance for that purpose. I

would also draw attention to the fact that plaster and sand and plaster of Paris (particularly the latter) are admirably calculated to resist the action of fire; while we know, on the other hand, that lath and plaster is about the most combustible material in a house. I can most confidently recommend plaster of Paris and plaster and sand to be employed in surrounding iron chests, or other places which contain valuable property, intended to be protected from fire. If an iron chest be surrounded with six or eight inches in thickness of this substance, I believe it will perfectly preserve papers, &c., from any destroying heat in the midst of the burning of our ordinary dwelling-houses. I may also point out that Yorkshire flag stone is a very quick conductor, and therefore ill adapted for warm flooring; also that lead which forms the covering of roofs is a remarkably quick conductor, and therefore a great waste of heat is experienced where such covering exists; hence the third back rooms on ground floors in our London houses are found to be so cold; a vast quantity of heat escapes through the leaden roof and through three of the surrounding walls, which are generally external, and so thin as to allow of a free escape of heat. Such places should be lined with slow conductors if warmth is sought for. Touching the practical utility of the specific heat experiments, I may point out that fire-brick absorbs a great quantity of heat, and therefore is well adapted to form the backs of our fire-grates; whereas, with iron backs, there is an enormous waste of fuel and heat, at the same time the fire requires constant stirring, and a quick supply of coal to keep it in; yet, curious to remark, we never enter a house, even of the highest order, where iron backs to fire-grates are not universally to be seen; while a back formed of a composition, as that of fire-brick, which can be as easily moulded into any desirable shape, would save fuel, thoroughly warm any apartment, require less stirring, and not go out so soon.

"There certainly exists in the present day a most extraordinary inattention to the economizing of artificial heat generated in the fire-grates of our dwellings in this country; the whole of this error proceeds from the total inattention of architects and builders to the subject of the difference of conduction of heat by different materials, which, I consider, is one of the most important points to study before an architect attempts to construct a dwelling. According to Deprez, iron is more than twice as quick a conductor as lead, and, according to these experiments, lead is more than eight times as quick a conductor as fire-brick, bearing the relation of 1888 to 223; and the difference of the relative absorbing power for heat, viz., that heat which is required to bring them to the same temperature, is in the relation of .0392 to .1917, the fire-brick retaining nearly seven times more heat than the lead. If to this we add the great escape of heat by the chimney, well might it be said that 'not more than a fiftieth portion of the heat generated was rendered available for warming apartments at the period Franklin visited England.' Rumford estimated the loss of heat and fuel to be more than  $\frac{1}{4}$ , and the lowest estimate is that of  $\frac{1}{3}$ . A due consideration of conduction, in relation to this most necessary part of our habitations, would, in a great measure, contribute to produce that which is sought for by every Englishman, 'a cheerful fireside.'

"With regard to the specimens of wood I have examined, it is worth observing that Maulmien teak absorbs much less water than oak wood, in the proportion of 82 to 224, being nearly one-third less; (?) and as the density of woods in their ordinary state bears a strict relation to their porosity or proportion of air within their pores, connecting with this, the fact that iron, protected from contact with the atmosphere and water (being compounds of oxygen), the better it is preserved, may very possibly be the reason assignable for the truth why iron is preserved considerably longer in Maulmien teak than in oak; the relation of absorption of water with the teak and oak (omitting the decimals) is as 82 of the former to 224 of the latter. The density of all these specimens of wood is here calculated from the state in which they naturally exist, that is, as dry as could be obtained, yet containing an unknown quantity of air and moisture. Mr. Parnell observes, 'when wood, rendered perfectly dry by the aid of heat, is exposed at



common temperatures to the atmosphere in its ordinary state of humidity, it re-absorbs a certain proportion of water, varying according to the compactness of the wood, and to the quantity of deliquescent saline matters present.' In reference to these two assigned reasons that govern the absorption of water by woods, I would draw attention again to the Maulnien teak in comparison with the beech wood; the relative specific gravity or density of the former to the latter is as 7442 to 7498, being very nearly equal, yet the absorbing power of the two is very different, being in the proportion of 82 to 185. These facts render it incumbent on me to recommend it to the attention of ship-builders.

"By Table X. it will be observed that the two kinds of flag stone, termed Shetland and Caithness, absorb very little moisture. Having been previously informed of this property, I was desirous of examining them, and certainly they maintain the character determined from the observation of practical men. Their conducting power for heat, I had not an opportunity of calculating, but if I might venture an opinion, I suspect they would range like Yorkshire flag stone; if so, they are quick conductors, or cold materials for flagging rooms where warmth is required; nevertheless, they will be found as valuable materials for arresting the ascent of moisture in the walls of houses; and speaking from memory, I believe the Caithness flag has thus been employed in the North of England with great success.

"The Carrara marbles mentioned are those generally employed in constructing mantelpieces; it is curious to observe, though their density is the same, yet the harder specimen absorbed more than twice as much water as the softer marble.

"Portland stone, Bath stone, and the stones employed in erecting the new Houses of Parliament, may be considered as spongy materials for absorbing water; their relative conducting power may be referred to in the first column in Table IX. It will also be seen that Napoleon marble is a warmer material than common brick. I mention this to correct the general opinion that brick is a slow conductor, and therefore a greater thickness of that material should be used in forming the walls of our houses; hence it is that the brick walls so often neither afford protection from the cold of winter nor the heat of summer.

"It will be observed that the specific heats have been compared with water as 1; therefore, if we reflect upon the capacity of water for absorbing heat, it very much exceeds all the substances with which it is compared. Water, therefore, becomes a reservoir for heat upon the surface of the globe; islands being surrounded by this reservoir, are preserved of a more equable temperature than main lands. It was the knowledge of this which led Cook to the conclusion that there must be a vast continent at the South Pole. That great current, universally bearing in one direction from south to north, the 'Gulf Stream,' transports an enormous quantity of heat from the Equator towards the North Pole, running at the rate of four miles per hour, and retaining for a thousand miles, from the Straits of Bahama, a temperature of ten degrees warmer than the air, and maintains an open sea, in the meridian of East Greenland and Spitzbergen, moderating the cold of all the lands in that inhospitable region. What has thus been going on for ages in the great scale of nature, is now made applicable in miniature, where water is used to warm the different apartments in our habitations, receiving a great amount of heat at a given point, and circulating through our chambers in pipes, yielding back that heat to the surrounding medium.

"In reference to the conducting power of malm and stock brick, it will be seen that stock brick is placed twelfth in the scale, and malm brick the sixteenth; it is, therefore, so much colder as a shield from the weather. From this circumstance I would remark, that when this brick (malm) is used to case a building (as is now commonly done), the walls should be constructed proportionally thicker, or we render the house so much colder. The absorbing power also of this brick for heat is very low, being placed third in the scale in Table IX. (third column); therefore we may conclude that malm brick is more a substance to please the eye for building than useful as a protection against the escape of heat; and

what applies to the escape of heat will bear a similar relation to the protection against the cold of our climate.

"It is curious to observe how low in the scale hair and lime is placed, both as to the conduction and capacity for heat. If lead were omitted from the table it would stand nearly as the quickest conductor and the lowest specific heat, proving that the compound is ill adapted to line our rooms, as far as concerns the preservation of heat. The best property of Roman cement, from these tables, certainly appears to be that of its slow conducting power, and therefore it is much better adapted to encase brick houses than malm brick; and as far as regards their relative absorbing power for moisture, the difference is not very great, being in the relation of (omitting the decimals) 133 of the former to 116 of the latter. But in this humid climate, the absorption of moisture is a most important consideration for all who erect habitations with a view of combining comfort with the order of architecture. Too often is it to be seen that the former, not to say yields to, but is totally neglected for the sake of the latter. One of the great exciting causes of rheumatism, that most common disease, is, I believe, most generally produced by the ill-constructed order of our habitations. Were air visible, we should wonder at witnessing the cascade (if I may be allowed to use this term) that is maintained between the windows and doors towards the fire-place, in the midst of which we are compelled to exist, and when experiencing this we draw towards the very part of the room where the current is strongest—to that imaginary circle which encompasses the fire,—here the evil is increased."

The above copious extracts from this small tract will give some idea of the valuable practical philosophy relating to architecture contained in its few pages; but much greater promise is held out by the author in his concluding observations, which are as follow:—

"With these remarks I leave the subject for the present, intending to enter more into it in a work which will shortly appear on the 'Construction, Warming, and Ventilating of Public and Private Buildings,' a topic which has lately engaged much of the public attention, and on which many revived theories have been brought to the test of experiment as newly discovered; but which, it will be obvious from a perusal of the work in question, are, in point of fact, some of very ancient date, and not one of recent invention, more especially those now in use in the ventilation of public buildings."

We doubt not the author's numerous, expensive, and toilsome experiments will prove a successful addition to the knowledge of practical architecture. We therefore recommend an attentive perusal of this work, which, though small, is a condensation of a great deal of scientific work; and no doubt he who does peruse it will desire anxiously to see forthcoming Mr. Hutchinson's other works.

## F.

## HOSPITAL OF ST. CROSS, WINCHESTER.

If the Hospital of St. Cross is reformed at all, it must be by the pressure from without. Public opinion must be brought to bear upon it, and public spirit and public honesty be set in array against the present monstrous mode of applying its revenues. We have fortunately a parallel case in our own city; and the success which attended the exertions of those public-spirited individuals who rescued the management of St. John's Hospital and other charities from the old corrupt Corporation of Winchester, should stimulate others to do likewise. St. John's Hospital, like the Hospital of St. Cross, once maintained but six old women, with but an indifferent allowance; while its revenues were expended for the benefit of its managers—the mayor and aldermen of Winchester. Suits in Chancery were commenced against the corporation, notwithstanding that they were appointed, by the testaments of the endowers, the managers and controllers of the charities through all time, just as is the present Bishop of Winchester the controller, the responsible controller, of St. Cross. Those suits were, after much vexatious opposition and delay, successful against the corrupt trustees, and the control they had abused was taken from them and given to others nominated by the Lord Chancellor. And what is the result?

Twenty-six persons are now comfortably lodged and fed; a new almshouse is built; the revenues are rapidly increasing; the charity is now a far more valuable one than is St. Cross under its present mismanagement; and all this good has been effected by the disinterested and philanthropic exertions of a few men who sought no other reward than the approval of their own consciences, and the approbation of all honest men. A similar course would be, we think, successful in the case of St. Cross; and in these times of reform and improvement, when associations are formed for the carrying out of almost every conceivable mode for benefiting the poor, and removing the plague-spots of ignorance and pauperism from the land, surely there are those who will lend a hand to such a noble and desirable object. The preachers of that faith of which the noble master of St. Cross is also a teacher, tell us from their pulpits that "he who giveth to the poor lendeth to the Lord." What he does and deserves who taketh from the poor we may imagine. But surely a gift to the poor which promises a more abundant return can hardly be found, than would a mite contributed to a fund for instituting suits in Chancery for the restoration of the funds of St. Cross Hospital to their original uses and intentions. We have merely thrown this out as a hint which we hope will be acted on. We can see no reason why the Hospital of St. Cross should be exempted from the power which has searched and reformed other public charities. We know that no charitable institution ever needed it more, and we hope yet to see it what it ought to be—an extensive asylum for the poor and destitute; a means of assistance to the hungry and thirsty wayfarer and wanderer.—*Hants Independent.*

## STATUE OF THE QUEEN AT EDINBURGH.

THE magnificent statue of Queen Victoria, executed by our celebrated sculptor, Mr. Steele, and which workmen have been employed for some time past in erecting on the top of the grand portico of the Royal Institution Buildings immediately behind the apex, was opened to public view on the evening of Tuesday, and in the course of Wednesday was eagerly gazed upon by numerous groups passing along the fine promenade of Prince's-street. It called forth general admiration, although there were not wanting individuals to make objections in reference to various supposed faults in the design, which, however, none of these hypercritics could very satisfactorily explain. As we have said, the statue was the subject of general admiration. Our Most Gracious Sovereign is here represented wearing a simple coronet, but in her robes of state, which are draped in such a way as to give a general idea of Britannia, as seen on the coins of the realm, while the bust and features most strikingly resemble those of the Queen. The neck and head are truly graceful, and the *trout ensemble* is classical and commanding. The height of the statue and base is 18 feet, while the length of the base (the flowing robes reposing upon it) is about 20 feet. Her Majesty is here represented in a sitting posture, her left hand leaning on the orb, while from her right hand, covered by the drapery, appears the point of the sceptre, resting on the arm. The Queen is looking up Hanover-street, towards the statue of George IV., her royal uncle, in the centre of George-street. The statue adds greatly to the architectural magnificence of the Royal Institution Buildings; and, when viewed from the west, forms a fine leading point for the Scott Monument, and other interesting objects in the vista. It is creditable to the institution, and will no doubt serve to extend the fame of the clever sculptor.—*Caledonian Mercury.*

## MONUMENT TO DR. HARVEY, FOLKESTONE.—

It is in contemplation to erect a monument by subscription to the memory of the celebrated Doctor Harvey, the discoverer of the circulation of the blood, &c.; and several respectable inhabitants are actively engaged in collecting funds in order to raise a memento to their illustrious townsman. Dr. Harvey was born in Folkestone, and it is intended to erect the monument on the spot of his birth-place.

A ROYAL COMPOSER.—A portion of the musical service at St. George's Chapel, Windsor, on Sunday last, was the composition of Prince Albert.



## RAILWAY INTELLIGENCE.

*Extension of the Eastern-Counties' Railway to Ipswich.*—There now appears every probability of the Eastern-Counties' Railway being extended to Ipswich, every preparation having been made for the introduction of the bill for that purpose into the House of Commons. The opposition of the Eastern-Counties' Company has so far subsided that, we understand, they are very desirous to promote the extension, and the bill is now intrusted to the care of the Parliamentary agent they had retained for the Hadleigh line. The applications for shares have been very numerous, considerably exceeding the number at the disposal of the committee, so that the apprehensions of the *Railway Times* and *Bury Post* upon this subject may be allayed. As a portion of the extension from Colchester, we shall be happy to see the work commenced, and we confidently expect that it will ultimately become the main line to Norwich. Considering that the Northern and Eastern Extension, by which it is now proposed to connect Norwich with the metropolis, will be at least 15 miles longer than the route by way of Ipswich, we think we may entertain an expectation that the citizens of Norwich will regard with favour an extension of the Norwich and Brandon Railway from East Harling to Stowmarket. Indeed, as the principal railway traffic from Norwich must be towards London, the saving of 15 miles in distance must be of some moment. We observe that a meeting is to be held at Bury next Wednesday, to consider the course to be pursued in consequence of the abandonment of the Hadleigh line by the railway company. Mr. Eagle has addressed a letter to the local papers, in which he suggests that exertions be made to induce the Parliament to institute a deliberate inquiry into the merits of the variety of different plans proposed, before they allow any bill whatever to pass upon the subject. Mr. Eagle here refers to the Northern and Eastern extension, and the Hadleigh and Bury branch; but we must remind him that Parliament has already pronounced upon the expediency of a railway *via* Ipswich to Norwich; which resolution, we suppose, will have some weight with the committee on the Ipswich bill. It may therefore be assumed that the main line to Norwich will in no case be made by way of Bury. We hope, therefore, the meeting on Wednesday will see that their interest lies in supporting the Ipswich line, as well as in proposing a branch to Cambridge. Under such circumstances, we see no reason why the town should lose the benefits of its market, for it will still remain the centre of a large district. With regard to the Harwich extension, we understand no arrangement has been come to between the competing interests of Mr. Locke's line, supported by Mr. Attwood, and Mr. Braithwaite's line. The plans and sections of the former prove that the ground has been most judiciously chosen, as for ten miles there is no cutting or embanking to the amount of four feet. There is a plan for a floating harbour with extensive quays and jetty. The execution of such a work would be of the highest importance to that town.—*Ipswich Journal*.

*South-Eastern Railway.*—The Dover terminus buildings of this railway are progressing rapidly, and when finished (which will be right early), they will present a magnificent appearance, and afford the most ample accommodation for its traffic. Abbott's Cliff Tunnel is now completed, and the permanent rails are now laid throughout. The line will be opened for general traffic in a few weeks. These prospects are highly gratifying to the good people of this town and neighbourhood. The importance of the London and Dover Railway to this locality in particular, and to the nation generally, we have constantly maintained; and we trust the auspicious day of its completion will be celebrated in a manner befitting the occasion. Let there be then a concentration of those who represent the interests of Dover and the out-ports, to meet the chairman, the directors, the engineers, and the other gentlemen who have brought this herculean undertaking to a close. Let there be a gathering together of the leading men of Dover, Deal, Folkestone, Canterbury, Sandwich, and the other neighbouring places, as

well as those of Boulogne, Calais, and Ostend; so that a general expression of respect and gratitude may be unanimously given by England and France to these indefatigable and enterprising spirits, who have so ably conquered those formidable obstacles which have been strewn in their path while constructing this noble highway to the Continent, which will be the means of uniting the metropolis of England and France in a closer bond of union and intercourse than has hitherto existed.—*Dover Chronicle*.

On Saturday week, the proposed branch line to Maidstone, from the South-Eastern Railway, was commenced.

*West-London Railway.*—At a special general meeting of this railway-company, held on Tuesday week, at their offices, Abchurch-lane, Mr. Robert Guntton in the chair, to consider the expediency of extending the railway to the river Thames, and of applying to Parliament for an act or acts to enable them to proceed with the necessary works, the report of Mr. Robert Stephenson was read, and a series of resolutions moved by Mr. Whitechurch, authorizing the directors to proceed as above, were carried, only two hands being held up for an amendment to adjourn for a fortnight, moved by Mr. White.

*Manchester and Bolton Railway.*—On Friday week a special general meeting of the Manchester, Bolton, and Bury Canal Navigation and Railway Company was held at the Clarendon-rooms, South John-street, Liverpool. It was numerously attended. James Branner, Esq., presided. The 11th half-yearly report was read, and also the receipts and disbursements on the railway and the canal, for the half-year ending the 31st of December, from which it appeared that the railway receipts had amounted to 21,042l. 11s., and the disbursements to 8,084l. 10s. 1d., leaving the railway surplus 12,957l. 11d. The canal receipts had been 6,987l. 6d., and the disbursements 2,957l. 8s. 10d., leaving the canal surplus 4,029l. 11s. 8d., which, added to the railway surplus, and deducting 554l. 4s. 3d. for interest, rents, and commission, left a net profit for the half-year of 11,432l. 8s. 4d. To this was added 1,736l. 6s. 4d. for half-year's dividend, and the balance from 30th June, making the disposable net proceeds 13,168l. 14s. 8d. A dividend of 2l. per share would amount to 12,402l., leaving on hand, including the dividend on the 120 shares held by the company, a surplus of 1,066l. 14s. 8d.; and the committee had accordingly directed a dividend of 2l. per share to be paid to the proprietors on the 1st of February. In the course of the proceedings, the chairman stated incidentally that the committee had that morning borrowed 20,000l. at 3½ per cent. The agreement of the company with the Liverpool and Manchester Railway Company, giving the latter an interest in the line of the former, was approved and confirmed; as was the agreement with the Manchester, Bury, and Rosendale Railway Company; and the committee of management were authorized to carry it into effect, and for that purpose to obtain parliamentary powers to raise any sum not exceeding 100,000l. Thanks were then voted to the directors and the chairman, and the meeting separated.

*Taff Vale Railway.*—The adjourned meeting was held at the Cardiff Arms, Newport, on Tuesday week, Sir John Guest, Bart., in the chair. The committee of investigation appointed at a previous meeting, having gone into a detailed examination of the proposed agreement to lease the docks to the Marquis of Bute, stated that they were of opinion that a permanent arrangement with the Marquis of Bute for the docks would be an object of the greatest importance to the railway; and strongly recommended to the shareholders, as the most effectual means of carrying out that object, that an Act of Parliament be obtained to enable the railway company to take a lease of the Bute Docks and the adjacent conveniences from the Marquis of Bute; and the committee also recommended that in case such an arrangement be made between the Marquis of Bute and the railway company, that the terms and period upon which such lease should be held, be printed and circulated among the shareholders at least one month prior to a meeting of the proprietors, to be called for the purpose of ratifying or rejecting such arrangements. The report having been received,

thanks were voted to the committee for their services; and it being resolved that the former agreement made with the Marquis of Bute was in its present form ineligible, it was determined that the directors should be empowered to take measures under the notice already given for applying to Parliament for a bill, in conformity with the recommendation of the committee.—*Bath Herald*.

*Whitby and Pickering Railway.*—A special general meeting of this company was held at Whitby, on Wednesday week, for the purpose of authorizing the committee to give their formal assent to the notice served upon their treasurer by the York and North-Midland Railway Company, with reference to the termination of their line at Pickering. The opportunity of the meeting was taken by the directors to obtain from the shareholders authority to negotiate with the York and North-Midland Railway Company for the sale to them of the Whitby and Pickering Railway, as to which some preliminary steps had been taken by the directors, a deputation from whom had an interview with Mr. Hudson on the subject.

*The Cornwall Railway.*—Pursuant to advertisement, a public meeting of the shareholders and others interested in the construction of a railway through Cornwall, was held on Friday week, in the Town-hall, Truro, for the purpose of receiving a report from the provisional committee, and devising such plans as may be needful for the carrying out this important measure.

*Railway Law.*—It is, we are informed, the intention of her Majesty's Government, immediately after the meeting of Parliament, to propose that a select committee be appointed to consider the standing orders relating to railways, and whether any and what changes ought to be made in those standing orders; and likewise to consider whether any and what new provisions for the advantage of the public, and the improvement of the railway system, ought to be introduced into such railway bills as may come before the House during the present or future sessions, and to report their opinion thereon to the House.—*Times*.

*English Workmen on French Railways.*—A correspondent, who states that a great number of workmen have been induced to come over to France from England in the expectation of obtaining employment on the Rouen and Havre Railroad, requests us to announce, in the hope of preventing a further influx, that "in consequence of some difficulty in procuring land, &c., the works on the said line cannot be proceeded with to any great extent for some weeks to come; and, further, that although there are many men fully employed, yet hundreds are actually starving from want of work." He adds, "During the last fortnight the Rev. Mr. Tucker, with means benevolently furnished by Messrs. Mackenzie and Brassey, the contractors of the railroad, has supplied with food and other means of support upwards of 120 men, who have been wandering about the streets of Rouen without bread or any prospect of employment for some time to come."—*Galignani*.

At a meeting of the Oxford Parish Burial-ground Committee, held on Friday week last at the Archdeacon's rooms, Christ Church, the report of the sub-committee was delivered in and adopted, recommending—

1. The purchase of three burial-grounds on different sides of Oxford, for the use respectively of the parishes nearest them; considering the many evils which might result from funeral trains being made to pass out by one road, the injury to property lying on the sides of that road, the great inconvenience likely to arise on occasional days of busy traffic, the interruption to vehicles passing, and the unseemliness of all that would take place amid such scenes, not to mention the great advantage and comfort to the attendants on the funeral processions—the aged and infirm, for example—of not being compelled to extend their walk through the length of the city under such circumstances.

2. That such burial-grounds should be purchased by subscription.

3. That these burial-grounds should be a provision for all persons, being placed precisely on the same footing as the existing churchyards.



## CHURCH BUILDING INTELLIGENCE.

*Restoration of Redcliffe Church, Bristol.*

A meeting of the subscribers to the fund for the restoration of this noble fabric was held on Thursday week, when the right worshipful the Mayor of Bristol presided. The report of the committee was read by Mr. Procter, churchwarden, from which it appeared that although in consequence of the general pressure of the times, and more particularly the prevalence of local distress, the committee did not think it prudent to make a very urgent appeal to the liberality of the public, yet the sum obtained, almost voluntarily, was 4,700*l*. This is far short of the amount required, but the gentlemen present expressed themselves so anxious for the preservation of the church, that they resolved to recommend to the subscribers generally, to allow the money to be expended in putting the church into substantial repair, if sufficient should not be raised to carry out the magnificent plans contemplated last year. We understand that the project of erecting a spire on the present tower is abandoned.—*Bath Herald*.

*Alnwick.*—It is contemplated to erect a new church at Alnwick, Northumberland. A memorial to his Grace the Duke of Northumberland, patron of the living, is now in course of signature, stating that the parish of Alnwick, with a population of nearly 7,000, contains only one church, which is insufficient for the wants of the parish, and requesting his grace's consideration and assistance with the view to the erection of a new church.

*New Church, Lynn.*—At a meeting of the committee, held at the Town-hall on Saturday last, it was resolved that the new church should be erected on a part of Allen's Close, being the ground offered for that purpose by the corporation.

*Llandisilio.*—The Marquis of Anglesey has granted two acres of land in a romantic and beautiful situation, as a site for a new church at Llandisilio, towards the funds for meeting which 360*l*. have been subscribed.

## PATENTS RELATING TO ARCHITECTURE, ENGINEERING, &amp;c.

Granted between 23th December, 1843, and the 25th of January, 1844.

## [SIX MONTHS FOR ENROLMENT.]

Thomas Murray Gladstone, of the Swan Garden iron works, Wolverhampton, ironmaster, for certain improvements in machines for cutting or shearing iron or other metals, which improvements are applicable to other like purposes.—Sealed Dec. 28, 1843.

George Benjamin Thornycroft, of Wolverhampton, ironmaster, for a machine for rolling, squeezing, or compressing puddled balls of iron, and also for crushing or grinding other substances.—Sealed Dec. 28, 1843.

Edward Budd, of Hafod Copper Works, Swansea, Glamorgan, copper-merchant, and William Morgan, of the same place, refiner of copper, for improvements in treating or reducing copper ores, and in the construction of furnaces for treating such ores, part of which improvements are applicable to other ores.—Sealed Dec. 28, 1843.

William Longmaid, of the borough of Plymouth, accountant, for an improvement in the manufacture of copper, tin, zinc, and peroxide of iron.—Sealed Jan. 1, 1844.

Robert Foulerton, of the Jamaica Coffee-house, Cornhill, master mariner, for certain improved machinery for moving vessels and other floating apparatus.—Sealed Jan. 13, 1844.

Anthony Movilton de Glimmes, of Pantion-street, Haymarket, gentleman, for certain improvements in apparatus for propelling vessels on water, and also in machinery capable of communicating manual power to work the same, which machinery is also applicable to raising heavy bodies and exerting power for various other purposes.—Sealed Jan. 13, 1844.

Henry Bessemer, of Baxter-house, St. Pancras, engineer, for a new pigment or paint, and the method of preparing the same; part of which method is also applicable to the preparing and treating of oils, turpentine, varnishes, and gold-size, when employed to fix metallic powders, and metal leaf, or as a means of protecting the same.—Sealed Jan. 13, 1844.

Charles Cameron, of Liverpool, chemist, for improvements in extinguishing fires in buildings.—Sealed Jan. 16, 1844.

Benjamin Cheverton, of Pratt-street, Camden Town, sculptor in ivory, for improvements in ma-

chinery for cutting wood and other materials.—Sealed Jan. 16, 1844.

William Edward Newton, of Chancery-lane, civil-engineer, for improvements in machinery or apparatus for facilitating the tracing and copying of designs, drawings, and etchings of all kinds, either of the original size or upon an enlarged or reduced scale.—Sealed Jan. 16, 1844.

William Basford, of Burslem, Staffordshire, brick and tile manufacturer, for certain improvements in the mode of manufacturing bricks, tiles, quarries, and certain other articles made or composed of brick-earth, and of burning and firing the same, and certain articles of pottery and earthenware.—Sealed Jan. 20, 1844.

Samuel Wright, of Shelton, Staffordshire, for a manufacture of ornamental tiles, bricks, and quarries for floors, pavements, and other purposes, being an extension of former letters patent for the term of seven years, from the 26th instant.—Sealed Jan. 23, 1844.

Henry Davies, of Norbury, Staffordshire, engineer, for certain improvements in the construction of vessels for conveying goods or passengers on water; also certain improved arrangements of machinery for communicating motion to such vessels.—Sealed Jan. 25, 1844.

## SCOTCH PATENTS.

Granted between the 28th November and the 12th of January, 1844.

Arthur Wall, of Bisterne-place, Poplar in the county of Middlesex, surgeon, for certain improvements in the manufacture of iron.—Sealed Nov. 28, 1843.

John George Bodmer, of Manchester, in the county of Lancashire, engineer, for certain improvements in grates, furnaces, and boilers, and also in the manufacturing of iron or other metals.—Sealed Nov. 29, 1843.

Thomas Drayton, of Brighton, in the county of Sussex, gentleman, for improvements in coating glass with silver for looking-glasses, and other uses.—Sealed Dec. 4, 1843.

Francis Higginson, of the city of Rochester, in the county of Kent, lieutenant in her Majesty's royal navy, for certain improvements in fastenings for parts of ships and other vessels, which improvements are also applicable to other building purposes.—Sealed Dec. 14, 1843.

John Hick, of Bolton-le-Moors, in the county of Lancashire, engineer, for certain improvements in steam-engines, and in apparatus to be connected therewith for driving machinery, part of which improvements are applicable to forcing, lifting, and measuring water.—Sealed Dec. 15, 1843.

Henry Austin, of 87, Hatton-garden, in the county of Middlesex, civil-engineer, for a new method of gluing or cementing certain materials for building and other purposes.—Sealed Dec. 26, 1843.

Charlton James Wollaston, of Welling, in the county of Kent, gentleman, for improvements in machinery for cutting marble and stone.—Sealed Dec. 26, 1843. (Communication.)

Margaret Henrietta Marshall, of Manchester, in the county of Lancashire, for a certain improved plastic composition, applicable to the fine arts and to useful and ornamental purposes.—Sealed Jan. 5, 1844.

Charles Townsend Christian, of St. Martin's-place, St. Martin's-lane, in the county of Middlesex, East-India army agent, for improvements in the construction of steam-engines.—Sealed Jan. 12, 1844. (Communication.)

## IRISH PATENTS.

Granted between the 25th October and the 27th December, 1843.

John Wood, of Parkfield, Birkenhead, in the county of Cheshire, merchant, for certain improvements in machinery or apparatus for affording additional or artificial buoyancy to sea-going or other vessels, or for lessening their draught of water, and which said improvements are also applicable to raising vessels, or other heavy bodies, and for securing and supporting the same.—Sealed Oct. 25, 1843.

Ernst Lentz, of Eastcheap, in the city of London, gentleman, for improvements in machinery for raising and forcing water and other fluids, which machinery, when worked by steam or water, may be employed for driving machinery.—Sealed Oct. 25, 1843.

Alfred Jeffery, of Lloyd-street, Pentonville, in the county of Middlesex, gentleman, for a new method of preparing masts, spars, and other wood, for ship-building and other purposes, and also a new method of defending the sheathing of ships, and protecting their sides and bottoms.—Sealed Nov. 7, 1843.

Charlton James Wollaston, of Welling, in the county of Kent, gentleman, for improvements in machinery for cutting marble and stone.—Sealed Nov. 7, 1843.

Nicholas Troughton, of Swansea, in the county of Glamorgan, South Wales, gentleman, for improvements in dressing ores requiring washing.—Sealed Nov. 29, 1843.

William Wylam, of the borough and county of Newcastle-upon-Tyne, for an artificial composition, which, if variously modified, may be applied in preparing fuel from coal and other substances, or as a cement, or as a substitute for stone, or as a coating for metals and other substances.—Sealed Dec. 27, 1843.

## Correspondence.

## WESTMINSTER BRIDGE.

SIR,—The writer of the letter in your last Number, signed "A Civil Engineer of the Great Western Railway" (although he leaves us in ignorance of his status, whether engineer-in-chief, or a resident engineer's assistant's assistant), appears to me to have failed in his attempt to give support to the design which accompanied the letter of "A Practical Observer" in *THE BUILDER* of the previous week. The artistic effect of the design is a mere matter of taste, and may please some persons; but the point to which I would draw your attention, is the fallacy of the supposition, that a pier, incapable of supporting an arch of 70 feet span with its superincumbent weight, would be equal to the support of one of 140 feet span as proposed.

In a case like the present, when the state of the work is such that Messrs. Walker and Burgess say, "To support the piers has been a constant expense, and is at this moment a source of considerable anxiety;" and Mr. Barry—"It is now, in my opinion, no longer a question as to the propriety of rebuilding the superstructure alone, but the entire bridge," every other consideration must give way to the all-important one, the foundations. Let the bridge be reconstructed as it may, whether in the Tudor, Norman, or any other style, it must be supported by one of two methods: the first, by massive piers, each of sufficient strength and bearing to support half of the weight and thrust of the two adjoining arches. If this principle be adopted, which "A Civil Engineer of the Great Western Railway" (following in Messrs. Burgess and Walker's wake) recommends, then it is manifest that, instead of throwing two arches into one, and thus doubling the pressure upon piers acknowledged to be incompetent to bear their present load, the correct system of procedure would be to increase their number, and reduce the span of arches, inconveniently narrow as they are.

The second method above referred to, is to construct the arches of such a form as to enable them to transmit their thrusts from one to another until they terminate in the abutments, which might be made sufficiently massive, without any interference with the waterway. Thus, the piers being relieved, might be "few and far between;" while, as relates to the lowering of the roadway, the height of headway for vessels, and the amount of clear waterway, the public convenience could be consulted to a far greater extent than by the former system.

The particular form of the arches I speak of, I must decline entering upon at present; but, Sir, one thing I trust, when Westminster-bridge becomes in such a state that all doubt of the advisability of removing it is cleared away, and that such ere long will prove the case (especially if the proposed Thames embankment is carried into execution), notwithstanding the paragraph in the *Times* of the 23rd instant, I for one feel confident; then, Sir, I do trust, that the commissioners (acting upon the system pursued in the case of the Houses of Parliament) will at once call forth the energies of the engineering profession, by throwing the matter open to competition, without even a restriction as to style. Should this be done, I feel assured, so great has been the advance within a few years in the principles of bridge-architecture, that a design may be selected, to which, in point of beauty in outline, stability, united with economy of construction, and public convenience, even the Waterloo and new London bridges, fine structures as they are, must yield precedence.

I am, Sir, your obedient servant,  
London, January 30, 1844. B.

SIR,—Two letters have been lately published in the *Times* journal, the one from Messrs. Walker and Burgess, and the other from Mr. Barry, on the subject of Westminster-bridge. The former gentlemen insist in their letter that "in a bridge constructed with semicircular arches, any one of the arches may fall without endangering the others, because a semicircular arch has no lateral thrust;" and the latter gentleman declares that a pointed Gothic arch requires "less weight on its crown to keep its haunches in their places than any other form of arch in use."

Most men acknowledge that our progress in engineering and architecture has of late been very rapid, but I think few were aware that the disco-



veries above named had been made; and I am sure it would be highly instructive to the profession generally to know from such high authorities as the gentlemen referred to, upon what principles the truth of either of the propositions can be made to appear. Surely it has been well said that "when a man has got the name of being an early riser he may lie in his bed all day."

I am, Sir, your obedient servant,

A BUILDER.

January 26, 1844.

DEAR SIR,—It affords me much pleasure to see the steady improvement that is taking place in your journal, the last numbers of which are filled with most interesting matter. My object in writing is to forward to you, with the hope that it may in some measure meet the wishes of your correspondent "A WELL-WISHER," a paper which I put together some years ago connected with the subject of scarfing. I have not now leisure to revise or rewrite, and must therefore give it you "with all its imperfections," leaving you at liberty to hew or prune as you may find expedient. I need hardly say that the examples are not original, but selected. I am glad to find that your views coincide with my own respecting the absence of any provision for the wants of decayed members of the architectural profession—that is, as a distinct body. I have long regretted the non-existence of such an institution; and it was in a great measure for the purpose of setting on foot a fund of the nature referred to (Leader No. 50) for one of the classes you mention, namely "Architectural Draughtsmen," that the society with which I am connected was first instituted; although, what with the "higher grounds" talked of by some, and the jocosities of others, and my failing to impress the majority with an equal conviction of the importance of the subject, that department has been materially modified, and become a subordinate feature. I hope, however, that the good intentions of the "College of the Freemasons of the Church" may be realized, and that the architectural profession will eventually no longer stand alone unprovided, but possess a haven of refuge for those of its members who, though well doing, may, notwithstanding, be unfortunate.

I remain, obediently yours,

JAMES WYLYSON,

Hon. Sec., B. A. A. D.

33, Southampton-street, Strand,  
January 27, 1844.

[We have placed in the hands of our engraver the twenty-seven diagrams kindly transmitted to us by our correspondent, and his article will appear as soon as his illustrations are ready.—Ed.]

#### MEASURING ROUND TIMBER.

SIR,—I beg to call the attention of your readers to a blunder of my townsman in No. 49, which is the finding of the cube contents of a piece of round timber, being 6 inches diameter at one end and 6 feet diameter at the other, and 80 feet long.

I must call his attention back to the first part of mathematics, and remind him that although triangulation cannot be applied to cube measure, its principles are the same. Lay down a triangle of the dimensions given, agreeably to the rules of geometry, and he can with precision find the mean diameter therefrom, at 40 feet length, being equidistant, viz., 3 feet 3 inches; the area of this being  $8.29578750 \times 80 = 663.663$  cube feet, being less by 159 feet. If he takes them separately, the mean diameter of the thicker part being  $4.33 = 18.7489$ , and its area  $14.7253 \times 40 = 589.010$ , contents; the mean diameter of the thinner part being  $1.53 = 2.40$ , and its area  $1.8849 \times 40 = 75.390$  solid contents.

589.010

Total contents 664.400 taken together.  
The difference of both ways being one half foot, is accounted for by not extending the decimals.

I trust the above demonstration will prevent many (there are too many) from committing such gross mistakes; as also that of dividing by 4 for the square. I am, Sir, yours very truly,

Liverpool, 17th January, 1844. J. M.

#### COPYRIGHT OF DESIGNS.

SIR,—If an architect design a building for a certain purpose on a plan not usual, can he prevent any person from erecting a similar building, and adopting the same principle of construction without his permission? The building in question is composed of a series of arches to make it fire-proof, and to be applied to a purpose of which I believe there is no existing example. By publishing the design in the shape of a book, and entering it at Stationers' Hall, would that give him any protection?

Any remarks you may be pleased to make will be thankfully received by one of your subscribers. B.  
January 20, 1844.

#### Miscellaneous.

ISLINGTON LITERARY AND SCIENTIFIC SOCIETY.—The annual meeting of the proprietors was held in the theatre of the institution on Thursday week, Charles Woodward, Esq., F.R.S., in the chair. The annual report announced, as in past years, an increase of members and attractions; 630 members were enrolled on its books at Christmas; and the library now contains 5,600 volumes.

EARTHQUAKE.—At Comrie, on the 14th inst., at half-past twelve, noon, a smart shock of perpendicular earthquake was felt. At five minutes past one a second shock occurred, which, although rather less, continued longer. There were three slight sounds heard preceding the first-mentioned shock, two betwixt the shocks, and one about a quarter of an hour after the last, and two during the following night. The momentum of the shocks was nothing to the momentum of the great shocks of 1839 and 1841. Still they were severer than any shock since that time. The accompanying sound was very loud on the present occasion.—*Westmoreland Gazette*.

IMPROVEMENT OF THE METROPOLIS.—The commission for improving the Metropolis, and providing increased facilities of communication within it, had a meeting on Wednesday week at the office in Whitehall-place. The commissioners present were the Earl of Lincoln, the Right Hon. J. C. Herries, the Lord Mayor, Sir R. H. Inglis, Mr. Alderman Humphrey, Mr. H. T. Hope, Mr. A. Milne, the Hon. Charles Gore, Sir Robert Smirke, and Mr. Charles Barry.

LEEDS.—A project exists for the erection of a public building in Leeds on a scale much more capacious than any that at present exists. The principal room is to seat three thousand persons, and the edifice is to consist of an hotel of a very superior kind (resembling some of the hotels in Manchester and Liverpool), a masonic lodge, and a picture-gallery, with other accommodations applicable to public purposes.

Mr. James Matheson, M.P. for Ashburton, has just purchased the noble mansion in Cleveland-row, adjoining Sutherland House, so long the town residence of the Earl of Durham. The house will be thoroughly repaired and embellished previous to the return of the honourable member from the Continent.

THE OLD BRIDGE, BATH.—We understand the committee are about to recommend the adoption of an entirely new bridge, which will afford the passengers a roadway of 40 feet, and a clear water-course of 110 feet. The bridge will, it is proposed, be of one arch, and made of cast iron.

#### MEETINGS OF SCIENTIFIC BODIES,

To-day and during the ensuing week.

SATURDAY, FEB. 3.—*Asiatic*, 14, Grafton-place, 2 P.M.; *Westminster Medical*, 32, Sackville-street, 8 P.M.

MONDAY, 5.—*Entomological*, 17, Old Bond-street, 8 P.M.; *British Architects*, 16, Lower Grosvenor-street, 8 P.M.; *Chemical*, Society of Arts, Adelphi, 8 P.M.; *Medical*, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 6.—*Linnean*, Soho-square, 8 P.M.; *Antiquaries*, Somerset House, 8 P.M.; *Royal Society of Literature*, 4, St. Martin's-place, 4 P.M.; *Medico-Botanical*, 32, Sackville-street, 8 P.M.

FRIDAY, 9.—*Astronomical*, Somerset House, 8 P.M. (anniversary); *Royal Institution*, Albemarle-street, 8½ P.M.; *Philological*, 49, Pall Mall, 8 P.M.

SATURDAY, 10.—*Royal Botanic*, Regent's-park, 4 P.M.; *Westminster Medical*, 32, Sackville-street, 8 P.M.

The *Oxford Society*, for the study of Gothic Architecture commenced their meetings for the present term on Wednesday last, and will continue them on Wednesday, Feb. 14 and 28, and March 13, 8 P.M.

LINNEAN SOCIETY.—Library open on Monday, Tuesday, and Thursday, and the Museum on Wednesday and Friday, from 12 o'clock to 4 in the afternoon.

GEOLOGICAL SOCIETY.—Library and Museums are open every day from 11 till 5.

ROYAL ASIATIC SOCIETY.—Museum is open every Tuesday, Wednesday, and Thursday, from 11 till 4.

CIVIL ENGINEERS.—Library open from 9 A.M. to 9 P.M.

LONDON INSTITUTION.—Lectures will be delivered every Monday and Thursday evening, at 7 o'clock, until May 6.

#### Tenders.

TENDERS for the Monumental Chambers at the Cemetery, Kensal-green.—Mr. Griffith, Architect.

Messrs. Piper (Bishopsgate-street) £6,841  
Mr. Stephens (Charlotte-street,  
Portland-place) ..... 6,814  
Mr. Lander (Kensal-green) .... 5,671

#### NOTICES OF CONTRACTS.

BUILDING SEWERS in Cree-Church-lane, King-street, Duke-street, and Great Duke's-place, City.—Plan and Specification at Sewers' Office, Guildhall, daily from ten till four o'clock.—Joseph Daw, Principal Clerk. Feb. 13, 1844.

BUILDING THREE ROOMS OF LARGE DIMENSIONS, LAMBETH.—Plans and Specifications at 96, Westminster Bridge-road.

FORMATION OF RESERVOIRS and laying down Iron Conduit, with other masonry work connected therewith, Bradford Waterworks.—Plans, &c., to be seen, and further information had, at the Office of Messrs. Leather and Son, Civil Engineers, Leeds; John Thompson, Law Clerk to the Company. Feb. 13, 1844.

WORKS REQUIRED FOR THE NEW FISH MARKET, GREAT YARMOUTH.—Plans, &c., to be seen on application to Mr. A. T. Tillett, Architect, King-street, Great Yarmouth; Town Clerk. Feb. 21, 1844.

CONSTRUCTING VARIOUS STATIONS at GATESHEAD and other places, Newcastle and Darlington Junction Railway.—Plans, &c., at Railway Office, York.—Further particulars on application to Mr. Andrews, Architect, York.—G. Hudson, Esq., Chairman. Feb. 13.

BUILDING A COUNTY LUNATIC ASYLUM AT LITTLEMORE, OXFORD.—Plans, &c., at Mr. R. Clarke's, Architect, Clinton-street, Nottingham, or at the Office of the Clerk of the Peace, Oxford.—J. M. Davenport, Clerk of the Peace. February 22, 1844.

BRIDLINGTON PIERS AND HARBOUR.—Erection of a new south pier, removal of present pier, and other works for enlargement of Harbour.—Plans and Specifications at the Office of Mr. Sidney Taylor, Solicitor, Bridlington. March 1, 1844.

ALTERING EAST SUFFOLK COUNTY HALL AND COURTS OF JUSTICE, IPSWICH.—Plans, &c., for inspection on application to Mr. Whiting, Surveyor, &c., County Hall, Ipswich, on Monday Jan. 29; J. H. Borton, Clerk of the Peace, Bury St. Edmunds. February 12, 1844.

WORKHOUSE ALTERATIONS, ST. LUKE, MIDDLESEX.—Plans, &c., at Workhouse.—J. Parson, Vestry Clerk. Feb. 7, 1844.

#### COMPETITION.

PREMIUM OF 20 guineas for the best plans and estimates for erection of a new gaol, Baubury.—All information may be obtained on application to the Town Clerk. March 1, 1844.

#### TO OUR CORRESPONDENTS.

PERIODICAL LITERATURE.—A BIRD-OF-PASSAGE.—The letter of our droll and industrious correspondent, "J. R. W.," dated from Norton-street, the 1st of January last, and which appeared in our No. XLVIII., has, it seems, migrated wonderfully. Going northwards (diverging a little to the west), it stopped at Manchester, as a half-way house; from thence, having shaken off all that related not to Manchester, it took its course still further northwards, and in a week or two arrived opposite the Orkneys. Having then, some how or other, flown into Cornwall (land of granite, tin, and savoury pilchards), it on Thursday morning last alighted from the Cornwall Gazette, and that morning reappeared with the "Times" in London.

The appearance of several articles of correspondence, which we had intended to insert in our present Number, we have been reluctantly compelled to postpone from want of space.

We have several fine specimens of the details of Gothic architecture ready for early insertion, and have others progressing for our intended extensive treatment of the subject.

SIR,—I wish you could inform me, through your paper, of the best book on agriculture, and the best book of designs for farms, &c., fitted for New Zealand, and where I could obtain them. I am, Sir, yours, &c.

A SUBSCRIBER.

[Few architectural books of the kind mentioned by our correspondent have been published. Perhaps though many of the designs contained in it are very exceptional, Loudon's Cyclopædia of Cottage and Villa Architecture contains most information upon the subject.—Ed.]



# The Builder.

NO. LIII.

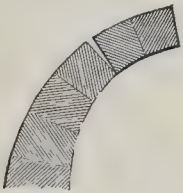
SATURDAY, FEBRUARY 10, 1844.



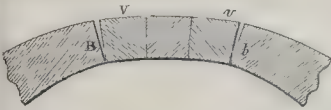
PURSUING the subject of Bridge-arches, and recurring to that which

terminated our last week's disquisition, it will be remembered we stated Drift to be the active force in arches and vaults.—This drift, commencing at the crown of an arch, gradually reaches the base of the work supporting the superstructure.

But at first sight, a portion of this drift may seem to have an opposite course when an arch has been carried up so far as that its component voussoirs have a tendency to fall over from their beds.



But this is fallacious; for if a voussoir V have a tendency to leave its arch-bed B, and



have a drift away from its supporting pier equal to a ton weight, the voussoir v on the opposite side of the vertex of the arch will have a counter-tendency to leave its bed b, and will so neutralize the contending forces, and in effect restore to the arch-bed B its ton of drift; and gravitation will go on (while the foundation of the work remains secure and unfinching, and while the crown of the arch is prevented from either rising or falling) precisely as though no counter-drift existed.

We now proceed to our DEDUCTIONS FROM THESE THEORIES.

- 1st. Drift is the active force in arches.
- 2ndly. The action of the drift commences from the vertex of an arch, and continues from thence to the foundation of the work.
- 3rdly. Provision should be made for preventing fracture by reason of drift, through the increase of pressure as the work recedes from the vertex downwardly.
- 4thly. The provision for preventing fracture from the increase of drift must be made by the arch-joints of the voussoirs increasing in superficial extent as they recede from the vertex of the work; or if such an increase of the surfaces of their arch-joints be not adopted, the voussoirs should be made of materials increasing in firmness and ability to resist compression continually more and more as they diverge from the vertex of the work.
- 5thly. If any circumstances prevent the pure adoption of one or the other of the above-mentioned provisions against failure from drift, they may be combined; as, for instance, if ne-

cessity exist for restricting the bulk of any part of the work, harder materials may be used, or if it be necessary to amplify the bulk of the work, softer and lighter material may be used.

6thly. The whole structure of a bridge should be catenarian.

7thly. The catenary must, at its crown or key, commence with strength sufficient to resist the pressure and concussion of the traffic, and of the roadway and parapets.

8thly. The depth of the key-stone must depend upon the nature of such traffic, &c.

9thly. A key-stone being the part of an arch most in jeopardy, requires on that account the greater care to prevent it from falling through; but pure natural catenarian construction requires that a key-stone should have less depth than any other part of the arch, and therefore such key-stone having little wedge-like upward increase, thence two antagonistic principles clash with each other.

10thly. In order to obtain an upward increase, or enlarged extrados to the key-stone and neighbouring parts of an arch, without violating the natural graduated catenarian principle by unduly burdening the voussoirs in the neighbourhood of the key-stone, such key-stone and neighbouring voussoirs may be made of lighter materials, so as to present, by an extended surface, as much resistance against crushing, though of a softer nature.

11thly. Again, if the foundation of an arch be uncertain, and therefore likely to settle from the weight of the work or any other cause, the catenary should commence at its crown or key with an increase of depth, in order that the upward or extrados *al* increase of the voussoirs may make up for the increase of jeopardy and liability to derangement on account of such uncertainty of the foundation: here again antagonistic principles exist, since the weakness of the foundation requires a diminution of weight, rather than an increase of weight; therefore, in such case, if a masonry bridge be adopted, the lightest kind of stone should be selected, so that provision against the derangement of the voussoirs may be made by increase of their depth, without increasing, but if possible rather diminishing, their weight.

12thly. The depth or strength of the key-stone being settled, the strength of all the other parts of the catenary from thence take an increasing sequence, as stated 4thly and 5thly.



(To be resumed in our next.)

THE NEW ROYAL EXCHANGE.—Instructions have been given by the Committee superintending the erection of the New Royal Exchange, to sell the triangular block of buildings facing Cornhill and Threadneedle-street, known as Bank-buildings, and which is to be taken down for the purpose of forming the western approach to the New Royal Exchange and the site for the Wellington Statue. The buildings to be sold comprise the premises occupied for many years by the Sun Fire Office, the house where Messrs. Ladbroke & Co., the bankers, carried on the business of the establishment, and several residences adjoining. The sale is announced to take place by auction, by Messrs. Pullen & Son, on the 19th instant, and appears to include a vast quantity of useful materials for building purposes. It is fully expected that the New Exchange will be opened in June.

## EMIGRATION.

THERE can never be a happy industry at home, nor a just empire abroad, when, to relieve the country from its burthens or its troubles, expatriation is brought forward and supported as a forced necessity—it only leaves evils as they are; takes the sluggish ease of an assumption that they are incurable; and establishes thereupon that feeling of neglecting troubles which will assuredly cause them to grow to evils of greater magnitude.

The proprietor is led to this remark and the following observations, by a letter from Mr. Smith, of Greenwich, on the subject of Emigration.

When expatriation is suggested and becomes almost universally adopted as the last hope of the country for relief from the distresses and troubles of its inhabitants, then is it indeed a sad state of things. It is a sad reflection upon a nation where the inhabitants of such nation are many, and a bodily-active and mind-energetic race, and where the chief features of the moving activity of its influential mind are prudence and wisdom to provide for the improvements of the enjoyments of this life, and every contributive for the indulgence and information of the intellectual faculties; it is indeed a sad reflection that such prudence and wisdom should overlook the simple care and knowledge of providing all things, those which are most essential for the real comfort and happiness of the most needy, and for their means of existence in their own land.

The prudence and wisdom of goodness of intention could never thus perplex the nation, could never thus invert the true welfare of the community,—it must have been produced by the unseen or unimpeded agency of cunning prudence and wisdom of evil design. But the evil-designing cannot perplex affairs beyond the skill of infinite wisdom and goodness to unravel,—Almighty God rules, and will guide the simple-minded, acting in subordination to his will, to arrest the last effects of the malice of the evil-minded in the midst of their career for expected triumph. In all cases where and if evil is the design, or is the unseen tendency arising from thoughtless design, this will be accomplished. For the last pass is come—(to adopt the truthful perception of *The League* paper), “the last act of the drama” is truly arrived when, without providing honest remedial measures, we are losing all confidence in the will and ability of the many to incline to and to provide what is just and good at home—we become placed in the position of being forced to expatriate our fellow-countrymen from their homes—to the, perhaps, greater miseries of distant shores.

Every one who is industrious may or ought to gain subsistence in his own country—where agriculture, the arts, manufactures, and commerce are encouraged. And what is to prevent their proper and fruitful encouragement in England, or in Great Britain and Ireland? whereby the strength and prosperity of our nation would depend upon the number of its inhabitants, instead of depopulating and loosing the sinews of the glory of our country by forced expatriation.

Emigration is good when adopted as of free choice, and not as of forced necessity. When in such necessity our fellow-countrymen have to run from one distress to another, perhaps greater, as being in a distant land, not cared for, and not able to help themselves, we only by placing them in this position establish at the inoment a separation in heart from us for ever, as sending them an encumbrance to other lands, to relieve our own; or we introduce into a colony the seed of dissatisfactions, dissensions, and division—and thus generate, with its first establishment as a colonial British possession, the germ of its dissolution or separation in disgust from the parent nation whose population it comprises.

Emigration is good when we extend the influence of Britain's disposition of peace and good-will to all mankind by her well-affectioned and enterprising sons in distant colonies. But above all, it is essential with the distressed



and needy, before we encourage the emigration of our fellow-countrymen, that they should not have to run from one distress to another, but that they should be cared for when they arrive in distant colonies, and find ample compensation for leaving a distant home, by the pre-induced and prepared happy employment and reward of toil which they seek, and thereby have occasion to feel ample cause ever to have and grow upon an affectionate and grateful remembrance of those of the nation they have left.

Plans for emigration promoted and instigated and provided for as described, would be indeed a blessing to our country; it would afford a means of permanent employment and improved condition; but until we shall have commenced with and established the right concern and care for our poor, the working classes at home, emigration will only be an unmanageable trouble to us, increasing our distresses for the time present, and a curse to us as a nation, increasing our perplexities with the time to come.

Agriculture, arts, manufactures, and trade at home are the first essentials and the only sources of legitimate wealth, of employment and consequent relief to the distresses of the poor, the working classes. Commerce with other nations is only an adjunctive means which gives the value of steady increase to this employment, when and as the honest and solid worth of the home industry shall have been duly cared for. If it be so cared for,—flourishing as a populous kingdom, we can then afford to buy freely of the industrial products of other nations, and extend our own happy but not avaricious wealth, by interchange of products of our industry, creating with other nations the due appreciation and fruitful and sterling value of our own.

The community may obscure or veil their power to do the good that is needful by the mere will to do it, and thus tolerate and perpetuate evil, enjoying their will to do good, alike in its perception and deception.

There is a power for the community lodged in the government and the governing institutions of our country, to foster, to create anew when decayed, and to cherish the vigorous energies of our home trade and manufactures.

A parent of a family would check all injurious or licentious freedom in one child, which was either hurtful to such child or tending to injure or destroy the welfare of any of his other children. So will the parental power of the state guard and protect the proper and wholesome freedom of all individuals and classes for whose welfare and guardianship it is appointed to protect, so that the freedom given to one individual or class of individuals should not be exercised to the injury of any one member or body of members of the community.

Arts and manufactures, trade and commerce, are inseparably connected with freedom; but it is only a just and wholesome freedom based upon just laws of mutual benevolence, based upon those "eternal principles of justice which unite the wise, the learned, and the good of every name and denomination, and insure the final triumph of whatever is consistent in goodness with these principles." It is only with this wholesome freedom that a country flourishes in blessings to itself and the means of blessing other nations; but with unrestrained hurtful liberty, it soon falls to decay. The very rivalry of injurious competition engenders animosities and injuries from one portion of a trading interest against the other of its own class—but to such a pitch has it now run, that the manufacturing interest is not content with rivaling prejudicially the manufacturing interest, but sets itself against whatever interest shall interfere with its money-gains, even against its best friends, the agriculturists, setting with this interest, one against the other, with a reckless spirit of general ruin.

Artists, manufacturers, and merchants duly encouraged are the life and soul of a commercial and enterprising—of a happily civilized country. It is on these the agriculture of our nations, but especially the agriculture of our own nation, depends. In vain will the farmer raise his corn, or fatten his cattle, if there be not manufacturers willing to buy, and the many

sufficient to consume the product of their industry and labour.

But if our merchants be encouraged by the government of the country, merely to suit the supposed money advantages of the manufacturers, to procure, as in substitution for that which the agriculturists of our country have produced, the corn and cattle from abroad, then is the freedom given to arts, manufactures, trade, and commerce made tyranny—then assuredly will our country sink to decay.

Under the mutually advantageous desires of a people, and the genial desires and encouragement of a duly bounded free country—agriculture is carried to the highest pitch, farmers are wealthy, peasants abound and have abundant work; all are employed, and all are happy. The farmer finds a ready market for all his cattle, corn, and wool, and the peasant goes cheerfully to his labours in the field, while his wife and children sing (perhaps it may be again as it was in former days) over the spinning-wheel. "The pastures are clothed with flocks, the valleys also are covered with corn, and the little hills rejoice on every side."

In this state of things, the wealthy and happy mind of manufacturing towns and districts of this should-be happy island would be amongst the first, with merry bells of joyous hearts (thus set at ease and made content), to rejoice at the welfare of others; but, most assuredly, by their striving to effect the realization of this attainable welfare of the agriculturists, will they accomplish their own happy and life-stirring employment, and their own enduring and lastingly substantial welfare, with happy hours of rest for enjoying the fruits of their labour, either in the town or the suburban country, when their daily labour is done.

As the farmer depends upon the manufacturer for consuming the product of his labour and risk, so does the manufacturer depend upon the agriculturist to consume or purchase for fancy or for use whatever may be produced by the industrious enterprise of manufacture.—All beyond the support at home (such as the home consumption) should only be looked upon as secondary in and for certainty of dependence; it should be regarded as an adventurous speculation, subject to all the chances of adventitious causes, which produce a casual demand that can never be reckoned upon as certain, or of sure continuance; whereas, to a certain extent, if agriculture at home be duly encouraged and flourishing, the manufacturer always reckons upon a certain amount of demand for his product, probably increasing annually, as confidence and mutual prosperity shall exist and increase amongst mankind.—*Provident Philanthropist.*

#### DESCRIPTION OF MR. CROGGON'S PATENT ASPHALTE ROOFING.

THIS material for roofing is a composition of hair and hemp, felted together and thoroughly saturated with pure mineral asphalt; it is a perfect non-conductor of heat and cold, and consequently keeps a building both warm and cool. It is portable, for being flexible, it is easily packed, and it is not liable to damage. It is so light, that timbers little stronger than sufficient to carry themselves will support it; nor is it applicable only to the roofs, but also to the sides of buildings. The following is the mode of application:—Cover the roof or building with thin (say  $\frac{1}{4}$  inch) close boarding, *where practicable*, not running horizontally, but the reverse way; securely nail the "material" each sheet lapping about  $1\frac{1}{2}$  inch, with copper nails; then pay it over, while hot, with a mixture of coal-tar and lime (about 6 lbs. of the latter to 2 gallons of the former). When this has become hard, it is advisable to give it a second coat, and the roof is complete. The price of the material is one penny per foot superficial; it is in all cases 32 inches wide, but can be furnished of any length. As a protective material to plants Dr. Lindley has pronounced it most efficient.

The "Dry Hair Felt" is a very desirable material to prevent the escape of heat from boilers and steam pipes, where heat has to be conveyed from one part of premises to another. As a preventive to sound it is a most effective barrier, by lining the partitions of rooms with it.—*From a Correspondent.*

#### MICROSCOPICAL SOCIETY.

JAN. 17.—J. S. Bowerbank, Esq., F.R.S., in the chair.—The secretary, Mr. John Quekett, made some observations upon the structure of some human bones which had been discovered in a bog about ten feet below the surface. When first taken up they were as black as ebony, but on drying, the colour had changed to a dark brown; the specific gravity was exactly twice that of water. The most remarkable circumstance connected with these bones, was the fact of the earthy matter not only having penetrated into the Haversian canals, but had made its way from them through the canaliculi into the osseous corpuscles. The specimens exhibited had been boiled in Canada balsam, to render them very transparent, and to show the great contrast between the corpuscles which had been filled with earthy matter and those which were still empty. The same fact had been noticed by Mr. Luce in the bones of a mummy. The author stated that he had not been able to succeed in filling the corpuscles with injection.

Mr. Dalrymple alluded to a portion of a skull of a Peruvian, in the Haversian canals of which he had seen not only a single vessel running in the canal, but a number of capillaries on the walls of the canals. Dr. Goodfellow mentioned that he had seen the osseous corpuscles artificially filled by Mr. Tomes.

Mr. Quekett then made another communication on the arrangement of the blood-vessels in the lower part of the lung of the camelion, which were so precisely like those in the air-bladder of the eel, that it left no doubt on his mind of the respiratory function of that organ.

#### ROYAL INSTITUTION.

JAN. 19.—On Friday evening, Mr. Brande gave a very instructive lecture "On Fermentation." The lecturer, after some successful experiments, shewing the changes produced by chemical action, directed particular attention to the fact, that the presence of a body which could have of itself no apparent action, is yet found to exercise a most decided influence. A portion of chlorate of potash was heated by an argand lamp in a glass retort, and by the side of it was placed, in a retort of exactly the same size, exposed to exactly the same heat, some chlorate of potash mixed with a small portion of oxide of manganese; after a few minutes, the chloride of potash mixed with the oxide of manganese was observed to be suffering decomposition, evolving large quantities of oxygen gas, while the other suffered no change. The oxide of manganese was entirely unchanged, and even oxide of copper, or any metallic oxide, could be substituted for it. Again, platinum resisted nitric acid; it could be boiled in it without change. Silver was, on the contrary, dissolved. Yet, on submitting an alloy of these two metals to the action of the acid, the platinum might be supposed still to escape action, but it was not so. The chemical action commenced in the silver extended to the platinum; both were dissolved. These results were precisely identical with fermentation, the action of neither was at the present moment known, and the application of abstruse chemical terms did not advance the knowledge. Experiments had, however, proved that no body, unless it contained nitrogen in its composition, could produce this result. On mixing a small quantity of balm or yeast with a solution of sugar and water, the following changes could be traced:—sugar consisted of three atoms of carbon, three of hydrogen, three of oxygen; a proportion of carbon would, under the influence of the yeast, unite with oxygen, forming carbonic acid, and the remaining proportions would be so arranged as to form alcohol. In the manufacture of wine, yeast was not required, as the sugar of the grape contained this principle, yet the grapes could be dried into raisins without change; but that arose from the total imperviousness of the skin of the grape to air. Drying could be effected, for water could pass, but no air; allow even for a moment the entrance of air, and the change into vinous fermentation would inevitably result. There was a peculiarly instructive experiment of Liebig upon this point: he introduced into a vessel holding a solution of sugar and water, a smaller one with a false bottom (covered with muslin), and he placed in the smaller one some yeast;



and it was shewn that the fermenting action had commenced in the smaller vessel, while in the larger, or outer one, although there was a free communication through the gauze, the action had not commenced, nor would it till the particles became sufficiently reduced to pass through the gauze. The presence of kerosene turpentine would stop the action of yeast; boiling might be regarded in the light of delaying it, for after some time the action could not be perceived. It might to many appear strange to hear that sugar consisted but of charcoal and water, yet he could shew it by experiment. The lecturer poured some oil of vitrol into syrup; steam was evolved, and a large pasty mass of charcoal formed. The lecturer, in conclusion called attention to a very ingenious plan for brewing, suggested by Sir Thomas Marmar, by which the elaborate apparatus now employed was completely dispensed with. The malt and hops were boiled together, as at present; when it had cooled to about 90°, it was mixed with the yeast, and poured at once into the cask. The cask was fitted with a bent tube, connected with a basin of water, to prevent the access of air, while it allowed a free exit to the carbonic acid so formed. The cask required to be kept at a temperature of 60° or 70° for five weeks, and a very excellent beer was produced; the uppermost and the lowest strata were to be rejected as containing impurities.

# ON "SCARFING" OR LENGTHENING OF TIMBERS.

BY MR. JAMES WYLLSON.

WHEN beams or other timbers employed in carpentry are required to be of length greater than can be obtained in the *balk*, it is necessary to adopt artificial means of lengthening them, or so connecting together as many pieces of timber lengthwise as will make out the extent required, and which result is obtained by means of the method called *scarfing*. "SCARFING" may, therefore, be termed the art of uniting two or more pieces of timber endwise, so as to make them like one piece, nearly so in appearance, and, if possible, perfectly so with respect to strength.

Of the various methods in use, there are some in which there is no expenditure of the length of the timbers that are to be united, the pieces being joined end to end; in others some sacrifice takes place in this particular from the pieces lapped together. They might also be classified as those which with regard to strain longitudinally and transversely depend for strength of connection, entirely on bolts; and those which in reference to the strain lengthwise have, from being so formed as to clasp together, some independent security in themselves. The clasping, or as it is technically termed, *indenting*, necessarily reduces the depths of the timbers more than a single lap-joint does; and consequently weakens them in a proportionate degree; the practice, therefore, in regard to beams, is less available where there is a weight to be sustained, and less necessary where a tendency to extension is least required to be guarded against, than when the chief or entire purpose is to furnish a tie between two given points—in which case it is recommendable.

Before entering into a detailed description of the variety of scarfs herein exhibited, we must make mention of another and simple method of lengthening timbers, called *fishing*, and which, though inferior in appearance, is perhaps the most efficient in point of strength; and is very convenient for temporary purposes. It consists in abutting against each other the ends of two pieces of timber, and applying to the joint, instead of the plates of iron employed in superior scarfing, two pieces of timber, one on the top and the other below, and bolting the whole together (see fig. 1.) This

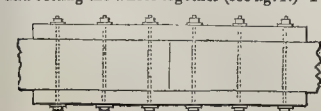


Fig. 1.

joint, like most simple modes of scarfing,

depending altogether for strength as a tie upon bolts, may be improved by indenting the pieces



Fig. 2.

together, as shewn by fig. 2, or by introducing



Fig. 3.

keys, as in fig. 3; either of these methods gives resistance to the strain which affects the beam lengthwise, in addition to that of the bolts; but at the same time it must be observed, that as the two main timbers are weakened in the same ratio that they have in the indents been decreased in their depth; therefore consideration has to be made when adopting this mode of connecting timbers lengthwise, whether opposition to the strain above noticed, or to the cross ones of compression and extension which simultaneously proceed from loading, is most to be provided: in other words, whether the compound beam is to be a tie or a support; and as the strain in the former is trifling in comparison with that in the latter, there will be no doubt as to the method which should be adopted; the use of one indented piece only (the under one) is a good compromise where objection to the reduction of strength is not great; since it assists the bolts in holding together the lower half of the main abutting joint. These remarks are equally applicable to scarf-joints.

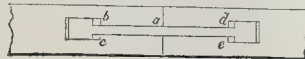


Fig. 4.

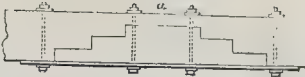


Fig. 5.

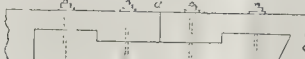


Fig. 6.

Figs. 4, 5, and 6 are modes of scarfing which may be adopted when none of the length of either of the pieces can be spared. The first may be used as a tie, without plates or bolts, where little strength is required:—*a* is a key tightened by wedges at *b c d* and *e*, which cause the ends of the timbers to abut closely together. It may be here stated as applying to this and all other cases of wedging in scarf-joints, that the wedges ought to be driven in only just sufficient to bring the abutting surfaces to bear properly on each other. It is a very good practice to place a piece of thin sheet-lead, or, what is better, plate-iron, between the surfaces, in a joint where two timbers, meeting together, the grain of the wood in one is made to abut against that of the other, to prevent them from penetrating each other; this of course only applies to abutting joints; under this denomination those at *a* in Figs. 4, 5, 6, 22, 23, and 24 would come were



Fig. 22.



Fig. 23.

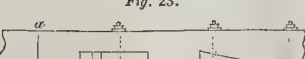


Fig. 24.

the beams loaded above. The second of the examples in question (fig. 5) shews a method of

lengthening with an intermediate strengthening piece indented flush into the others by steps, and all three secured together by means of an iron plate and bolts; this is a very good scarf for a bearing-beam, but lengthwise its strength entirely depends on the bolts; in this respect, however, it may be considerably amended by turning in the ends of the plates (supposing it to have two, one at top and another at bottom), as in Fig. 7, &c., and which may be regarded as a good practice generally. The third example being indented, is a fair tie-joint, and if the ends of the connecting piece be played inwardly, as shewn at *b*, it will be also effective under a weight.

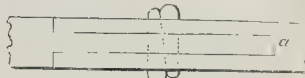


Fig. 7 A.



Fig. 7 B.

Fig. 7 shews A, the side, and B, the top, of a joint which is very good for purposes where bolts are not intended to be used, and where much strength is not needed; the joint *a* (fig. A) is made just sufficiently easy to allow the wedges fair scope for bringing the parts at *b* (fig. B) close together.

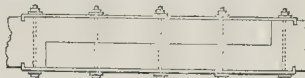


Fig. 8.



Fig. 9.

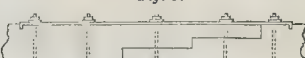


Fig. 10.

Figs. 8, 9, and 10 are the most simple of those methods, in which sacrifice is made of length of timber equal to that of the scarf; and they may be considered very good joints where the resistance offered by the bolts to the strain which tends to separate the timbers, aided by the degree of connection afforded by turning in the ends of the plates, is deemed equal to the requirements of the case.

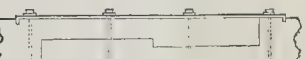


Fig. 11.

Fig. 11 may be considered as an improvement on fig. 8, if the strain is lengthwise; but not so under a cross strain, the depths of the timbers being reduced by the indents.

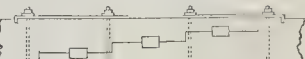


Fig. 12.

Fig. 12. The same remarks apply to this (with reference to fig. 10) as to the preceding, the only difference being that the tie is formed by means of keys instead of by tablings.

(To be continued.)

COLOURING.—Nature employs but two metals, iron and copper, for colouring the whole creation. All her variety results from the varied combination of three colours—red, yellow, and azure. What a harmony there is in the rainbow! Take away but one of its principal colours—the red, for instance, and the harmony is gone. The ancient painters, for a long time, employed only these primitive colours; the moderns make use of a considerable number. But with these three, and the addition of black and white, eight hundred and nineteen different combinations may be produced. Hence Apelles and Protogenes might have been as good colourists as Titian and Correggio.—*Magazine of Science.*



## LIVERPOOL DOCKS.

CONSIDERABLE discussion occupied the Council for a long time on Monday and Tuesday, last week, as to the propriety of affording increased dock accommodation. The debate was opened on Monday by Mr. Moore, the chairman of the Dock Committee, who moved a resolution to the effect that "the proceedings and resolutions of the Dock Committee, from the 28th of September to the 24th inst., so far as the same related to extending dock accommodation, be confirmed; that the Dock Committee be authorized to prepare and present a bill for carrying the same resolutions into effect, laying before the trustees the plans as soon as they shall have been printed and prepared, the Dock Committee having full authority to proceed with the bill, the Dock Solicitor conferring with the Town Clerk on the same subject, and settling the same with him, subject to the approbation of the trustees; and that the Dock Committee be authorized to affix the seal of the trustees, preparatory to the bill being brought in."—Mr. Nicol, the deputy chairman of the Dock Committee, seconded the motion.—Mr. Alderman Evans opposed it, in a speech of about an hour and a half's duration, and the debate was then adjourned.—Mr. Aspinall re-opened it on Tuesday morning, after which Messrs. Hodgson, Parker, Isaac Holmes, Bushell, and Aikin addressed the Council. All parties seemed to unite in thinking that this was the most important and momentous question which had ever been agitated in Liverpool, involving, as it does, the outlay of upwards of a million of money. Two amendments were moved, one by Mr. Aikin and the other by Mr. Turner. The first was to the effect that it was unadvisable to proceed further with the dock bills, until the plans of the proposed new docks be prepared and approved of. The second was to the effect that negotiations be entered into with the Harrington Dock Committee for the purchase of land for a sea-moat dock to the extent of 40,000 yards. The first amendment was lost by a majority of 33 to 14; and the second by a majority of 34 to 13. The original motion was carried by a large majority.

## URNS LATELY FOUND IN LANCASHIRE.

Mr. Studley Martin states that, being on a visit to the Rev. William Thursby, at Ormerod House, I went to see the spot on the moors dividing Lancashire from Yorkshire, about four miles east of Burnley, where Mr. Spenser discovered some time ago four urns, which he gave up to Mr. Parker, of Cuerden; and on my way over Worsthorn Moor, I noticed a collection of stones, scarcely raised above the turf, which struck me as worth investigation—evidently not got together for line burning, clearing the land, or any building purpose. On the 17th of April, 1843, I therefore, assisted by a man with a spade and pick, and accompanied by Mr. John Hardy Thursby, examined the centre of the heap. The stones were rough, irregular, and moss-grown. Upon clearing them away, some rather fine sand appeared, and about a yard below the original surface, covered by a stone, was an urn containing ashes and fragments of partially burnt bones, pronounced, from roughness, where the muscles had been inserted, to be those of a muscular man. The upper part of the urn, which was five inches in diameter at the bottom, eight and a half at the widest part of the top, and eleven and three-quarters high, contained either charred substance or peat, and sand or earth, with which the ashes were mixed, probably filled in upon them, and was moist, I fancy, more so than if it had been dry when originally deposited. The stone was not wrought, and without any inscription or mark. The urn was exactly in the centre of the heap, which formed a circle, extending east and west about eight yards in diameter, and six north and south. On the turf is discernible a circle about eighty yards in diameter east and west, and sixty north and south—the centre of which the urn also formed. Round the urn was a sort of wall of stone, filled up with peat or clay. The cardinal points were marked by larger stones. The whole of the stone-enclosed space has been examined, but without further results. The spot, on Worsthorn Moor, about three miles

east of Burnley, is on the north side, and about two hundred yards from the summit of a hill, called Smallsaw, and is at the junction of two scarcely defined paths, one leading from Worsthorn Quarry, over the moors, in the direction of Mr. Spenser's urns, which were found on the further side of a hill, to the east, and separated by a ravine from Smallsaw; the other from a hill to the north, between which and the stones is a gully called Thornden, with a stream flowing into one of the Caldera. Dr. Whitaker, in his "History of Whalley," mentions, under "Clioigers," Roman coins having been discovered in this district in 1695, and given by a Townley, of Townley, to Thoresby—a tumulus, at Lawhouse, destroyed in 1763—another opened in 1766 containing a rude urn—appearances of entrenchments at Redless—all immediately in the neighbourhood of my discovery. He also mentions Briercliffe as remarkable for some Roman remains, and thought a chain of small Roman posts, subordinate to the station of Castorcliff (the casta restio of Columio), extended on the elevated grounds of Briercliffe, Worsthorn, and Extwistle, commanding the great inclined planes intersected by the deep ravines of Thornden, Swinden, and Thorstun, one of which was in the middle of Worsthorn Moor. This is also near the stones. The other barrows he mentions are not now easily to be found. The urn is without inscription; but on the upper part had rude marks. It was entire when discovered; but several portions crumbled off the top in my hands. I left it at Ormerod. Conjecturing it not to be Roman, I was on the look-out on the moors for any traces of serpent circles Dracontia, &c., but in vain. The Ormerods, whose heiress is Mrs. Thursty with her sister, the Hon. Mrs. Yorke Scarlett), intermarried with the family of Edmund Spenser, which the *Gentleman's Magazine* shews to have sprung from Hurstwood, now belonging to the Ormerod estate, and between it and Worsthorn. The writer of the communication respecting Spenser, is Mr. Spenser, of Halifax, who discovered the first-named urns.

## RAILWAY INTELLIGENCE.

**Railway Docks at Hull.**—At the meeting of the Hull Dock Company last week, the chairman stated that a representation had been made by gentlemen connected with the Leeds and Manchester and Hull and Selby Railway Companies of the inadequacy of the dock accommodation in the vicinity of the railway terminus for large quantities of salt and coal that were expected to be shipped from the port for exportation, and that the same parties had made the suggestion that a small dock might be formed upon the ground of H. Broadley, Esq., of about 720 feet by 120, capable of accommodating some 14 or 15 vessels, which would have the effect of materially relieving the Humber Dock from the pressure of shipping, and where the articles referred to could be delivered from the railway waggons at once into the ships' holds. It was necessary, however, that power should be delegated to a committee to entertain the proposal, and consider of the necessary steps to be taken, in the event of a successful negotiation with the associated railway companies. A resolution was passed accordingly, empowering the committee to take the proposition of the railway companies into their immediate consideration. We understand that the railway companies have contracted with one house for carrying and delivering at Hull, in the course of the present year, upwards of 20,000 tons of salt. This is quite a new article of traffic on the Manchester and Hull Railways, and will add to their revenues some 12,000*l.* or 15,000*l.* per annum.

**Blackburn and Preston Railway.**—We are enabled to state, that there is no longer any obstacle to the carrying out the project of a railway from this town to join the North Union line at Farrington, near Preston, and we are also glad to be informed that the line, as originally struck out and surveyed by Mr. Collier, the engineer, has been altered for a better one, Mr. Fielden having, with his usual liberality, granted leave for the line to take a more convenient course through his estate at Witton. This amended line has, we understand, been recommended by the eminent railway engineer, Mr. Locke, after a careful personal examination.

**London and Chatham and Chatham and Portsmouth Junction Railway.**—The directors of the Croydon and South-Eastern Railways have united to form this line, which, by arrangements with the Brighton and South-Western Railways, is to connect Chatham, Rochester, Strood, Gravesend, &c., with the metropolis, as well as with Brighton and the coast of Sussex, and with Southampton and the west of England; uniting, at the same time, the two naval arsenals of Chatham and Portsmouth. This line will also be guaranteed four per cent. on the capital by the South-Eastern and Croydon Companies.

**Brighton and Chichester Railway.**—A company has been formed, under the auspices of the London and Brighton Company, for connecting Brighton and Chichester by means of a railway, to commence by a junction with the Brighton Branch at Shoreham. Arundel, Bognor, Littlehampton, and Worthing will thus have the advantage of railway communication with London. The Brighton Company offer to lease the line for ten years from its completion, at a rent of 12,000*l.* per annum, being four per cent. on the estimated cost, dividing the net profits equally between themselves and the proprietors of the projected railway. The line will be twenty-three miles long, over a country described as remarkably level.

**Brighton, Lewes, and Hastings Railway.**—This company is brought forward with a guarantee by the Brighton Company similar to that offered to the Brighton and Chichester line. Hastings, St. Leonard's, Eastbourne, Hailsham, and Lewes, are the principal places to be connected with each other, as well as with London and Brighton. The length of the line is about thirty-one miles, making the total distance of Hastings from London eighty-one miles; the capital required is 475,000*l.*

**Hastings, Rye, and Tenterden Railway.**—This railway will be twenty-five miles in length, and is intended to connect Hastings, St. Leonard's, Rye, and Tenterden, with the South-Eastern line at Headcorn. A single line of rails will be sufficient, and the cost, it is stated, will not exceed 400,000*l.* The South-Eastern Railway Company guarantee a return on the capital similar to that offered by the Brighton Railway to their Hastings branch.

**Harrigate and Knaresborough Railway to the York and North-Midland Line.**—We understand that such is the favourable opinion entertained by the public of this proposed railway, and the anxiety evinced to obtain shares therein, that the provisional committee have received applications for upwards of 24,000 shares; and, having only 6,000 shares at their disposal, they have been under the necessity of refusing *in toto* a great number, and in many instances have been compelled to cut down the amount of shares allotted to highly respectable parties, in order to meet the wishes of such an unprecedented number of applications.—*Leeds Mercury.*

**North British Railway.**—Mr. Hudson, the indefatigable chairman of the York and North-Midland Railway, accompanied by Mr. Stephenson, the engineer, are engaged in a careful personal examination of the line of the North British Railway, between Edinburgh and Berwick. So far as their tour along the line has proceeded, both gentlemen have expressed their satisfaction with the route chosen by the Edinburgh engineers, as well as with the estimated cost of construction.

**Stansted Mountfitchet.**—The works of the Northern and Eastern Railway Extension are proceeding with great rapidity in this parish, and the adjoining ones of Elsenham and Birch-anger; but as yet nothing is doing upon the property of Mr. Maitland, here, through whose land it will pass to the extent of a mile. The operations have caused a considerable influx of railway labourers into the parish, all of whom, at present, have conducted themselves with great propriety.

**French Railways.**—An attempt was made by M. Muret de Boret and M. De la Roche Jaquelin to extract from the Minister of Public Works an idea of his intentions relative to the great new lines of railroad which have been some time projected, and on which speculators are in doubt whether the Government means to execute them itself, or deliver them over to joint-stock companies.



**Dreadful Accident on the Sheffield and Manchester Railway.**—On Friday, the 26th ult., a frightful accident occurred at Dinting viaduct, now in course of erection across Dinting Vale, a short distance from the present Glossop station on the Sheffield and Manchester line. The viaduct is of great height, vying with that at Broadbottom, and comprises three stone arches, raised from massive abutments or pillars. Our informant happened to be proceeding from the Glossop railway station, outside the coach, when the appalling event took place. He states that one of the three arches, partly formed with stone, and resting on the centres and other supports, suddenly moved and oscillated, when, in a moment afterwards, the ponderous erection fell to the earth, carrying with it the immensely large stones already laid towards forming the arch, and producing a fearful sound, resembling the discharge of artillery guns. On the highest part of the centres, when they fell, stood two workmen, who were precipitated among the heavy stones, timber, and mortar. One of them was found to have sustained a compound fracture of the elbow joint, with internal injuries, which brought on collapse, and in a few minutes the poor fellow ceased to exist. His fellow-sufferer was not so severely injured; fracture of the ribs had occurred, but with care and attention he is likely to recover. When our informant left, the cause of the accident had not been clearly ascertained. It was said that the centres, or timber supports of the arch, were not new and sound, but had been used on another part of the line, and had been here most improperly introduced. On this very important point no doubt an investigation will be immediately entered upon, and the truth elicited.—*Manchester Times.*

**Advantages of Low Fares on Railways.**—The report of the North Shields Railway presents some curious particulars in respect of third-class passengers. The directors, with a view of restoring the former position of the railway, which had been greatly depressed, resolved on re-establishing third-class carriages at lower fares, and with more frequent trains. The result has been that in the half-year ending the 31st of December last, the number of passengers was 487,064 as compared with 381,522 passengers in the corresponding six months of the previous year, being an increase of 105,542, the increase in money being 347. 3s. 6d. A very gratifying fact is also mentioned in the report—namely, that “the passengers carried since the opening of the railway amount, on the 31st of December, to the very great number of 3,369,491, and no accident to the life or limb of any passenger has ever occurred.”

**Statistics of Railway Traffic in 1843.**—An interesting table, prepared from the returns of the past year, appears in the *Railway Magazine*. We have not room for the table, but quote the following results:—The number of passengers was 17,255,085 during the past year, upon thirty railways; the total traffic receipts upon forty-four railways for the year, being 4,827,655*l.*; making an average earning of 3,076*l.* per mile per annum, which is at the rate of 59*l.* per mile per week. If we deduct 40 per cent. 1,931,062*l.*, from the total receipts, as working expenses, we shall have, less the passenger duty to Government, (5 per cent. on passenger receipts,) 179,662*l.*, and income-tax, 81,509*l.*, leaving the clear sum of 2,635,462*l.*, to pay an average dividend per cent. of 4*l.* 18s. 10*d.* upon the actual amount of capital already expended as per last reports, namely, 56,135,134*l.*; which, of course, entirely excludes nominal capital and preference advantages. The traffic receipts for 1843 exceed those of 1842 by at least 470,000*l.*, shewing an increased average traffic of more than 9,000 per week in favour of 1843, which is, perhaps, a promising argument of railway prosperity, and may in some measure account for the great desire the public have shewn lately for railway investments, in consequence of which, and the state of the money-market, railway shares have risen to an astonishing price.”

A deputation, consisting of Mr. Glyn, Chairman of the London and Birmingham Railway Company; Mr. Baxendale, and several other gentlemen connected with railways, had an interview with the Right Hon. W. E. Gladstone on Monday last, at the office of the Board of Trade.

## RAILWAY ACTS.

Mr. GLADSTONE, as President of the Board of Trade, proposed to the House of Commons on Monday last the appointment of a select committee to consider the standing orders relating to railways, and the course which it might be expedient for Parliament to take with respect to applications for new lines or for new powers in relation to old lines. He intimated that it might be fitting to reduce the amount of deposit now required by the standing orders; and, having regard to the growing importance of the subject, he suggested that future railway bills should be referred to the Board of Trade before the introduction of them into the House of Commons. His present motion would not include any inquiry into the checks which it might be desirable to provide against the alleged abuses of existing railways. There were indications of a disposition to apply for competing lines; but such lines would not produce all those advantages to the public which are considered as attaching to competition in other matters; and he was not without hope that such advantages might be obtained from the good sense of the existing companies, without any unlimited encouragement to competing lines. The object he chiefly desired was, a reasonable arrangement for passengers of the third class, which he thought there was a disposition to concede, and which he believed would be attainable without breaking down the fair principle of the general charges.

Mr. Labouchere wished to make the terms of the reference to the committee a little more extensive, lest the committee should find itself wholly precluded from entering upon an inquiry into the arrangements of railway companies not seeking any further aid from Parliament. He could not think that competition was useless to the public in railway undertakings, and illustrated his opinion by the fact that parcels from Bath, of which it might be supposed that the Great Western Railway would have the entire monopoly, are frequently carried by the Southampton line.

Mr. Gladstone said, that when a certain progress had been made by the committee, such additional references as should then appear expedient might be added by new instructions from the House.

Mr. Roebuck was solicitous that nothing should be done that could fetter the House in examining and dealing with a subject so material to the public welfare. He insisted on the usefulness of rivalry by competing lines; and on the principle that Parliament, after passing an act of monopoly, had a right to interfere if that monopoly were not used as Parliament had expected it should be. The hardships now imposed upon third-class passengers on the Great Western line were an exemplification of this grievance. Having these views of the subject, he wished that there should be nothing to narrow the scope of the committee.

Mr. C. Russell (chairman of the Great Western Railway Company) gave some explanations respecting the accommodation of third-class passengers on that line, and stated that most of the companies were at this moment carrying this class at a positive loss.

Mr. Wallace contended for good accommodation to third-class passengers, and against the discretionary power of directors to raise fares.

Sir R. Peel enforced the principle, that there was a great distinction between parties coming for new enactments, and parties having invested their capital on the faith of enactments already existing. There might, indeed, be cases where Parliament would have a right to control even companies long since founded and seeking no new powers; but he would caution the House to pause in such interference. They ought not to interpose merely because some railways produced profits larger than had been expected; the Legislature which should do that would be equally bound to compensate those lines which had been productive of a loss. But, undoubtedly, the Legislature would do quite fairly in checking abuse by authorizing lines that would have a competing effect; and that power of Parliament, and that probability of competition, constituted the true control on the existing bodies, who, he trusted, would see, in particular, that it was their interest to make fit provision for the third-class passengers.

Mr. S. Wortley was desirous of giving the widest possible scope to the inquiries of the committee.

Mr. P. Stewart trusted that, even if these inquiries should be limited in the beginning for the sake of convenience and despatch, the subject would afterwards receive a wider consideration.

Colonel Sibthorp enlarged upon the evil which railroads had produced in displacing the employments of those who were connected with the old roads and modes of travelling. He did not care how soon he saw all these railway schemes bankrupt.

After a few words from Mr. Plumptre and Mr. F. French, the motion was agreed to.

## THE CANAL OF ALEXANDRIA.

THE Canopic mouth (of the Nile) is long since closed up by the mud of Æthiopia, and the Arab conquerors of Egypt were obliged to form a canal to connect this seaport with the river. Under the Mamelukes this canal had also become choked up, and her communication with the great vivifying stream thus ceasing, Alexandria languished—while Rosetta, like a vampire, fed on her decay, and, notwithstanding her shallow waters, swelled suddenly to importance. When Mehemet Ali rose to power, his clear intellect at once comprehended the importance of the ancient emporium. Alexandria was then become a mere harbour for pirates—the desert and the sea were gradually encroaching on its boundaries—but the Pasha ordered the desert to bring forth corn, and the sea to retire, and the mandate of this Albanian Canute was no idle word—it acted like an incantation to the old Egyptian spirit of great works. Up rose a stately city, containing 60,000 inhabitants, and so suddenly yawned the canal, which was to connect the new city with the Nile, and enable it to fulfil its destinies, of becoming the emporium of three quarters of the globe. In the greatness and the cruelty of its accomplishment, this canal may vie with the gigantic labours of the Pharaohs. Three hundred thousand people were swept from the villages of the Delta, and heaped like a ridge along the destined banks of that fatal canal. They had only provisions for one month, and implements they had few or none; but the Pasha's command was urgent—the men worked with all the energy of despair, and stabbed into the ground as if it were their enemy; children carried away the soil in little handfuls; nursing mothers laid their infants on the shelterless banks; the scourge kept them to the work, and mingled blood with their milk, if they attempted to nourish their offspring. Famine soon made its appearance, and they say it was a fearful sight, to see that great multitude convulsively working against time. As a dying horse bites the ground in his agony, they tore up that great grave—30,000 people perished, but the grim contract was completed, and in six weeks the waters of the Nile were led to Alexandria. The canal is forty-eight miles in length, ninety feet in breadth, and eighteen in depth; it was finished altogether in ten months, with the exception of the lock which should have connected it with the river; the Bey who had charge of this department lost his contract and his head.—From “*Episodes of Eastern Travel*,” in the *Dublin University Magazine*.

**GOOD AND BAD ROADS.**—The following table will shew the occupiers of land, who by their teams and in their gigs are the most frequent travellers along the cross roads, how very expensive bad roads are to them, and how much it is their interest to endeavour to improve them, to which frequent gates are the greatest obstacles. Force required to draw a loaded cart, weighing 1,000 lbs. is—

Turnpike road hard and dry .....	20½ lbs
Ditto dirty .....	39
Hard compact loam .....	53
Ordinary bye-road .....	106
Turnpike road newly gravelled ....	143
Loose sandy road .....	204

From this it appears that there is more than three times as much force required in draught on a middling bye-road as on a hard turnpike road. No farmer makes money now a-days by cart horses; he ought not, therefore, to wish to keep more than necessary; and good roads enable him to turn the keep of a cart horse into the more profitable animal, a cow or some sheep.—*Berks Chronicle.*





KING'S LANGLEY PRIORY, HERTS.

This priory was founded by King Edward the Second, who, by letters patent, dated at his palace at Langley, granted to the fraternity of Friars Preachers, a garden and other lands lying contiguous to the parish church; and by other letters patent dated at York, granted to them seventy marks, wherewith they might build themselves a house in his park of Langley, for the daily celebration of mass for the soul of himself and his ancestors.

King Edward the Third, also in further testimony of his affection to the foundation of his royal father, gave them a mazer cup called Edward, and thirty-nine other mazer cups, with a particular injunction that they should

never be alienated from this religious house. Upon the dissolution, the revenues of this priory, then valued at the sum of 122*l.* 4*s.*, were surrendered to the Crown.

King Philip and Queen Mary, in 1557, gave and restored to this priory all the houses and grounds, &c., but in the first of Elizabeth, A.D. 1559, this priory, with the appurtenances, reverted again to the Crown, and in the 42nd year of her reign, 1600, gave to Martin, Bishop of Ely, the rectory of King's Langley, with the rights, &c., &c., late parcel of the possessions of the dissolved priory.

Edmund de Langley, the fifth son of King Edward the Third, who married Isabel, second daughter of Don Pedro, King of Castile and

Leon, was buried, according to his own desire, in this priory of the Preaching Friars, in the third year of Henry the Fourth, from whence his tomb was removed into the parish church at the time of the dissolution, and now stands at the N.E. corner of the chancel within the communion-rails, covered with a slab of Purbeck marble.

Notwithstanding the present insignificance of the village where the remains of this priory are situate, it could at one time boast of a palace erected by Henry the Third. Of this once magnificent structure (covering three acres of land), however, but very few vestiges can now be traced.—(*From a Correspondent at King's Langley.*)

#### WOODS, FORESTS, AND METROPOLITAN IMPROVEMENTS REPORT.

THE following is an abstract of the twentieth Report of the Commissioners of her Majesty's Woods, Forests, Land Revenues, Works, and Buildings. By the fourteenth annual Report of the said Commissioners, it appears that the leases of Crown property in England and Wales granted in the year ending the 5th of January, 1843, amounted in annual value to 3,692*l.* 7*s.* 4*d.*; the yearly rents reserved to 3,712*l.* 7*s.* 3*d.* The proceeds of the sales by public auction of the land revenues of the Crown in England, between the 5th of January, 1842, and the 5th of January, 1843, produced 2,085*l.* Sixty-six sales of lands and premises by private contract yielded 15,183*l.* 13*s.* 5*d.* The appendix contains an account of land-tax redeemed by the Crown up to the 5th January, 1843, which amounted to 6,144*l.* 0*s.* 7*d.*, in extinction of which there was transferred to the Commissioners for the Reduction of the National Debt, in the Three per Cent. Consolidated Bank Annuities, 194,850*l.* 0*s.* 6*d.*; Reduced Bank Annuities, 30,430*l.* 3*s.* 10*d.*; total, 225,280*l.* 9*s.* 10*d.* The amount paid for the purchase of property on behalf of the Crown was 30,760*l.* 1,080*l.* was paid for the purchase of property for the purpose of forming a new opening from Knightsbridge-road into Hyde-park, and a new opening from High-street, Kensington, into an intended new

road across the Palace-green. The reports contain an account of the particulars of some purchases which have been made for the improvement of the Crown property in the Phoenix-park, near Dublin. The Commissioners have also purchased some property lying to the south of Holyrood Palace, Edinburgh. The purchases alluded to were completed for the sum of 530*l.* The sum of 711*l.* has been paid for the purchase of some premises adjoining the ancient ruins of the Abbey of Arbroath. The tenement in question is built against the walls of the abbey, and it is said, would have interfered with the preservation of the ruins. For Holyhead-road 12,697*l.* 12*s.* 10*d.* has been received, and 11,285*l.* 9*s.* 7*d.* expended. For the metropolitan improvements, purchases to the amount of 300,755*l.* 5*s.* 8*d.* have been made; and contracts for further purchases have been made to the amount of 194,641*l.* 13*s.* 6*d.*, viz.:—in the line of Oxford-street to Holborn purchases have been completed to the amount of 166,851*l.* 12*s.* 10*d.*, and contracts to the amount of 15,906*l.* 15*s.* In the line from Bow-street to Charlotte-street, Bloomsbury, the purchases amount to 35,464*l.* 11*s.*; contracts, 26,485*l.* In a line from the London Docks to Spital-fields Church purchases, 44,157*l.* 10*s.*; contracts, 71,102*l.* 18*s.* 6*d.* From Coventry-street to Long-acre, purchases 54,281*l.* 5*s.* 10*d.*; contracts, 78,477*l.* From East Smithfield to Rosemary-lane no purchases have been com-

pleted, but contracts have been made to the amount of 2,670*l.* For the purpose of these improvements the sum of 500,000*l.* has been borrowed from the Equitable Assurance Company. Three houses have been purchased in High-street, Kensington, which were required for opening the intended new communication between Kensington and Bayswater, which not only forms an essential part of the plan for letting for villas the site of the Royal kitchen-garden at Kensington, but will be a great accommodation to the rapidly increased and increasing population of that district. In order to form a new park in the eastern part of the metropolis, the freehold interest in 101 out of 290 acres has been purchased. The following items of expenditure are to be found in the reports:—Amounts paid for purchases at Charing-cross and in the Strand, 874,010*l.* 2*s.*; in Downing-street, 67,293*l.* 6*s.* 5*d.*; King-street, 17,028*l.* 10*s.*; Bedford-street, 7,325*l.*; York-street, Tavistock-street, Long-acre, 29,403*l.* 10*s.*; Piccadilly, 2,130*l.* 17*s.* 6*d.* Payments made for the exhumation of bodies from St. Martin's churchyard, 2,523*l.* 3*s.* 1*d.* The receipts arising from the woods, forests, and land revenues of the Crown in the year ended 5th of January, 1843, including "produce of the land revenue," the "Royal gardens, parks, forests, and woodlands," "extraordinary receipts," "public works and buildings," and "Holyhead Harbour and Roads," were 754,213*l.* 16*s.* 6*d.*



## INFERIORITY OF MODERN ENGLISH BRICKWORK.

It is a remarkable fact, that in proportion as the manufacture and burning of bricks have improved, and while the use of stone-lime has become more general, the workmanship of much of our modern English brickwork has debased in quality more than the materials of the work have improved. The author is obliged to confess, that although he has taken very great pains to procure complete soundness in the execution of brickwork, he has almost wholly failed: his idea of soundness is nothing more than that the work should be composed of good materials correctly bonded in every part, should be thoroughly cemented together, and that as few broken bricks as possible should be used in the work.

An idea is prevalent that great care and exactness in the choice of the materials of brickwork, and in the workmanship of it, are too burthensomely expensive to be borne in ordinary buildings. No idea could be more erroneous, for bad materials will not support much more than their own weight; and though bad brickwork may even cost only 10% per rod, a much larger bulk of it is required for supporting the same weight, and for keeping out the weather equally well, than for the same purpose would be required of brickwork of a better quality; while the carriage and the excise duty are as costly, and the mortar and workmanship of it are as expensive and sometimes more so.

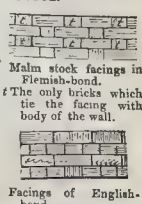
It will be found that for the performance of a certain quantity of duty, malm paving-bricks set in the best stone-lime mortar, will (besides their superior duration) be cheaper than the worst descriptions of place-bricks. It is useless to plead that of itself, circumstances apart, such a wall is too thick or too thin; for sufficiency of substance depends entirely upon the

purpose for which work is required. If he who built Salisbury spire found out the art of so disposing the materials of it as to make a thickness of 7 inches of stone last 500 years and still to remain, it is in vain to say that a wall 9 inches thick will not serve for such or such a purpose: the masonry of Gothic edifices is but rarely in its particles so sound as excellent brickwork; and yet frequently, though you cannot get a builder to double the strength of his walls by careful workmanship, he very often advises you to double the thickness of them in situations where weight and bulk are positive evils.

When you deduct from brickwork in ordinary buildings the loss of strength occasioned by badness of material, by disconnection of the bond, by small pieces being inserted where whole bricks should have been used, and by the weakness which is the result of the work not being duly cemented, you will find that the useful part of common work (if indeed it possess any such) executed at 10% per rod, really costs 50% or more per rod; and then when it is considered in a vast number of our erections, that from one pier not being set over another, a large portion of such piers, instead of supporting the superincumbent weight, acts as ruinous burthens upon the remaining parts of the pier, it will be found that the quantity of effective brickwork is often so reduced, as to cost more than 100% per rod; and indeed it is almost a mistake to say that any of it is effective while in jeopardy from defective nature and mal-construction. In this view of the subject, brickwork is somewhat different from timber-work; for the nice calculator of interest is frequently satisfied, provided he can save by the use of low-priced and bad timber present outlay more than enough to counter-balance the expense of subsequent repairs, and perhaps he may on some special occasions be right, though, nationally considered, the use of bad timber is a disgrace.

4th part of the superficial extent of the work is bonded,—and in common bad ordinary work, the tie may be reduced to 1/4th; and the author has seen work in which it was reduced to less than 1/4th of the superficial extent, and acted rather as a burthen than a support to the brickwork. But if a wall be built wholly of malm paving-bricks, the facing, if the work be in Flemish-bond, will have 1/3rd of its superficial extent bonded in, and if of English-bond, 1/2 of its superficial extent will be bonded.

By the ordinary mode of bonding in only the "headers" of each alternate course, two-thirds of the extent of facing throughout the work are separated from the back-work by a series of perpendicular joints extending from the base to the summit of the work. See section from c to d.



The author believes that if the favour in which Flemish-bond facings are held be not altogether a prejudice, the superior soundness of facings of English-bond ought to prevent the use of Flemish-bond in most cases where it is now adopted.

It is of the greatest importance to reduce brickwork to the smallest possible dimensions; for besides the saving of the carriage and duty of the materials, the foundation is thereby disburthened of a crushing heap. In many parts of structures their grace and convenience depend solely upon the ability to reduce the bulk of their substantial component parts; and, moreover, every proprietor has a natural inherent feeling against the occupation of the site of his habitation, by an useless bulk of materials; and the disparity in favour of the quantity of permanent strength to be produced out of a given sum of money, by the use of good materials and good workmanship, should for ever, with the wise and truly economical, banish inferiority. The wonder with which mankind in general view a small quantity of materials reared by delicate art, should be sufficient inducement for the architectural practitioner to take some pains in this respect.

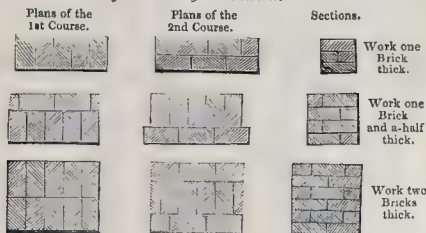
The author has sometimes, under peculiar circumstances, run up to a considerable height walls in their principal parts no thicker than nine inches, and has been cautioned against this; but he has found, although he could not get the brickwork executed to his satisfaction, these walls, from even the moderate care which has been used in their formation, have remained without flaw, while walls much thicker, raised by those who gave him their advice, have in a few months cracked and fallen to ruin, because they were worse constructed, and were reared contrary to all static principle.

Of how much importance it is to reduce the bulk of the component materials of an edifice to the smallest bulk which safety will allow, is the circumstance of the fondness with which so many persons view the adoption of small coarse and proportionless pillars of iron, in preference to the most beautiful piers and columns of either Grecian or even Pointed Architecture.

Only practically convince the public that economical soundness, internal capacity, and duration, may be obtained by the proper use of proper materials, and the coarse and slovenly workman will in vain attempt to defraud his employer by the sale of large quantities of worthless materials,—the brickmaker will find a mode of protecting his goods, while crude, from the injuries of inclement weather, and he will so well burn his bricks, that no more soft ones will be in the market than can be used for mere purposes of bulk and weight, or for the repairs of old and inferior buildings, the great duration of which is of little consequence.

The author is the more earnest in these remarks, since he finds it difficult to disabuse one class of employers from the ill advice which they receive from inferior tradesmen, who, unable to perform any thing well, find more pecuniary profit result from the sale of a large quantity of bad materials and bad workmanship, than from the performance of a moderate quantity of excellent work.

## English Bond of Brickwork.



It is universally admitted that English-bond is the mode in which brickwork can be put together with the greatest strength,—for in no part of such work, when properly done, does joint come over joint, and it does not require small pieces of brick to fill up the work; moreover it may and ought to be done entirely with whole bricks, except the "closers" near its angles, requisite in order to adjust properly the bond. Whereas Flemish-bond requires of necessity, through its whole structure, a multitude of small pieces, and possesses the additional inconvenience of having throughout its structure a series of coffers (filled with unbonded work) which extend perpendicularly from the base to the summit of the work.

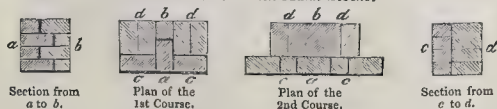
## Flemish-Bond of Brickwork.



It is customary to consider Flemish-bond as indispensable for the external facing of even the commonest descriptions of buildings; hence there is license given for the most defective workmanship; for as in general bricklayers use for all work out of sight the English-bond,

they make the insides of external walls of English-bond, and the outsides of them of Flemish-bond, and thus much irregularity and breach in the bonding of the work ensue. In order to avoid this evil, the author, for some considerable time past, has had all his external walls, except those of principal fronts, executed entirely within and without in English-bond; and he would have adopted the same mode of structure even in principal fronts, had he not been restrained by the fear of increasing the proportion in the quantity of facing-bricks, which are in general much softer and inferior in goodness to the description of grey-stock bricks which he in general uses: and this imperfection of the ordinary facing-bricks has almost induced him to lay aside altogether the ordinary facing-bricks, and to make his walls only of moderate thickness, but within and without entirely of the very best malm paving-bricks, a description of material which he believes to be the most excellent for walls; and this would remove altogether the imperfection of softness and the want of tie, in the ordinary facings of brickwork; for by the ordinary mode of carrying into the body of the work the "headers" of but every alternate course, only 1/4th part of the superficial extent of

## Brickwork Faced with Malm Stocks.



the facings can be tied into the work; and when it is considered how many of the "headers" break off while the workman is

laying them, how many he omits from carelessness or fraud, and how many of them are short when used, it will be found that only about



Perhaps no other description of work executed at the present day in England, calls for such asperity of condemnation as much of our London brickwork: where it is to be exposed to view, it is too often bad enough; but where it is to be concealed, as is so often the case, by vicious plaster finery, one-half the expense of which might have made it work indeed, no pen can describe adequately its abominations, its pseudo-arches, its want of bond, its shattered condition, its internal un cemented state, and its general badness of materials.—From *Bartholomew's "Essay on the Decline of Science, &c. in Modern English Buildings."*

### Literature.

*Fisher's Colonial Magazine.*—No. I.—New Series.

A NEW issue of this valuable periodical has been commenced, with a reduction of price from half-a-crown to a shilling per monthly number, so as to suit the purses of every grade, whether colonists, emigrants, or home readers. Among the many articles of interest contained in this periodical which we recommend to our subscribers, the article entitled "On the Use and the Practicability of the Construction of a Canal or other Communication from the Atlantic to the Pacific," will be of very great interest. The following are remarks contained in the paper in question:—

"We were about to offer our sentiments on the formation of a canal of even larger extent than any now existing, either for internal communication, or between rivers, lakes, channels, or even seas, we might call to our aid a tolerable quantum of resolution; but, when on the brink of considering the feasibility of uniting two vast oceans, and that by crossing through a portion of the most stupendous range of mountains on our earth, we become sensible of our relative pigmy weakness in attempting, perhaps rashly attempting, to modify, by human art, the vast works of an all-intelligent, all-powerful, and beneficent Creator.

"The idea of a communication between the Atlantic and Pacific Oceans is not a new or recent one. It did not escape the keen imagination of Columbus, the last days of whose eventful, ever-active, and vastly-useful life, were devoted to the deep contemplation of the work. His great mind did not rest satisfied, as well it might have been, with discovering for his fellow-men a new and mighty continent; but, like all master-minds born to improve their species, an achievement gained, was to him the foundation upon which he lifted himself towards the accomplishment of others. But he had already done more than is commonly allotted to man, and, unfortunately for mankind, the great design was left by him for the precarious accomplishment of subsequent ages. After his death, the scheme had attractions for the bold and daring aspirations of the early Spaniards, to whose habits of enterprising adventure, the vastness and sublimity of the project were congenial; but nothing was effected. We are not surprised at little having been done in later times, during the dominion in South America of the Spanish government; for what could be expected from the dull political and scientific apathy, but a stagnation of all that is good and profitable to man in his social condition? Beyond a solitary survey, made by order of the government, it would seem, solely and only for the embellishment of the archives of the city of Guatemala, and which was, in truth, most religiously confined to its musty dormitory until the South Americans cast off their galling yoke, the matter was hardly thought of. Since the achievement of their freedom, however, the republics of Venezuela and New Granada, and of Central America, have not been idle; amid their young flutterings for stability of government, they have found time to do much, by investigation, towards removing the imagined obstacles in the way of the accomplishment of the undertaking, having bestowed much pains in procuring those exact surveys, and other data, which are essential to a careful and accurate consideration of its accomplishment.

"We have thus seen that the New World is in itself naturally of a form eminently favourable to commercial enterprise; but, it is clearly also susceptible of great artificial improvement, and particularly and prominently so as respects the subject of our present article; a

subject affecting not only that vast hemisphere itself, but of immeasurable account to the other quarters of the globe. Were a water-communication, by means of a canal for ships, effected across the Isthmus of Darien, through Central America, or even Mexico, it is obvious that the harshest features of our present navigation would be softened down, and that also vast countries abounding in natural resources and wealth would be soon quickened into active commercial life. Instead of the now precarious and perilous voyage by the Cape of Good Hope to the East Indies and China, and their neighbouring islands, and also Australia, a safe one, occupying much less time, could be effected; not, however, because of there being any great difference of direct distance, but on account of extremely advantageous winds, tides, and weather. In place of the still more hazardous and trying route round Cape Horn, through icy seas, and along inhospitable coasts, to the western shores of America—every day rising in commercial and political consequence—and the islands of the Pacific, now assuming a prominent importance, and also to the whale fisheries in that ocean, an opening through the continent of America, would furnish both a fearless and an infinitely shorter voyage than that so frequently ruinously disastrous one. In short, a glance over the map of the world will make it evident, better than any description that can be given, that the execution of this great work would send over our globe a flood of commercial light, the effects of which would benefit not only Europe, but every part of the habitable earth. It would most emphatically and decidedly advantage those magnificent countries through which it would pass; Europe and North America, unquestionably so, in an eminent degree; Asia would be vastly benefited by it, and even dormant Africa would feel its awakening, enlivening influence.

"The much agitated question of the practicability of a communication between the Atlantic and Pacific Oceans, is now no longer a matter of speculation; if any seeming ground for doubt was ever involved in it, such has been now quite dissipated, for competent men, from actual survey, have confirmed what has been always our opinion, the admissibility of its accomplishment, and not only at one, but at several places—although the work has certainly appeared to us to be one of great difficulty, and also of distant and very uncertain fulfilment; necessarily difficult, from the very great magnitude of the work, and remote and precarious from paucity of inhabitants, and want of sufficient capital and enterprise in the states immediately concerned in bringing about its execution; but now that other governments seem to be taking up the matter, we may look for the early fruition of this unspeakable benefit to commerce and civilization.

"As many as four places have been supposed eligible for effecting this junction. It has been proposed that the Gulf of Mexico should be united to the Gulf of Tehuantepec, in the Pacific, by means of a canal, which should join the sources of the river Chimilapa to those of the Rio del Passo. The distance, however, being as great as thirty-eight leagues, added to other unfavourable local circumstances, renders this plan by no means an advisable one; and then, its being so much to the north, would also detract from its merit; besides, its realization is of more moment to the state of Mexico than to the general interests of the whole commercial world. The second plan proposes a line of communication across Central America by passing from the Atlantic up the river San Juan, into the lake of Nicaragua, and thence by a canal to the Pacific. This project has great recommendations, and, we think, is even preferable to any other, which we shall endeavour to make apparent, after having stated the merits of the two most popular ones; the third and fourth plans, which contemplate a passage through the Isthmus of Panama, and have occupied more attention than any of the others: an account of the features, both topographical and statistical of the locality, is essential to an explanation of the subject.

"The Isthmus of Panama, a name which must not be confounded with a province having the same designation in New Granada, is that remarkable ligature, neck, or link of land, more properly speaking, which connects the continents of North and South America. It is sometimes also called the Isthmus of Darien,

a name which is, however, now much out of use, and ought to be expunged on that account from geographical works. It extends from about the meridian of 77° to that of 81° west of Greenwich. Its breadth at the narrowest part, which is opposite the city of Panama, which is situated on the Pacific Ocean, is not less than thirty miles; and it swells out more or less at either extremity, where it blends with the parent continental portions of the New World. The continuity of the great Andean chain of mountains, which, for the most part, traverses the whole continent of America, is twice interrupted, if not entirely broken, within the limits above defined. The northern Cordillera exhibits the first indication of depression in the province of Nicaragua; but it again rears itself in the province of Veragua, where it expands and forms into a very fine table-land. In the eastern part of the last-named province it breaks into detached mountains of considerable elevation, and of a most abrupt and rugged formation, until, still further to the east, numerous conical hills make their appearance, raised not more than three or four hundred feet high, and having their bases skirted by extensive plains and savannas. These finally disappear, and the country becomes almost uninterceptedly level, until the conical mountains again thicken, and, becoming connected, form a small Cordillera, which runs from about opposite Porto-Bello on the Atlantic side to the Bay of Mandingo on the Pacific, and in the country of that name to the north-east, where the second break occurs. The land there continues low for a considerable distance, and abounds in rivers—those on the north side flowing to the Gulf of Urala, or Darien, and those on the south to that of San Miguel, beyond which point the Cordillera again rises itself on an extended scale, and enters South America. The general bearing of the mountains in the vicinity of Panama is north-east and south-west. They vary elsewhere, and appear to have a relation to the line of coast, although their course is not always parallel to it. Their height is not considerable; near Panama, their elevation is not more than 1,000 to 1,100 feet; east of Porto-Bello, however, they are considerably higher, and are generally covered with that dense and almost impenetrable forest and vegetation, which can only grow on a soil of great depth and amazing fertility, under the prolific action of great heat and moisture.

"The present very limited communication across the isthmus is maintained chiefly by two lines of road, one from Panama to Porto-Bello, and another equally from Panama by way of the town of Cruces to Gorgona, down the river Chagres to the seaport of the same name, at its mouth. There are some others in use, but little known, and, under the Spaniards, their improvement and multiplication were much discouraged. The present roads are exceedingly bad, and they traverse a mountainous part of the country. That between Panama and Porto-Bello is infinitely the worst of the two principal ones, being in many places almost impassable in the rainy season, from the steepness of the ascents and descents. But the roads to Cruces and Gorgona also lead across a mountainous country, and are extremely difficult in bad weather—a considerable part of the latter, indeed, being merely the bed of what is in winter a large stream.

"The Isthmus of Panama is divided into two provinces, namely, Panama, which includes Darien and Veragua; these again are divided into cantons, each having a certain number of parishes. By a census taken in 1822, the following was the state of the population in the two provinces:—that of Panama contained 66,188, and that of Veragua 35,367 inhabitants—making the population of the whole isthmus, for that year, 101,555, an amount which has not since materially altered. The people are composed of white and coloured, as in the other parts of South and Central America, and are given up to indolence and want of industry, although strong and enduring under occasional fatigue; they are, in point of civilization, less advanced than their neighbours of the same continent. The extreme fertility of the soil, together with their great destitution of moral enlightenment, are the chief causes of their general indolence, as, in the absence of the good impulses of civilization, a man can there, notwithstanding, for a small expenditure of desultory labour, procure a



sufficient subsistence for himself and family. They are, however, like other persons, quite susceptible of steadily practising habits of industry, when proper incentives and sufficient stimulants are powerful enough to call forth their energies. There are within the province several regiments of militia, formed of the lower classes of people and Indians, and there are also excellent workmen in felling timber and clearing ground, and not inapt in acquiring any mechanical trade or art. They are, moreover, exceedingly simple in their habits, and are easily maintained, so that, in the projected work of a communication between the Pacific and Atlantic Oceans, some workmen may be obtained at a tolerably moderate rate of wages—a circumstance of much importance in assisting the success of the undertaking, which we will here state must be principally the work of foreign labourers, as we shall explain in its proper place.

"The site of Panama, the capital of the Isthmus, has been once changed. The old city stood about three miles east from the present situation. The name is supposed to be derived from the Indian word *panama*, signifying "much fish," from its great abundance along the coast. The first city was originally a village inhabited by Indians, at the invasion by the Spaniards in 1515. The present city of Panama is situated in latitude  $8^{\circ} 57'$  north, and longitude  $79^{\circ} 30'$  west from Greenwich, on a rocky tongue of land, shaped nearly like a spear-head, and extending a considerable way into the sea. Its harbour is protected by a number of islands lying at a distance from the main-land, and some of which are of considerable size, and highly cultivated. Its anchorage is good, and it has a plentiful supply of water and provisions. Its great advantages in regard to situation will, no doubt, be one day turned to great commercial profit. The population amounts, according to some, to not more than 12,000, but others make it to contain nearer 25,000 inhabitants, which seems the more probable estimate. It is tolerably healthy, notwithstanding its high temperature, if we except during the months of August and September, when its increased warmth engenders frightful epidemics.

"Panama is protected by some fortifications, and is divided into the high and low towns, the last, called *Varal*, being the most densely peopled. Its streets are narrow, dark, and filthy. The houses, for the most part, are built of wood, and covered with a thatch; they are of three stories high in general, and are much neglected in their interior arrangements. It has a large open square, but, through the inattention of the authorities, this is overgrown with weeds, and encumbered with the fallen ruins of a great many buildings, and particularly of the college of Jesuits. Here is a college, in which are professorships for Spanish and Latin grammar, philosophy, theology, and public and canon law. The churches and convents, which are still numerous, are built of stone; the cathedral and the hospital are very fine buildings. The roadstead of Panama is extensive, but rendered dangerous by the prevailing north winds, which are violent. There is so little depth of water along the shore, that goods can only be landed at one place, and that by using flat-bottomed boats and piraguas. Hence large vessels are obliged to come to at the islands Perico and Flamenco, two miles out; but nevertheless there is a good deal of traffic carried on, principally with the English at Jamaica and the United States of America. The annual exportation of pearls alone amounts to 40,000 dollars. A good deal of commercial spirit is manifest; the stores for ships' goods are spacious, and well filled with merchandise. Every year there is a well-frequented fair. English fashions and customs have the ascendancy; and even the *cuisine* of Old England is allowed supremacy. The women wear no head-covering, and parade stately with their long black tresses flowing down their shoulders. The environs of the city are planted with bananas, oranges, figs, and limes; and the tamarind and cocoa-nut trees are beautifully conspicuous in their majestic height. Our readers will remember that Panama was a most flourishing port when the commerce of South America with Spain was carried on by means of the *galleons*; it was then the *entrepôt* of the commerce of America, Asia, and Europe. Its importance since then has greatly decreased.

"Porto-Bello is situated in latitude  $9^{\circ} 35'$  north, and longitude  $77^{\circ} 45'$  west, close to the sea, at the foot of immense mountains which surround the whole of the port. It is, from its situation, most unhealthy, for the heat is exceedingly oppressive; and the town being encompassed by mountains, the freshness of the sea-breezes cannot gain admittance as a relief; while the country being uncleared of wood, and there being a great deal of, nay, almost constant rain and damp, the uninviting features of the place are rendered most repulsive, although some 2,000 mortals contrive to exist in it. Chagres and Porto-Bello are the only towns or villages on the Atlantic shore of the Isthmus. About nine miles east from Chagres is the Bay of Simon, also called Navy Bay, which is large and spacious, being as much as three miles wide at the entrance. The other towns of Panama are of trifling importance. Gatun is a small hamlet; Gorgona is somewhat larger, and is a point at which passengers going to Panama frequently land. Cruces, however, is of more consequence—it is the place to which goods are always conveyed. It is agreeably situated on a fine open plain, upon the left or southern bank of the river Chagres, about thirty-four miles from its mouth, and eight hours' journey on mule-back from Panama. The inhabitants of these places are, for the most part, owners of canoes or mules for the purposes of transport, or are store-keepers for taking charge of the custody of goods and merchandise; or *logos*, that is, persons employed in working canoes. Cruces and Gorgona are also places of resort in the dry season, or summer, as watering-places for the inhabitants of Panama; for they are considered extremely salubrious, a reputation likewise enjoyed by the town of Chorrera, situated upon the river of that name.

"The, at present, very limited trade on the Atlantic shore of the Isthmus is maintained with Jamaica by a British man-of-war, which sails monthly for the purpose of conveying letters and specie; with Carthage, by government vessels, twice a month, and also with the same place and a few other points by private trading-vessels, which bring freight to Chagres, and there exchange or sell it. Its commerce on the Pacific is, however, more extensive, embracing all parts of the coast, both north and south, which find it their interest to communicate with Europe by this way. Specie is conveyed across the Isthmus to be embarked at Chagres at an expense of ten dollars and two rials for every 5,000 dollars; besides which, there is a transit duty of three per cent. on silver and one per cent. on gold. In return, goods are brought to Panama, where they are lodged in the custom-house immediately on their arrival. When for exportation, they pay a duty of two per cent., but if for home consumption, one is imposed according to the nature of each particular article. Limited as the trade of the Isthmus is, it is yet somewhat improving. The receipts of the treasury of the government of Panama in the year 1827, we are assured by good authority, amounted in round numbers to 250,000 dollars, of which was left a balance in the public chest of nearly 3,000 dollars, after providing for all the exigencies of the state; and there is reason to suppose that since that period the finances of the territory have improved. The receipts are not one-third, it is true, of what they were in the year 1812, when Panama was a colony of Spain; but this we are not surprised at when we consider the grinding, exclusive system of dealing which was universally adopted by that unfortunate government. It is important to mention, that by the last arrangement affecting the territorial distribution of this country, it became the north-western boundary of New Granada, one of the three republics into which Colombia was divided in the year 1832.

"Now, in considering the merits of the Isthmus of Panama as a point at which to attempt the junction of the two oceans, we must not allow our judgment to be led aside by a circumstance which is no doubt calculated to render us liable to be warped from an impartial view of the matter; we mean this: the Isthmus presents the narrowest barrier to the meeting of the two mighty waters, whose conjunctive commercial assistance we are so anxious for. That is not all,—not only its form, but its peculiarly convenient position with respect to the civilized world, seems to draw us, as it were, instinctively towards it, as to a place which nature

has formed and destined expressly for the great purpose of aiding man in beneficial intercourse with his fellow-man, and has therefore, it would appear, legibly written in its lineaments a powerful appeal to him to model it to his necessities. The land retiring on either side seems only the more to woo on the embrace, while even its stern hills stoop in encouraging aid of the longed-for union. Nature, however, does not send things out of her laboratory so nicely adjusted to our hand, but has wisely left much to give play to our mental exercise and industrial perseverance; and has taught us, and that too frequently by dear-bought experience, that the most encouraging appearances are but the meretricious lures of empty insubstantiality. But, reader, a canal across the Isthmus of Panama *could* be effected—we mean a ship canal—yet in the present social condition of that country such an undertaking is altogether impracticable, as we shall endeavour to explain in a future number of this magazine."

The above extracts, upon so important a subject, are of the more interest from the proposed Central American communication, being only part of a general system of continental isolation which is proposed to take place simultaneously by separating the Americas, uniting the Mediterranean with the great Indian Ocean, and the dismemberment of Spain from the rest of Europe; to the end that as an ordonnance seems to have gone out to Anglicise the greater part of the world, in order that one religion, one tongue, one body of literature, one civilization may pervade the whole, so one bond of union may girdle the entire body and all its members, by means of easy and rapid communications, where formerly months, and at one time even years, were expended in once effecting intercourse.

Ae.

#### INSTITUTION OF CIVIL ENGINEERS.

Feb. 6. — The President in the Chair. —The first paper read was by Mr. S. B. Moody. It described a water-wheel, constructed by Mr. W. Fairbairn, from the designs of Mr. B. Albano, and erected at the Flax-mills in Lombardy. The chief peculiarities of this wheel consisted in the introduction of the tension principle for the arms, and the ventilation principle for the buckets.

The use of wrought-iron bars as arms and braces on the tendon principle diminished the weight, as fewer centres and arms were required, and consequently a lighter shaft could also be employed; repairs were less frequent, and also were not so expensive as with cast-iron arms.

In the old form of the buckets, the air entering with the water, prevented them from filling; but by this introduction of an inner sheathing, forming a space between it and the sole plate, the air was permitted to pass off freely, and the buckets, being thus ventilated, were enabled to be more completely filled, and the effective power of the wheel was increased.

Mr. Albano explained its construction, and stated that its speed was about six feet per second, and that the useful effect obtained was equal to 6-10ths of the power expended, which was higher than many of the best wheels had attained. He then described a very ingenious adaptation of the balance weight governor for the penstock, for regulating the flow of the water to the wheel.

A description of a water meter, by Mr. P. Carmichael, was then read. The mode of operation of this meter, which was attached to the feed pumps of three steam boilers supplying an eighty-horse engine, was thus described: As the water proceeds through the discharge valve the float sinks until it comes in contact with a detent, or catch, attached to a rod which is suspended from a lever. This moves round a spanner and pendulum until it passes the centre of gravity, when the pendulum falls and strikes a spanner, which shuts the discharge valve and opens the inlet valve from the reservoir to the closed box which supplies the boiler. A dial, the hand of which was acted upon by the spanner, indicates the number of times of the emptying of the reservoir, and it was stated that the action of the machine was very correct.

Dr. Roth's automaton calculator was exhibited, and its action explained by Mr.



Wertheimer. He gave a short review of the various attempts at constructing calculating machines, noticing the Roman Abacus, the calculating boxes of the Chinese and Russians; the several classes of instruments invented by Napier in 1617, by Perrault and others in 1720, and subsequently, the slide rule, invented by Michael Scheffelt of Ulm, in 1699; the more important machines attempted by Pascal, in 1640, by Moreland, in 1673, by Gersten and by Leibnitz, which were submitted to the Royal Society of London and the Académie de Science in Paris. He then mentioned the machine of Mr. Babbage, upon which upwards of 20,000l. had been expended before the project was abandoned, and the finished part, which formed tables of progression up to five figures, was consigned to the Museum of King's College, London.

Dr. Roth's machine appeared very simple, and its results, which were severely tested, were very accurate; it performed all the operations in arithmetic from simple addition, subtraction, multiplication, and division of numbers, or of pounds, shillings, and pence, to vulgar and decimal fractions, involution and evolution, and arithmetical and geometrical progression, with surprising rapidity; it appeared particularly adapted for checking long calculations of quantities, for contractors, for the merchant's counting-house, or for government offices.

The same principle had been adopted as counters for rotary or reciprocating machines, and they appeared, from the compactness of their form and their regularity of action, to be well adapted for the purpose.

A collection of specimens were exhibited of a new material for architectural decoration. It was termed the "Cannabic composition," and was stated to be composed of hemp, with a resinous mixture, which, after a careful preparation in sheets, was forced by powerful presses into metal moulds, producing very sharp ornaments, in high relief. The detail of this mechanical arrangement was promised by Mr. B. Albano, C. E., on a future occasion. The ornaments were stated to be so hard, as to bear a blow of a hammer; they were very light and elastic, resisting the action of heat or cold, and of water, without change of form. Mr. Ponsonby, agent, of the Regent Circus, Piccadilly, explained that the specimens were capable of being bronzed, gilt, or painted, so as to produce an excellent effect for ceilings, and other internal decorations; and it was stated that the price was from ten to twenty per cent. below that of any other material in use for a similar purpose.

The monthly ballot for members took place, and the following gentlemen were elected:—Messrs. S. Robinson and J. Fowler as members; Messrs. R. Cowen, B. H. Blyth, J. Wilson, J. Houldsworth, A. J. Robertson, J. T. Blackburn, Eneas Coffey, J. G. C. Curtis, and G. Nasmyth, as associates.

The following papers were announced to be read at the meeting of February 13th:—

No. 659. "Results of experiments on a vessel called the 'Liverpool Screw,' fitted with Grantham's patent engine and screw propeller." By J. Grantham, Assoc. Inst. C.E.

No. 598. "Description of a Bridge across the river Shannon at Portumna." By T. Rhodes, Assoc. Inst. C.E.

No. 608. "Description of an hydraulic traversing frame at the Bristol terminus of the Great Western Railway." By A. J. Dodson, Assoc. Inst. C.E.

BRITISH MUSEUM.—By a Parliamentary return, the annual estimated charge for the British Museum to Lady-day next, is stated to be 34,975l. The return embraces nine divisions, including the number of persons who have visited the institution for the last six years. From Christmas, 1836, to Christmas, 1837, the number was 321,151; from Christmas, 1837, to Christmas, 1838, the number was 266,008; to 1839, 280,850; to 1840, 247,929; to 1841, 19,374(?); and to Christmas, 1842, 547,718. No fewer than 5,627 visits by artists were made in the year 1842 to the galleries of sculpture, and 8,781 to the print-room. It is stated in respect to the reading-room, that "the number of books returned to the shelves of the general library from the reading-room is 142,178; to the Royal Library, 22,408; to the closets where they are kept for the use of readers from day to day, 78,470; to the shelves of the reading-rooms, about 116,400; altogether, 359,457 volumes—on an average, 1,230 a day. The number of readers is 71,494."

#### PROJECTIONS IN BUILDING.

QUEEN-SQUARE.—On Saturday, Jan. 20, several gentlemen, residents in the neighbourhood of Eaton-square, attended at this court, anxious to hear the proceedings in a complaint laid by Mr. Foxall, the district surveyor of St. George's, Hanover-square, against Charles James Feske, an extensive builder, for having added to the side front of Lord Denbigh's house, in Elizabeth-street, Eaton-square, a projection of thirty-three feet in length, and seven feet in breadth, the same not being an open portico.

An application having been made to defer the proceedings until the arrival of Mr. Bodkin, the barrister,

Mr. Foxall said it would be unnecessary, as in consequence of a recent decision at quarter sessions, he felt it would be useless to go on with the case. The magistrate would remember having, about a month since, convicted a medical gentleman of the name of Griffiths, on his (Mr. Foxall's) complaint of a similar offence to the present. Mr. Griffiths gave notice of appeal, and the case came on by special appointment on last Monday at sessions, when the chairman got up and quashed the conviction. He did this in so sudden, so positive, and so determined a way, that he (Mr. Foxall) felt that it would be an absolute waste of time to proceed upon this, which precisely resembled the former complaint, and he was more particularly brought to this conclusion by the conviction in the former case having been quashed, although the court had said the magistrate was right in the view he had taken of the matter.

The complaint was then withdrawn.

#### Correspondence.

##### MANUFACTURING ENCAUSTIC AND ORNAMENTAL TILES BY MEANS OF MACHINERY.

SIR,—Some little time since being engaged in arranging machinery for a particular purpose, it occurred to me that I might with some alterations apply its principles for the purpose of making ornamental tiles and slabs of various kinds.

With this view, I devoted what little time I could to the consideration of the subject, and have every reason to believe that ornamental tiles may be much reduced in price, as well as improved in appearance, by the use of such a machine; which will be the means of extending the practical application and of more frequently introducing this species of architectural embellishment.

The patterns for the most simple of these kinds of tiles are first of all to be drawn on wood, of the size required, and are then to be cut out in the usual way, from which wood-patterns casts are to be taken either in good plaster of Paris or by means of the electrotype, which is perhaps the best method; by this operation a matrix will be obtained from which to take the working casts, in some hard, close-grained metal—as iron, which should be afterwards case-hardened.

These moulds are then to be fixed in the frame of the machine, and made to operate on the various earths and clays prepared for that purpose, and so imprint upon them the different devices required, which of course may be varied according to the order or wish of the architect.

A machine of the kind now under notice will also make tiles with alto or basso relievo, and consequently the manufacture may be extended to the production of slabs and plates with ornaments in full relief, for the purpose of filling up the faces of sunk panels or other plain surfaces which occur in every kind of architecture. For this purpose casts may be taken from Gothic tracery, monumental brasses, and the ornaments both of the Greek and Roman styles of architecture.

Among coloured things, for instance, a vast variety of very elegant embellishments may be obtained by imitating the scrolls and figures on the beautiful Etruscan vases and other ornaments so common now in every museum in this country; as also the frescoes, or rather paintings of the ancient Egyptians.

Gothic ornaments and tracery of the most elaborate styles, if not too deeply cut, may be introduced, which if made of well prepared earths, and carefully baked, will be as hard and durable as stone-work itself, and as they may be made much cheaper than stone can be chiselled, ample means will be afforded for architects to decorate their designs for the interior of buildings, in the most minute and elaborate manner.

As the potters' art is now well understood, the variety of different coloured earths, &c., in use is very great, so that almost any wished-for effect may be

ultimately produced, by judiciously blending and working party-coloured patterns.

I was much struck a little time since with the beauty of some Oriental perforated tiles, said to have been brought from the neighbourhood of Cabul, which if imitated and improved upon, will, I have no doubt, become in a little time a valuable acquisition to our architectural decorators' stock of standard ornaments.

As the operations of the machine now under notice are quick and precise, the first cost of all kinds of ornaments produced by it will be much reduced in price, compared with similar things now known to the profession.

I am, Sir, yours very truly,

JOSEPH LOCKWOOD, Engineer, &c.  
52, Lime-street, City.

##### LONDON, ITS SIZE, AND POPULATION.

SIR,—Your remarks in the last number relative to my letter on this subject, which appeared in No. 48, have surprised me much, and no doubt others have been astonished by these comparisons, or they would not have been copied so frequently and in such distant places.

I take the liberty of writing to you to say that I was much hurt to see "London" so mutilated by the *Times* on Thursday last, in their extract of this subject from a Cornwall newspaper. They have only made the slight mistake of more than 352,000 souls, which, of course, makes their notice of "London" untrue and ridiculous.

I beg to say that the remarks upon "London" that you thought worthy of a place in your interesting work, were true to the letter, and I am proved them by the last published government census.

With a hearty wish for your success in your arduous undertaking, I remain, Sir your most obedient servant,

J. RAWSON WALKER.

P.S.—Would there be any harm in mentioning this great mistake of the *Times* in your next number, because any one taking up that article, and comparing it with the last census, would, of course, say the whole was false together?

16, Norton-street, Portland-place.

##### MONUMENT AT ST. REMI.

SIR,—In your Number dated Jan. 13 appears a representation of a monument at St. Remi: I am not presuming to give any information upon the matter. It is stated by "Amateur" that the architect has very little projection compared with the advanced position of the columns. I agree with "Amateur" in not charging the architect with ignorance, for ignorance could not have produced such a work; but I cannot conceive how the effect can be as stated, when such a visible distortion must be manifest. As to preserving the pyramidal form, the principle is certainly one to be attended to; but bringing the entablature a few more inches in advance could not have seriously injured the pyramidal figure, particularly when such a sacrifice is made.

I trust "Amateur" will not consider me severe in my observations. I make them merely because it is an error that many country builders practise, and one that cannot but be censured—that is, projecting pilasters five or six inches, and the architect, in many instances, not more than two inches. If you deem these few remarks worth the attention of your readers of a certain class, I should esteem their insertion a favour.

I am, Sir, yours respectfully,  
Newport, Jan. 22, 1844. JAMES PICKARD.

##### PUBLIC WALKS.

SIR,—In THE BUILDER of the 16th December, 1843, you state that there is still in the hands of the Exchequer 9,500l. out of the 10,000l. voted by Parliament for "Public Walks." I find from the *Hull Packet* that the walk along the Humber bank is in a very dilapidated state; could any part of that sum be obtained towards repairing it, if an application were made by the inhabitants of Hull? Any information you, or any correspondent, could give on this subject would, I have no doubt, be laid hold of by the inhabitants of Hull, and would greatly oblige,

A Struggler for Distinction,  
Liverpool, Jan. 29, 1844. E. J. L.

##### "NATIONAL MONUMENTS."

SIR,—In the year 1816 the House of Commons voted two national monuments to commemorate the services rendered by the army and navy. I find by the public records, the committee of taste, appointed by Parliament to decide upon the designs for the grand national monuments, held their final meeting in March, 1817, at the house of the Earl of Aberdeen. Mr. Wilkins's estimate for the Waterloo Monument was 200,000l., and that for Mr. Smirke's Naval Trophy was 100,000l. They were then intended to be immediately begun. The situations for placing these national monuments was Greenwich for the navy, and Portland-place, in the circle next



the New Road, facing the Regent's Park, for the army. Why there should be so great a difference in the estimates appears somewhat strange when the "services of one have been equal to those of the other." Perhaps Mr. W.\* and Mr. S. (now Sir Robert S.) can enlighten those heroes who fought the battles of their country upon the subject, and why they have never been commended.

INQUIRENDO.

#### ASSISTANT SURVEYORS AND CLERKS OF WORKS.

SIR,—Allow me to suggest to your well informed readers, how valuable it would be to many who are but just commencing the profession, if they would give the result of their experience in answer to the questions contained in your last number, which were put to the candidates for the office of Assistant Surveyor and Clerk-of-the-Works to the Westminster Sewerage. The want of good sound information on these subjects is sufficiently evinced from the fact of only six out of about thirty candidates being thought competent to be allowed to stand.

I am, Sir, your obedient servant,  
A CONSTANT READER.

#### REBUILDING PARTY-WALLS.

SIR,—Our Metropolitan Building Act requiring three months' notice to be given before you can interfere with a party-wall which it may be necessary to rebuild. I will thank you or some of your country correspondents to explain how the law is out of the metropolis. Should a party-wall be between A and B become so bad that, in consequence of A pulling his house down, the wall must be rebuilt, I want to know what sort of notice, and what time should be specified as sufficient notice, and what power have you to compel him to admit of the said wall being so pulled down to allow of the building of a new wall? This is a very important question. Though not brought before the trade that I know of, it is important to builders and surveyors too, who may have work a very few miles from town, and not know how to proceed.

Yours, much obliged,  
Shadwell, Feb. 7, 1844.

L.

[We are not acquainted with any general statute or practice ruling matters connected with party-walls out of the range of the Metropolitan Building Act. We apprehend all such questions, in default of any local statute, must be governed by common law, professional opinion, agreement of the parties interested, and, if necessary, by arbitration. No doubt a general statute conferring directory power in all such cases will ere long pass the legislature.—Ed.]

SIR,—Can you, or one of your correspondents, oblige me with an economical plan of improving the appearance of my little house, merely a workman's house, with one room in front, up and down stairs? This room I wish to make comfortable (the door now opening immediately to the street in this country village.) I inclose a drawing of my house.



I wish to have some kind of double door or portico, so as to make the front down-stairs room comfortable as a parlour or sitting-room; and my object is also to improve the appearance of the door and bottom window, both being now very poor and common.

Hoping to be favoured with a hint to assist me, I am, Sir, with sincere wishes for the continued success of your publication, yours respectfully,  
A WORKING MAN.

January 20, 1844.

If a portico be recommended for the door, I should like it to be in wrought-iron, as, in this case, I could make it myself; but should require assistance as regards the best material for the roof of it.

[Our correspondent, desiring to make his house comfortable, should send a ground-plan of it, shewing the situations of the chimney and staircase; and should also state the aspect of the front, and if the house be detached;]

\* The late Professor of Architecture in the Royal Academy, since deceased.—Ed.

by which might be seen whether it would be advisable to design for the side of the building a porch with an entrance on the side least pervious to inclement weather. The material of the walls should be stated, and whether the apertures are arched.—Ed.]

#### CABINET WORK.

SIR,—Having a chair to make out of old oak for a curious advocate of the early styles, it would greatly oblige me if you or some of your talented correspondents could favour me with a design for an arm-chair—an elaborate one in the Tudor or Elizabethan style would be preferred. I regret that your valuable publication does not often contain designs for cabinet-work; the want of funds to purchase works on early furniture induces me to make this application; and the seeing you were kind enough to obtain a beautiful design for a "Young Mason," has induced me to apply to you in the same manner, hoping you will confer the same favour on a constant subscriber to your journal. Yours respectfully,

A YOUNG CABINET-MAKER.

[Those who cannot afford to purchase Shaw's, and other entire works upon the subject, may obtain separate plates of them for sixpence or a shilling each, of Evans, the printseller, Great Queen-street, Lincoln's-Inn-Fields, and of other dealers, who break up the works for the convenience of such purchases.—Ed.]

#### THE LONDON GAZETTES.

SIR,—Being a subscriber and admirer of THE BUILDER, I beg leave to suggest that I think it very desirable, and would be very useful to the trade, if you were to insert the Gazette, especially (I am sorry to say it) as the builders have frequently appeared of late so prominently in it.

I am, Sir, yours, &c.

OLD CARPENTER.

[We should willingly comply with "Old Carpenter's" suggestion, if on compliance with it would not follow the necessity of stamping, as a newspaper, every copy of our publication.]

#### THE ATMOSPHERIC RAILWAY.

SIR,—I shall feel obliged if you, or any of your correspondents, can inform me in your next number of THE BUILDER the principle of the atmospheric railway. Also, at the same time, if you know if there is any person in London engaged in the direction or construction of such works.

Your well-wisher and subscriber, F. R.

SIR,—Being anxious to become acquainted with land-surveying as well as ordinary surveying, I should feel obliged by your mentioning in your notices to correspondents the best work now published on the above subjects.

Your constant subscriber, F. M.

#### Miscellaneous.

WASTE LANDS.—INCLOSURE ACT.—On the motion of Lord Worsley, a very long return was made in June last "of the true or estimated quantity in statute measure of all common or waste lands not being held in severalty, in every parish or tithe commutation district, so far as the same can be ascertained from the schedules to the agreements or awards, or from the apportionments received by the Tithe Commissioners;" and also "a return of all Acts passed since the year 1800 for the inclosure of common or waste lands in England and Wales not being held in severalty, distinguishing the parishes and counties in which the same were situated, together with the estimated number of Acts passed from 1800 to 1810, from 1810 to 1820, from 1820 to 1830, and from 1830 to 1840." The summary of England shews that in the forty counties the total quantity of land amounts to 6,718,523 acres, of which the quantity of common or waste land is stated to be 1,358,419 acres. In Middlesex alone there are 1,321 acres of waste land. The largest quantity of waste land is in the North Riding of Yorkshire, there being no less than 132,815 acres of common or waste land out of a total of 1,897,592 acres; making a total of waste land in England and Wales of 1,860,232, out of the total of 8,616,115. By the second return it appears that from 1800 to 1810 the number of Inclosure Acts passed was 905; from 1810 to 1820 the number was 741; from 1820 to 1830 the number was 192; and from 1830 to 1840 the number of Inclosure Acts was 125.

THE TAX UPON COALS.—The merchants of the Coal Exchange are getting up a petition to Parliament against the projected duty of 5 per cent., which Government intends imposing upon all sea-borne coal that enters the port of London, for the purpose of enabling them to carry out the proposed metropolitan improvements, and for which a bill is to be presented to the House this session.

THE COAL TRADE, Jan. 27.—Copies of a memorial to Sir Robert Peel agreed upon at a numerous meeting of coal-owners of Northumberland and Durham, held this week, have been circulated in the North. The document (which is of great importance) is signed by Mr. Robert W. Brandling, on behalf of the representatives of 103 collieries present at the meeting. The following is a copy of it:—"That your memorialists believe that an effort will be made to induce her Majesty's Government during the next session of Parliament to propose an additional tax on coals imported into the port of London, in order to defray the expense of certain projected works on the banks of the Thames. That your memorialists contend that such a tax would be partial, unjust, and highly prejudicial. That the mining and shipping interests of the coal districts of the north of England, so far from being in a state to bear the smallest impost without being greatly affected by it, are so depressed that the most serious evils may be apprehended, unless the extension of the coal trade is encouraged by the removal of some oppressive charges with which it is at present clogged, especially the recently imposed export duty. That this depression has already most seriously diminished the fair returns upon the capital embarked by the coal and ship owner, and must, at no distant period, if a remedy is not applied, gradually increase the hardships which it has already inflicted upon the miners and sailors, in depriving them of that fair remuneration which they have a right to expect as a compensation for the labour they undergo, and the contingencies to which they are exposed. Your memorialists, therefore, most earnestly request the immediate and serious attention of her Majesty's Government to this important subject; and that they may be allowed an opportunity of proving that the fears which actuated your memorialists when the export duties were re-imposed have been fully realized, and that a longer continuance in this line of policy affecting the coal trade, must operate destructively to the interests of your memorialists, and the future prosperity of the general export and import trade of this district." The question of the proposed new tax excites great interest and general condemnation in this locality. It is probable the proposal will be withdrawn; but it is certain that the export duty on coals will be brought before the attention of Parliament almost immediately after its assembling.

PRUSSIAN FORTS.—It is stated in a letter from Berlin, that the Prussian Government intends to enlarge several of the commercial towns of the kingdom, and to substitute for the fortifications which now surround them, detached forts and towers, similar to those of Posen and Cologne. The first towns in which this course is to be adopted are Magdeburgh and Stettin.

FORTS OF ROUEN.—The Commerce says:—"Rouen, as well as Paris, is to have its detached forts. The preparatory plans are already far advanced. They comprise three citadels; one on the plateau of Bon Secours, another on Mont Riboudet, and the third on the Havre road, 600 metres from the Rouen gate of crotroi."

THE EFFECT OF RAILWAYS.—On Monday last, the Saracen's Head, Friday-street, Cheap-side, adjoining the church of St. Peter's, West Cheap, which is one of the oldest inns in the city of London, having been built in the style of architecture of the 15th century, with balconies in front, was disposed of by auction, for its building materials, when it will be pulled down, and on its site which extends nearly to the Old Change, large Manchester warehouses will be erected. This inn was extensively connected with coach proprietors and waggon carriers down the Great Western road, the traffic of which has been broken up by the establishment of the railways. The house adjoining, No. 5, Friday-street, which is part of the above property, is said to have been in the occupation of Sir Christopher Wren at the time of the erection of St. Paul's. The estate belongs to the Merchant Tailors' Company.

AN OLD PRINTING OFFICE.—The printing office established by Christopher Platin, about the year 1530, at Antwerp, then a great commercial emporium, has survived to our time in active operation, through the descendants of his daughter, the wife of John Morel, whose name the press has continued to bear. The Polyglot Bible of 1569-1578 is an enduring monument of Platin's press, of which some of the productions attest the existence in 1535.



**SUBSTITUTE FOR WHITE LEAD.**—The great amount of mortality among painters and manufacturers of paint, arising from the deleterious effluvia of white-lead, is well known, and has frequently directed the attention of chemists to the discovery of an innocuous substitute. Hitherto the attempt has been fruitless; at least as far as we are aware, no other substance has taken the place of the common pigment. It would appear, however, from the report of the Paris Academy of Sciences, that M. de Ruolz has at length succeeded in producing a preparation possessing all the economical properties of white-lead, without partaking of its offensive character. This substance is the oxide of antimony, which is distinguished by the following qualities:—Its colour is very pure white, rivaling the finest white silver; it is easily ground, and forms with oil an unctuous and cohesive mixture; compared with the white-lead of Holland, its property of concealing is as 46 to 22, and, when mixed with other paints, it gives a much clearer and softer tone than white-lead. It may be obtained, according to M. de Ruolz, from the natural sulphuret of antimony, and at a third of the cost of ordinary white paint.

**HADDON HALL** is a relique in the county of Derby most interesting in point of antiquity. It was formerly the seat of the Vernon family, and now belongs to the Duke of Rutland, whose ancestor, Sir John Manners, acquired it in the reign of Queen Elizabeth by a marriage with one of the co-heiresses of Sir George Vernon. It is situated on an eminence above the river Wye, and consists of two courts in an irregular form, approaching to squares, and surrounded by suites of apartments. This fine ancient English seat is now comparatively deserted: its halls are silent, giving but a mournful idea of its past scenes of revelry and antique pageantry. Prince Arthur, son of Henry VII., is said to have repeatedly visited Haddon Hall, when Sir Harry Vernon, who was his preceptor or governor, resided there. The chapel and the great hall—considered to be the most ancient parts of the edifice, having been built prior to 1452, the former with its despoiled sacred ornaments and curious old font, the latter with the deep-toned oaken panelling and its elevated seats at the end, that distinctive spot where the owners of old used to entertain rude hospitality at the *dais* the more distinguished of their guests, for in those times the hawk and hound afforded amusements for the day, and the riotous fascinations of the baronial board and wine-cup closed the day after the fatigues of the chase—the dining-room, long gallery, state bed-room, and ancient state-room, were among the interesting parts visited by her Majesty and party. The Rutland family have not resided at Haddon since the reign of Queen Anne, when the first Duke of Rutland lived there occasionally in great state, and is said to have kept Christmas with open house, in the true style of old English hospitality.

**THE HIERARCHY.**—The bishoprics of England and Wales are considered to have been instituted according to the following order of time, viz.:—London, an Archbishopric and Metropolitan of England, founded by Lucius, the first Christian King of Britain, A.D. 185; Llandaff, 185; Bangor, 516; St. David's, 519. The Archbishopric of Wales from 650 to 1100, when the Bishop submitted to the Archbishop of Canterbury as his Metropolitan; St. Asaph, 547; St. Augustine (or St. Austin) made Canterbury the Metropolitan Archbishopric by order of Pope Gregory, A.D. 596; Wells, 604; Rochester, 634; Winchester, 650; Lichfield and Coventry, 656; Worcester, 679; Hereford, 680; Durham, 681; Sodor and Man, 899; Exeter, 1050; Sherborne (changed to Salisbury), 1056; York (Archbishopric), 1067; Dorchester (changed to Lincoln), 1070; Chichester, 1071; Thetford (changed to Norwich), 1089; Bath and Wells, 1089; Ely, 1109; Carlisle, 1123. The following six were founded upon the suppression of monasteries by Henry VIII.:—Chester, Peterborough, Gloucester, Oxford, Bristol, and Westminster, 1538. Westminster was united to London in 1550. Ripon, 1836.

**MEAL, COMMEMORATIVE OF THE QUEEN'S VISIT TO ANTWERP.**—Mr. Frederick Veracker has caused to be struck a beautiful medal of our beloved Queen, having her profile on the obverse, and the arms of Antwerp on the reverse. The medal is about the size of a crown piece. It is executed by the unrivalled medalist, Hart, from whom we have a bronze medal of Rubens' head, beyond all competition and praise. Mr. Veracker has been architect of the city of Antwerp for the last 22 years, and has, in this instance, given undoubted proofs of his gallantry of spirit and accuracy of taste. Three casts of this medal, one in gold, another in silver, and another in bronze, are consigned to the Rev. Dr. Dibdin (the particular friend of Mr. Veracker) to be presented by him personally to her Majesty.

**MICA, A SUBSTITUTE FOR GLASS.**—In the windows of the workshops at the Buttery Iron Works, so much glass was broken by the chippings of iron, that a substitute was sought which would resist a moderate blow, and yet be translucent. A quantity of the sheets of mica were procured from Calcutta, which, when fixed into cast-iron window frames, were found to resist the blow of a chipping of iron driven off by the chisel with such force as would have shivered a pane of glass. Mica possesses both toughness and elasticity, and when a piece of iron penetrates it, merely a hole is made large enough to allow the piece to pass, while the other parts remain uninjured. It is not quite so transparent as glass, but it is not so much less so as to be objectionable; but this circumstance is not important at Buttery, as, in consequence of the quality of fluoric acid gas evolved from the fluate of lime used as a flux in the blast furnaces, the glass in the windows is speedily acted upon, and assumes the appearance of being ground. Mica is a little more expensive than common glass; but, as its duration promises to be much longer, it must be more economical. It can be procured of almost any dimensions necessary for ordinary purposes, as it has been found in Russia in masses of nearly three feet diameter. It is susceptible of very minute subdivision, as, according to Italy, it may be divided into plates no thicker than one three-hundred-thousandth part of an inch.

### Tenders.

TENDERS delivered for building a house for C. Parker, Esq., at Eton. Jno. Shaw, Esq., Architect—

Opened in the presence of the parties.

Burton.....	£3,540
Bridge and Ashby.....	3,750
Locke and Nesham.....	3,935
Winsland.....	3,987
Hicks.....	4,070
Grimdale.....	4,150
Lee.....	4,283
Piper.....	4,300
Bedborough and Jenner.....	4,350
Hayward and Nixon.....	4,363
Grissell and Peto.....	4,375
Baker and Son.....	4,590

The quantities were supplied.

TENDERS for new shops in Hungerford Market, December 6th:—

Hayward and Nixon.....	£4,563
Grissell and Peto.....	4,473
W. Rogers.....	3,688
Clemence.....	3,593

The tenders not opened in the presence of the builders.

TENDERS for the erection of a mansion at Portsea, from the designs and under the direction of A. Trimmer, Esq., of Adam-street, Adelphi:—

Clements.....	£6,279
Nicholson (Wandsworth).....	5,878
Sugden.....	5,777
Stevenson & Co.....	5,675
Abbsall (Portsea).....	5,646

TENDERS for building three rooms, of large dimensions, Lambeth, February 7th, were opened in the presence of the competitors:—

Mays.....	£647
Herbert.....	553
Mitchell.....	520
Cooper and Davis.....	520
Wadey.....	488
Mason.....	480
Want.....	477
Pelhum.....	463

### NOTICES OF CONTRACTS.

TENDERS for Two Gas Tanks.—Directors of the New Gas Company, Aberdeen. Feb. 12.

TENDERS for a HYDRAULIC PUMP and APPARATUS for PROVING PIPES.—Directors of the New Gas Company, Aberdeen. Feb. 19.

TENDERS for Two Gas Holders.—Directors of the New Gas Company, Aberdeen. Feb. 19.

Offers are wanted by the Aberdeen New Gas Company for the furnishing and erection of a Steam-engine, of a six-horse power, with Pumps and Pipes, and connection for pumping.—Adam and Anderson, Advocates, Aberdeen.

CONTRACT for a large quantity of Cast-Iron Pipes, of various Sizes.—Directors of the Aberdeen New Gas Company. Feb. 12.

YORK and SCARBORO' RAILWAY.—Tenders for 60,000 Larch and Memel Sleepers.—Secretary for the York and North Midland Railway Company. Feb. 21.

PARISH OF ST. GEORGE, HANOVER-SQUARE.—Contract for Workmen's Tools and Hammers, Iron Lamp Posts and Gas Fittings, and for keeping in order the garden in Hanover-square, for one year from the 25th March. R. Lees, Clerk, Board Room, Mount-street. March 6.

PARISH OF ST. GEORGE, HANOVER-SQUARE.—Contract for Masses' and Paviers' Work, and supply of Guernsey Granite Chippings, and Yorkshire Paving, for one year from the 25th March.—Mr. R. Lees, Clerk, Board Room, Mount-street. March 6.

CONTRACT for Paving and Cleansing the Streets for one year from the 25th March, the United Parishes of St. Andrew, Holborn, and St. George-the-Martyr, Middlesex also for Watering the Streets for six months, from the 25th March.—Commissioners of Paving, Board Room of the Workhouse, Gray's-Inn-Lane. Feb. 12.

BUILDING SEWERS in Cree-Church-lane, King-street, Duke-street, and Great Duke's-place, City.—Plan and Specification at Sewers' Office, Guildhall, daily from ten till four o'clock.—Joseph Daw, Principal Clerk. Feb. 13, 1844.

FORMATION OF RESERVOIRS and laying down Iron Conduit, with other masonry work connected therewith, Bradford Waterworks.—Plans, &c. to be seen, and further information had, at the Office of Messrs. Leather and Son, Civil Engineers, Leeds; John Thompson, Law Clerk to the Company. Feb. 13, 1844.

WORKS REQUIRED FOR THE NEW FISH MARKET, GREAT YARMOUTH.—Plans, &c., to be seen on application to Mr. A. T. Tillet, Architect, King-street, Great Yarmouth; Town Clerk. Feb. 21, 1844.

CONSTRUCTING various STATIONS at GATESHEAD and other places, Newcastle and Darlington Junction Railway.—Plans, &c., at Railway Office, York.—Further particulars on application to Mr. Andrews, Architect, York.—G. Hudson, Esq., Chairman. Feb. 13.

BUILDING a COUNTY LUNATIC ASYLUM AT LITTLEMORE, OXFORD.—Plans, &c., at Mr. R. Clarke's, Architect, Clinton-street, Nottingham, or at the Office of the Clerk of the Peace, Oxford.—J. M. Davenport, Clerk of the Peace. February 22, 1844.

BRIDLINGTON PIERS AND HARBOUR.—Erection of a new south pier, removal of present pier, and other works for enlargement of Harbour.—Plans and Specifications at the Office of Mr. Sidney Taylor, Solicitor, Bridlington. March 1, 1844.

ALTERING EAST SUFFOLK COUNTY HALL AND COURTS OF JUSTICE, IPSWICH.—Plans, &c., for inspection on application to Mr. Whiting, Surveyor, &c., County Hall, Ipswich, on Monday Jan. 29; J. H. Borton, Clerk of the Peace, Bury St. Edmunds. February 12, 1844.

### COMPETITION.

PREMIUM of 20 guineas for the best plans and estimates for erection of a new gaol, Banbury.—All information may be obtained on application to the Town Clerk. March 1, 1844.

### TO OUR CORRESPONDENTS.

We are sorry that we have not in our power compliance with the request of "C. D. S."

The cuts for the article of "A Constant Reader" having been spoiled, we must postpone its appearance till next week, as we do not desire so important a question to be unduly answered.

"J. B." London.—We refer to our last year's volume.

Mr. Kelly's contribution is being engraved. We shall be happy to receive his details of Irish and other kinds of Gothic architecture.

The MS. of "G. R. F." is being set up, and his illustrations are being executed.

The designs by "Σ." for a School and an Effluvia-tray we have ordered to be engraved.

We have taken some pains to afford the information required by "A Working-man," Leamington, but have not yet fully satisfied ourselves; we hope, however, that we shall be able to give a proper answer in our next number.

We have received copies of—

"Payne's Universum," 2 Nos.  
Knight's "Old England," 3 Parts.  
Skyring's Price Book.

ERRATUM.—In the article last week upon Brecon Priory, the river "*Hondâ*," pronounced Honethee, was misprinted *Howden*.



# The Builder.

NO. LIV.

SATURDAY, FEBRUARY 17, 1844.

**O**UR essay or disquisition upon arches, prompted by the state of Westminster Bridge, and the reports and other matters relative to it, which are before the public, having, as we proceeded, grown under our hands to an extent far beyond the limits of our first contemplation, we are compelled to take a little breathing-time, during which some fresh and wholly original illustrations of the subject will be in a state of preparation, the production of which will confirm our theories, and we trust, by clear and visible demonstrations, certify the merest reader of those truths over which so much obscurity has been thrown.

In the meanwhile, as an arrear of important subjects has accumulated with us, we shall take the opportunity of touching slightly upon such matters as are most pressing.

We have been besought to take an early opportunity of going into the causes of the failure of the construction of buildings.

We trust that we have never lost sight of this important matter, and that while proposing excellence of structure, we have constantly given conversely a series of essays thereon, by endeavouring to teach the mode of avoiding failure: indeed, we have received from different correspondents some waggeries prompting us to be up and doing, as though we had verily fallen asleep.

One desires us to bring a certain building for its sins into the *Court of Arches*. Another, assuming something of vulgar familiarity, and putting our oral gravity a little to the blush (though not causing our ears quite to redden into scarlet), craves our surveillance of some specimens of *crack* architecture. A third has sent us a very learned essay, in which he draws our attention to an instance wherein the fall of a building occurred through its being *shored down*.

To these pleasantries we beg to reply that, some little while hence, we may find time, even though it be only during the hours of broken rest, to enter into some *critiques upon cracks*; we may give our sentiments upon *settlements*; perhaps descend into *disquisitions upon the dangers of downfalls*; offer a *few facetia on the faults, failures, and falls of fabrics*, and conclude with some acute cautions against *crevices*.

Thus disposing for the present of our wage, further we should recommend those of them who may feel indisposed to wait till we put forth essays meeting their desires, to employ themselves in ascertaining the length of a pendulum to beat seconds in the latitude of the land of Gothem.

We return now to graver subjects. During the sittings of the Parliament which is now assembled, a general opinion seems to be enter-

tained, that many most important Acts relative to buildings will be passed. We shall almost immediately enter into the subject of the Metropolitan Building Act, making such suggestions as we think will have a tendency to produce the greatest public benefit and safety with the least possible private restriction; upon the general Act for the regulation of provincial buildings we shall give our own opinions, and as there seems one united admission that the time has come for the adoption of such a prudential and sanitary measure, we trust that the wisest Act which could be framed will pass the legislature.

In furtherance of an improved architectural police, the following forty-four Requisitions have been made by the Secretary to the Commission for Inquiring into the State of Health, Drainage, &c. in the Metropolis,

## TO PAROCHIAL COMMISSIONERS FOR PAVING, LIGHTING, AND CLEANSING.

1. Is the paving, lighting, and cleansing, executed under authority of the 57 Geo. 3, cap. 29, or is it under a local Act? If so, give the date of it, and state if it supersedes any of the powers contained in the general Act.

2. If there is a local Act, does it contain any powers for the prevention of nuisances from noxious trades, offensive dung-heaps, slaughter-houses, or privies, and does it prohibit the keeping of pigs?

3. Have proceedings been taken in any instance under 57 Geo. 3, cap. 29, sects. 67 and 68?

4. Does the local Act contain any power over private drains or cesspools, or over the public sewers?

5. Do occasions frequently arise for the exercise of them?

6. Is there any power in the local Act for pulling down ruinous houses?

7. Is a power requisite for such a purpose?

8. Do you know of any proceedings having been taken under 57 Geo. 3, sect. 79, for that purpose?

9. Is there any Court Leet regularly held, which exercises jurisdiction for any of the above purposes? If so, are its powers effectual?

10. What number of Commissioners are appointed, and what is the usual number who attend, and how frequent are the meetings?

11. What officers are in the employ of the Board, and at what salaries?

12. What is the mode of making the rate, on whom is it made, and how frequently?

13. Is there any power of appeal from it?

14. Are there many instances of an appeal being made and contested?

15. State the amount of assessable property within the district managed by your Board.

16. What is the average annual amount of rate in the pound, and the gross amount collected?

17. State the amount of loss on collection.

18. What are the most frequent causes of loss?

19. State the expense of management for the last ten years.

20. State the amount of expenditure, for the last ten years, under the following heads:—

21. Paving, lighting, cleansing, watering the streets.

22. Other expenses under their several heads.

23. Has any money been borrowed under the powers of 57 Geo. 3, or under any power contained in any local Act? If so, state the amount, and on what terms, and for what purpose the money was borrowed.

24. Has any land been purchased under sect. 80 of that Act, for widening or altering streets? If so, state if the whole of it was thrown into the streets, or if any portion remains in the possession of the Commissioners of Paving.

25. Have any contributions been made to the Commissioners of Sewers in aid of the formation of new sewers?

26. Under what Commission of Sewers is your parish?

27. Are there any complaints of the defective state of the sewers, or that they emit offensive smells?

28. In what manner are the streets, courts, and alleys drained? Have they drains communicating with the sewers?

29. Is any control exercised over these drains? If so, state the annual expense for the last ten years for cleansing and repairing them.

30. Has any wood pavement been laid down in your parish? If so, have you sufficient experience to be able to state the difference in expense of cleansing it, compared with granite pavement and macadamized road?

31. State the difference in expense of laying down the above description of pavement.

32. What are the regulations for scavenging and cleansing the streets, and how often are they cleansed?

33. Are the courts which are inaccessible to carts properly cleansed, in what manner, and how often?

34. Are the houses generally provided with dust-bins, or are any provided at the public expense?

35. What other means are adopted to prevent filth and refuse being thrown into the streets?

36. Are the poorer classes generally supplied with water, laid on to their own houses, or by a common stand-cock?

37. Are there any public pumps erected and repaired at the expense of the Board?

38. Is the water for them well adapted for culinary and domestic purposes?

39. Are there any instances of pumps becoming useless from the foul state of the water? If so, state the cause known or suspected, and how long they have been in that state.

40. In case of fire, what time usually elapses before a good supply of water can be brought to bear upon the premises?

41. What is the annual amount of rewards, for the last ten years, paid to turncocks and firemen?

42. The same as to rewards for alarms of fire, and what proportion has been recovered from the occupiers of the premises?

43. Have you any remarks to offer upon the operation of this system of rewards?

44. What number of engines are kept in your parish?

Upon the necessarily absorbing subject of railroads, though much has been done, and much still is doing, much yet remains to be done; the Legislature is alive, and desirous of effecting general and particular improvements, and is, indeed, as quick to the subject as contending interests will suffer; the notices which have been given, and the conversations which have already occurred in Parliament, afford a perspective of the year's railroad programme.

When we have disposed of the subjects of the general and metropolitan bills relating to buildings, drainage, and health, we shall enter into that of fire-insurance, and the vicious and impolitic scale of its duties, after which we shall proceed to others of importance, wherein we hope for improvement.

ed.

THE NEW ROYAL EXCHANGE.—Preparatory to the demolition of the houses forming Bank-buildings, adjoining the New Royal Exchange, a very extensive hoarding has been erected, and several of the inmates have removed their furniture, the sale by auction of a portion of them having been announced for Monday next. That part disposed of will then be cleared away, and within a fortnight the remaining portion will be also sold, and in a few days afterwards the whole will be removed. Subsequently it is intended as quickly as possible to erect on a part of the site the statue of the Duke of Wellington.



## ON IMPROVEMENTS CONNECTED WITH GILDING.

BY HENRY DIRCKS, ESQ.

It is rather remarkable, considering our national wealth, that, except in the embellishment of the interiors of our public buildings and mansions, there is a comparative dearth of that richness and beauty of ornament which would be afforded by the appropriate introducing of plate-glass and decorative gilding. We may probably trace the paucity of these luxuries, in even the residences of wealthy private individuals, to the little excitement to emulation that must naturally exist so long as the expense of such ornamental work is so considerable as to limit its universal adoption. It can, however, be no matter of doubt that the more general this art does become, the more will the aristocracy vie with each other to obtain, even in the less pretending country villa, or the now plain town mansion, the same splendour of decoration that at present forms a principal feature in the lordly hall.

But certainly, for gorgeous, tasteful, and expensive decorations, most excellent specimens are to be found in the ordinary business establishments of many tradesmen, as well in the metropolis as in most of the principal towns in the country; the plate-glass and gilt embellishments in the fitting-up of many of the metropolitan shops form, indeed, matter of daily comment and surprise.

Gilding, to which department of the decorative art we shall confine our present remarks, affords employment to a large body of artisans. Various and curious as are the different operations involved in applying the laminated gold to wood, plaster, &c., we shall, instead of entering here into detail on these, proceed to consider, what will at present be more instructive, the causes most affecting the limitation of this highly ornamental art; at the same time endeavouring to shew that it is within the scope and province of modern science and improvement, to enable us to obtain, at a materially lessened cost, all the richness and beauty attainable by judiciously introduced gilding.

In the application of gilding and bronzing for ornamental house-work, two very different processes are adopted. The first requires the employing of pure gold leaf, equal in fineness to the  $\frac{1}{1000}$  of an inch, and gives rise to the two methods, one called *oil gilding*, comprising about a dozen operations from first to last; the other known as *burnished or distemper gilding*, which, performed in its best style, occupies about half as many more processes as the former for its completion. We may here at once perceive that the expense of both these processes is materially enhanced by the amount of time consumed in their performance.

Bronzing does not strictly belong to this division of the subject, but a bronze powder is often employed, which is rather imitative of gold than of antique bronze. Its use to imitate bronze castings is well understood, by a slight gilding of a few prominent portions, which, tastefully applied, greatly enriches ornamental cast-iron work, statuary, &c.

We come next to consider the procuring of these precious materials. It may not be generally known, that such has been the encouragement long given to the art of gilding in Germany, that we were early, and have since continued to be, extensively supplied with the bronze powders from Germany, which still find a good market in London, as also in Birmingham and other manufacturing districts engaged in fabricating ornamental metal and japan work, and similar articles of taste and *virtù*. The foreign markets reap, therefore, the benefit of both their home and foreign trade, while we have hitherto been almost wholly dependent on them, as much from prejudice as from custom. So much has this been the case with our tradesmen and artists hitherto,

that it is a well-ascertained fact, that although the English manufacture of these articles has of late been brought to a high state of perfection, and is now even approved on the continent, in preference to their own, both for excellence and cheapness; yet, to accommodate English fastidiousness, the English produce is frequently only disposable through the medium of the German dealer, to whom is often paid 50 per cent. and upwards over what it might have been purchased for in the metropolis from the manufacturer. It is almost incredible that prejudice should so strongly warp the judgment of many of our traders and artists; and it would really appear that the fact has only to be known, and exposed in all its glaring absurdity, to be exploded; and that encouragement given to British art and British skill, of which we are too apt to lament the absence, or the decline, though often on the most vague, superficial information. Improvement in art or science is effected by the united efforts of many, which can only be sustained by proper encouragement being given; but which cannot be expected to result from the folly of constantly charging on the present age the weaknesses of the past, as if science stood still, or was circumscribed by soil or climate. What it is possible to manufacture on the continent it is surely possible to manufacture on our own island; yet past experience has afforded the fullest evidence, practically, of this simple fact having long been most obstinately doubted and disputed against the strongest evidence to the contrary.

The creating of a new art, or the adding of another branch to an existing one, must always excite considerable interest. I have no hesitation in pronouncing this to have been effected in regard to painting, as a decorative art, by a remarkable and truly beautiful and ingenious application known as *Gold Paint*, of which Mr. Henry Bessemer, of St. Pancras-road, is the inventor and patentee, by the use of which all the gorgeous and rich appearance of gilding is produced with wonderful despatch, at an amazing reduction of cost. I consider that the gilding of the dome of St. Paul's would cost little less than a thousand pounds, whereas all the brilliancy and lustre of the leaf-gold may be obtained by employing the gold paint, as it is very appropriately called, for an expense short of 200*l*. Mr. Bessemer, who is deservedly distinguished as a bronzer, has by his highly improved manufacture of bronze powder, greatly reduced its price, yet at least one-half of that article continues to be purchased from the German dealers.

The introduction of the gold paint will now, however, more than enable us to compete with continental manufacturers, for we may be well assured, that by their present means, nothing to be compared with it for fineness and effect can be produced in the foreign market. The better to understand the value of the new process, which in fact will become a new and highly ornamental branch of painting, the principal objections to the use of bronze powder for such purposes may be enumerated. In the first place, we find that when an attempt is made to imitate gilding by bronzing cornices, mouldings, carvings, and similar work, it is always attended with a deadness of effect, a want of brilliancy;—secondly, some difficulty is experienced in applying powder to large fixed objects without its falling about the apartment, occasioning waste, while great care is requisite to guard against spoiling whatever of furniture is in its neighbourhood;—and lastly, not the least consideration is the cost of preparing surfaces with gold size, as for gilding, which requires the utmost management in the after-application of the powder, to avoid its becoming oxidized by being fixed on the surface of the varnish, unprotected from atmospheric influence. The gold pigment obviates every objection that has been raised to other methods of imitative gilding. Its preparation involves the employment of very curious and elaborate metallic machinery, by which an impalpable metallic powder is produced of singular beauty. Its application to plaster, papier maché, wood, plain or painted frames, or whatever it is required to cover with the composition, is effected simply by using a camel-hair pencil, which is dipped into a little of the powder and rubbed up in a small portion of a transparent gummy varnish, prepared and supplied for the purpose, by which it is made firmly to adhere to whatever it is laid on, after the common method of

applying paint. Thus may be seen how much this process differs from that of bronzing, and how successfully is avoided all waste or risk of spoiling furniture. Ease and simplicity of operation are likewise no small recommendation of this process, which requires no previous ground-preparation; one coat will even cover black paint, or mark a sheet of writing-paper, though for finer and richer work two coats may be applied. A magnificent effect may be produced on massy ornamental iron-work by first applying the gold-paint and afterwards passing over it a thin coating of a green coloured varnish. For all out-door work this paint would require to be varnished over for its better preservation.

Mr. Bessemer undoubtedly deserves our esteem for the skill which he has displayed in perfecting this ingenious invention; for we may now emulate Paris and other continental cities in their elaborate and profuse display of internal and external gilding (with no doubt equal lustre of effect at less expense), but in an especial manner has he contributed, by this means, to benefit a large class of the community—painters, in all almost every branch of the art. At no very distant period we may, therefore, expect to see a complete change effected in ornamental gilding by this additional gift of science.

77, King William-street, City.

## SOCIETY OF ARTS, ADELPHI.

FEBRUARY 14.—George Moore, Esq., F.R.S. (V.P.), in the chair. J. F. Doyle, W. A. Goodhue, W. H. Todd, and H. Yool, Esqs., were elected members.

Mr. Heaton continued his experiments illustrative of the principal cause of the rocking motion of railway engines and carriages.

The machine by which these experiments were shewn consists of a cam ring having four sets of cams on its periphery, viz., one set of sixteen cams, one set of eight cams, one set of four cams, and one set of two cams.

When the cam ring is made to revolve, the cams raise a rod of iron 12 inches long, and supported at one end by a cross bar fixed between centres. When the rod is fixed for the sixteen cams, it is raised  $\frac{1}{2}$  inch by each cam, and strikes (after the manner of a forge-hammer) 292 blows per minute, or travels at the rate of  $7\frac{1}{2}$  inches in a second, and no faster.

When fixed for eight cams, to raise it  $1\frac{1}{2}$  ins. high, the rod strikes 224 blows per minute, or travels at the rate of  $11\frac{1}{4}$  inches per second.

When fixed for four cams, to raise it three inches high, the rod will strike 170 blows per minute, or travel at the rate of 17 inches per second. A half-pound weight being fixed close to the end of the rod which is raised by the cam, two additional blows will be struck in one minute more than when the rod is not thus loaded, and if the half-pound weight be removed, and a two-pound weight be fixed near to the centre of the rod, so as to require the same weight to raise it by each cam, it will strike 233 blows in a minute, or travel at the rate of 25 $\frac{1}{2}$  inches in one second, *clearly shewing* that the one end of the rod working on centres does not retard the falling of the rod lifted by each cam.

Numerous other experiments were made with the same machine, with modifications, from which it appears that the small iron rod travels as fast as a forge-hammer ordinarily used.

That the velocity of a body falling short distances is doubled when passing through double the distance.

That due allowance should be made for the momentum of the piston, piston-rod, and slide gearing of a locomotive engine; and shewing particularly that a great loss of power is sustained by the wheels being heavy-sided.

Mr. Martin explained his Chirogymnast, which is intended to prepare the hand for playing on all sorts of musical instruments, but in particular the piano-forte.

It consists of a board 19 inches long, 12 $\frac{1}{2}$  inches wide, and 1 inch thick, with brass slides, pivots, buttons, straps, ladders, &c., fixed in different parts, containing altogether eleven exercises.



## INSTITUTION OF CIVIL ENGINEERS.

FEBRUARY 13.—George Rennie, Esq., in the chair.

A paper by Mr. J. Grantham described a series of experiments on an iron vessel called the "Liverpool Screw." This boat was 65 feet long, 12 feet 6 inches beam, and had 3 feet 9 inches draught of water; she was propelled by two high-pressure oscillating engines, with cylinders 13 inches diameter and 18 inches stroke; the pressure of the steam in the boiler varied from 50 lbs. to 60 lbs. per square inch, and it was cut off at one-fourth of the length of the stroke, working the remainder by expansion. The nominal power was 20 horses, but it did not really exceed 18½ horses. The cylinders were placed diagonally, with both the piston-rods working upon the same crank, the driving-shaft being beneath the cylinders and running direct to the propeller, without the intervention of either gearing or bands.

The screw-propeller was enlarged three times, and at last was left at 5 feet 4 inches diameter, by 20 inches in length; it was set out with a pitch expanding from 10 to 11 feet, on Woodcroft's plan; it was made of wrought iron, with four short arms with broad shovel ends, whose united area was 16 square feet, 13 feet only of it being immersed, as some portion of the arms was constantly above the water; the angle of the centre of the float was 45°. The speed of the propeller was generally 95 revolutions per minute.

With these dimensions, the speed attained was described as 10½ statute miles per hour. The amount of "slip" of the screw in the water, as ascertained by Massey's log, was stated not to exceed 5 per cent. Several experiments were detailed, which showed that there was not more tendency to "list" or to turn round by the action of the screw than with paddle-wheels, and the vessel was said to have excelled all the other steamers of the port of Liverpool in towing out vessels in a rough sea.

Designs were submitted on this principle for a steam frigate, and for large steamers working with oscillating cylinders direct upon the main shaft.

In the discussion which ensued, the various forms and modifications of screw-propellers and their relative merits were very ably treated by a number of speakers.

Mr. Rennie gave a sketch of the introduction of a kind of screw used by Mr. S. Brown with his gas-engine, which was tried on the Thames; the more successful attempt of Mr. Smith, and the building of the Archimedes and other vessels; he mentioned also the claim of M. Sauvage, of Boulogne, to the invention, and his being recently rewarded by the King of the French. Mr. Rennie entered largely into the theory of the forms of the propellers, and in this he was followed by Mr. Farey, Mr. Galloway, Mr. Samuda, and others; and M. Normand, of Havre, who is celebrated for giving such superior forms to the vessels built by him, gave a slight sketch of the *Napoléon* French frigate, in which he eulogized the engines constructed by Mr. Barnes, and the general result obtained with the vessel, but it appeared that the speed was not superior to what had been obtained with paddle-wheels.

A model was exhibited by permission of Sir H. T. de la Bèche from the Museum of Economic Geology, shewing all the kinds of valves used in the pumps for draining the Cornish mines, and the merits and defects of the various kinds were very ably explained and commented upon by Mr. Jordan, under whose directions the model was constructed. Mr. John Taylor gave an historical sketch of the introduction of the various improvements, the causes which led to them, and the effects they had produced: the length of the discussion upon the screw-propeller left so little time for the subject of the valves, that it was announced to be renewed at the next meeting, Tuesday, Feb. 20th, when the following papers will be read:—

No. 598. "Description of a bridge across the river Shannon at Portumna," by T. Rhodes. M. Inst. C.E.

No. 658. "Description of a bridge over the river Whitadder at Allanton," by J. T. Syme.

No. 625. "Description of a cast and wrought-iron trussed girder for bridges, with a series of experiments on their strength," by F. Nash.

## ON "SCARFING" OR LENGTHENING OF TIMBERS.

BY MR. JAMES WYLLSON.

(Continued from page 63.)

Fig. 13 is another form of a scarf with tablings, and is tightened by means of a pair of



Fig. 13 A.

wedges; a (fig. B) shews a tongue which may be formed on the extreme end of each of the



Fig. 13 B.

timbers, to resist the tendency which any force might have to bend the parts laterally out of their ranging position, and would be found convenient, from keeping the timbers in right position when in the first instance fitted together; another method is shewn in B, fig. 21.

Figs. 14 and 15 are for scarfs in tie-beams,

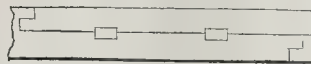


Fig. 14.

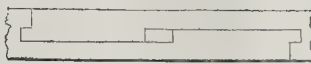


Fig. 15.

wherein bolts may be dispensed with unless great strength be required; but the keys must be such as can be fully depended upon, and should therefore be of a hard, tough, and incompressible wood, so as to keep the tongue which is on each end of the timber, securely in its proper place; the addition of bolts renders such scarfings of the first order; the former of the two examples is the easier to execute, and may perhaps be considered preferable on account of its thinnest parts being less in extent than those of the latter.

Fig. 16 is the same scarf as fig. 14, but with

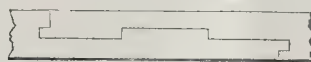


Fig. 16.

the wood well tabled together instead of being keyed.

Figs. 17, 18, and 19 are various modifications of one description of scarf; the first,

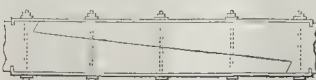


Fig. 17.

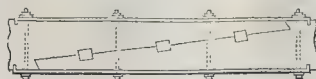


Fig. 18.

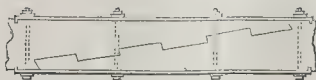


Fig. 19.

which is very common, is not very recom-

mendable, since, if used as a tie, the oblique pressure has a tendency to make the two ends incline towards each other; and, if under compression, to have a contrary effect; the two latter, which only differ in the modes of affording them a means within themselves for resisting the strains lengthwise, are very much superior to the first, and are indeed very good and strong scarfs.

Figs. 20 and 21 are good ordinary scarfs, in



Fig. 20.



Fig. 21 A.

principle similar to fig. 15, but inferior to the same on account of the oblique joints; the clasp of the first may be improved by the insertion of a key; the second may be tightened up by wedges; the form shewn by B for cutting the

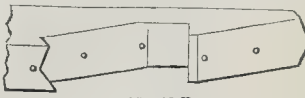


Fig. 21 B.

ends of the scarf is very convenient for fitting and keeping the pieces immovably in their places.

Figs. 22, 23, and 24, are combinations peculiarly calculated for timbers sustaining a super-

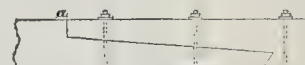


Fig. 22.

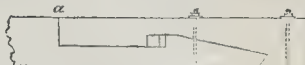


Fig. 23.



Fig. 24.

imposed weight. In bearing-timbers the upper half is in a state of tension; and, therefore, the lower half in that of compression, and the plain square form which in these examples has been adopted for the abutting-joint *a*, must be the best that can be employed under such circumstances. In the first of these scarfs the bolts and the turned ends of the plate afford the only check to the extending strain in the lower half, but the deficiency is made good in both the others by their being indented and wedged up.

The examples for scarfing which I have herein given (those of them having in their formation oblique parts excepted) are generally applicable also to the lengthening of vertical and diagonal supporting-timbers, such as posts and struts, it being only advisable to tongue the ends of the wood as shewn by figs. 13 *a*, or 21 B, though the better to ensure their remaining in their intended positions, and which tonguing might be introduced in the internal tablings as well as to the outside ends, wrought-iron collars being substituted for the upper and lower bolts. The *fished* timber, fig. 1, would require pieces on all the four sides.

According to Tredgold, the length of scarfs should be about—

For Oak, Ash, or Elm, without bolts .. ..	6 times the depth of the beam.
— Fir .. .. ditto .. ..	12 ditto.
— Oak, Ash, or Elm, depending on bolts only .. ..	3 times the breadth.
— Fir .. .. ditto .. ..	6 ditto.
— Oak and hard woods, bolts and indents combined .. ..	Twice the depth.
— Fir and soft woods .. .. ditto .. ..	4 times ditto



## METROPOLIS IMPROVEMENTS BILL.

HOUSE OF COMMONS.

FEB. 12.—The Earl of Lincoln moved the third reading of this bill.—Mr. Hume objected to that part of the bill by which the Bank of England were authorized to advance money on the security of the new houses to be built as part of the projected improvements in the metropolis. The practice of such advances by the Bank of England was contrary to every sound principle of banking; and, if carried out to a great extent, might not leave a single sovereign in the bank, as was the case once. He would ask the right hon. gentleman the Chancellor of the Exchequer whether his attention had been called to this clause?—The Chancellor of the Exchequer said, that there was nothing in the present bill which had not been contained in a bill brought in two years ago. Since that bill had been passed into a law, a doubt arose as to the legal construction of one clause, viz., whether the bank would be bound to take, in repayment of the money advanced, instalments, as the money should be raised from the rents of the houses to be built. Legal opinions were taken on the point, and they were considered satisfactory; but he thought, under all the circumstances, that it would be the better course to come to Parliament, and thus at once to remove every doubt or difficulty in the matter. The whole of the money which the Commissioners of Woods and Forests were authorized to borrow from the bank would be repaid in five years. He did not see that the bank ran any risk whatever in the transaction.—After a few words from the Earl of Lincoln, which did not reach the gallery, Mr. Hume said, that very great complaints had been made of the delays which took place between the removal of houses and the erection of others in their place. In some cases two years were allowed to elapse from the removal of one set of houses to the erection of others. Would the noble lord the chief commissioner say to what cause those delays were to be attributed?—The Earl of Lincoln assured the hon. member and the House that every reasonable diligence was used in carrying out the contemplated improvements. It was necessary that houses should be removed gradually, for if all the houses which were intended to be removed were to be taken down and sold at once, their materials would scarcely fetch anything.—The bill was then read a third time; and, after a short discussion relative to the advance of money by the Bank of England for the erection of public buildings, the bill was passed.

THE GRESHAM CLUB HOUSE.—The foundation-stone of the new building for the Gresham Club was laid on Thursday, the 8th inst., by the Lord Mayor. His lordship was attended by the sheriffs, a committee of the members of the club, and a number of influential citizens. The Lord Mayor, having been received by the committee, Mr. Flower, the architect, submitted to his lordship the plans of the building. The vice-chairman of the club (Mr. R. P. Davis) presented to the Lord Mayor the various coins to be deposited, and the secretary (Mr. Best) read the scroll on which the objects of the club were inscribed. The coins and scroll were then placed in a leaden box, and deposited in the aperture prepared for them in the foundation-stone. The silver trowel was now handed to the Lord Mayor, by the chairman of the committee of the club (Mr. Lamie Murray), and the stone having been properly placed by the builder, Mr. Cubitt, his lordship spread the mortar upon it, and declared the foundation-stone to have been laid. Mr. L. Murray said he had now to thank his lordship on the part of the members of the club for his condescension in having on the present occasion laid the foundation of an institution which, he trusted, would be found to take its rank amongst the many which ornamented their noble city, founded, as they had all been, by the perseverance and enterprise of the citizens, amongst the foremost of whom stood Sir Thomas Gresham, whose name the club had honoured itself by taking. The ground on which the building (in the Italian style) is about to be erected adjoins the banking house of Messrs. Smith, Payne, and Smiths.

## DESCRIPTION OF A NORMAN CASTLE OR FORTRESS.

It consisted, with very few exceptions, of an inclosure of from five to ten acres of land; and was encircled by a river or artificial canal, called a moat, on the scarp or edge of which was a strong wall, succeeded by another, and between these was the first ballium, or outer court of the castle. Within the second wall, or that which immediately surrounded the keep or great tower, were storehouses for the garrison, and other offices suitable to the extent and distinction of the fortress. In the centre of this interior space or inclosure, was the citadel, or master-tower, as it is more properly called, in which resided the suzerain, or feudal chief, but occasionally it was occupied by the deputy, or castellan, who, for the time being, was the representative of the baron, and had the full exercise of his delegated authority. This master-tower was generally built upon an artificial mound. It contained the state apartments, which were in proportion to the style and retinue of the founder, with all the other domestic offices belonging to the strongholds of that period. In the centre of the tower, and descending to the lowest part of the foundation, were the dungeons, in which were confined the prisoners of war, the felons or malefactors of his jurisdiction. In several instances, access to the various compartments of the castle was provided by secret inlets through the centre of the walls, and by subterraneous passages made under the fosse.

In advance of the ditch or moat was the barbican, or outer defence, with a watch-tower that communicated with the interior by means of a drawbridge across the moat, which opened inwards, so as to be under the control of the sentinel on guard. The entrance to the ballium, or outer court, was secured by gates, with a ponderous grating or portcullis, which was raised or lowered by means of those iron chains and pulleys which are still used in some of our military fortresses, and are always met with in the fortified cities of the Netherlands. The walls were further protected by towers and battlements, from which, as well as through the numerous loopholes by which they were perforated, arrows and other missiles could be discharged with deadly effect; while through the apertures of the machicolation above—

"Sudden on the assailants' head,  
Blocks of stone and molten lead,  
O'er the foe descending, gushing,  
Scorching as they fell, or rushing,  
Helméd warriors in their fall,  
Guarded each embattled wall."

The outer walls were generally from six to ten feet thick; those of Rochester Castle are seven; while the walls of the keep to which all look for retreat under desperate circumstances, were often fifteen feet in thickness, and contained in their centre many secret closets, passages, and recesses, to which none but the castellan and his family had access. In the castle of Glammis there is a secret chamber, the key of which is transmitted from father to son, and never known to more than the "seigneur actuel," and some trustworthy official. Before the invention of artillery, one of these strongholds, such as we have described, might have been considered impregnable; and when taken, the surrender was generally in consequence of famine, revolt, or cowardice on the part of the garrison, or of stratagem on that of the besiegers.

Nearly all the fortresses of this class were erected during that period that elapsed between the reign of the Conqueror and that of Edward the Third. The Castle of Rochester appears to have been erected soon after the decisive battle of Hastings; and in tracing its history and that of its founder, we shall adhere to the general opinion, so far as that may be found to harmonize with historical documents. Castles built on the Norman model varied according to the natural shape of the ground selected for their erection. The military baron, following the example of the Roman general, selected that position to which nature had given the best means of security, which provided against sudden approach or surprise, and in cases of extremity offered some facility for escape, of which various instances are recorded in history. The sites chosen were generally on capes or promontories overlooking the sea; on high banks protected by a

river, or on isolated hills, where connecting valleys, by forming a natural fosse, would interpose a chasm between the besiegers and the besieged. These natural positions were readily taken advantage of by the warlike baron; while the difficulty of access could be increased by artificial means, such as damming up a stream which flows through the ravine, and thus forming a temporary lake. The situation of Rochester Castle is partly an example of this kind; the high ground on which it stands, and its immediate access to the river, were natural recommendations not to be lost sight of, and which the founder took every opportunity of turning to the best account. In castle-building, the general maxim was—

"Where the land o'erlooks the flood,  
Steep with rocks and fringed with wood;  
Where, throughout the circling year,  
Wells the fountain fresh and clear;  
Scoop the dungeon, rear the wall,  
Pile on high the feudal hall."

—The Castles and Abbeys of England.

## THE "NELSON MONUMENTS" OF ENGLAND.

AMONG the innumerable Nelson statues to be found in English towns, Birmingham possesses on its Bull-ring the smallest. This is a statue of the great man, representing him only the size of life. It is a perfectly faithful copy of nature, expressing thoroughly the simple, unassuming appearance of this citizen hero. His lean cheeks are represented just as they were in the man; his lank hair falls over his forehead, and he wears the empty sleeve of his shot-off arm. To my mind, the whole was too faithful to nature, although it comes from the hand of Westmacott, one of England's most distinguished living sculptors. Much, too, might be said against the empty sleeve. On right and true principles of art, ought not the arm to have been restored? Were a great man, an admiral or a general, to have both legs shot off in battle, should we put up the mutilated trunk—a statue without legs—in the market-place? Can we not imagine ourselves as meeting great men in a future state, whole and perfect? And is not this art of sculpture in white marble a sort of transfiguration of the human form, as it has preceded us to Paradise? Should we not represent our great men, in order to make this transfiguration more noble, hovering as it were over us, transfigured to the highest ideal glory, rather than cling to the historical, and therefore earthly truth of their sorrowful every-day history, and to their bodies battered by the storms of life? For the rest, this little, sorrowful-looking statue of Nelson, literally the only statue which Birmingham possesses, stands almost lost in the midst of 200,000 inhabitants. Only imagine, one single sculpture to 200,000 living men! In Rome, or Athens, there would have been one to every 100, or even 50 men. Even in Berlin, Petersburg, and other comparatively modern towns, we might reckon a statue to every 4,000 or 5,000 inhabitants; but in Birmingham, as I have said, there is one to 200,000! It is a question whether, in the whole world, there could be found another town of the same population so monumentless; at any rate, thus much is certain, that even among the manufacturing towns of England it has in this respect no equal. Not only Liverpool, Manchester, and Glasgow, but Newcastle, Bristol, and Hull have more, not to speak of such fine cities as Dublin and Edinburgh. Birmingham and Leeds are, I verily believe, the most pleasureless, tasteless, and ornamentless towns in England. On the whole, if Birmingham, in reference to the useful arts, may be called a Paradise, it is, in reference to the fine arts, a complete wilderness. In the theatre here I learnt that I could get tired even of a play of Shakespeare.—*Khol's Travels through England and Wales.*

## REMARKABLE CHANGE IN PROPERTY.—

When Lawrence Sheriff, grocer and citizen of London, left the third part of a field of 24 acres, in the parish of Holborn, for the endowment of a grammar-school at Rugby, it produced no more than 8*l.* a year. This field was called Conduit-close, and was nearly half a mile from any house. It is now covered with buildings, and the rental exceeds 10,000*l.* a year. The field has risen in value from 8*l.* to 10,000*l.* and upwards.



## RAILWAY INTELLIGENCE.

**London and Birmingham Railway.**—Feb. 9th, at noon, the half-yearly general meeting of the proprietors took place in the board-room at the London terminus, Euston-grove. Mr. G. C. Glyn, the chairman of the company, presided, and in opening the meeting, alluded to the proceedings in Parliament with respect to railways, and congratulated the shareholders on the prospect that was opened for their connecting the London and Birmingham line with Lancaster and Carlisle, and in another direction with Holyhead, where a spacious harbour was about to be formed by Government. He said that the Birmingham line paid 71,700*l.* per year to Government for duties, including 16,300*l.* for income-tax, and complained of the manner in which the line was rated to local taxes and parish rates, which had been increased in the present year to the extent of 3,000*l.* Mr. Creed, the secretary, read the report. The revenue account for the last half-year, as compared with the corresponding half-year of 1842, shewed an increase in the traffic of 11,393*l.*, and a decrease of 6,221*l.* in the working charges. The directors had to report that the net profits of the year 1843 being 502,484*l.* 9*s.* 5*d.*, and the dividend declared at the last half-yearly meeting 242,732*l.* 14*s.*, there remained a disposable balance of 259,751*l.* 6*s.* 5*d.*, from which they recommended that a dividend of 5 per cent. be deducted, leaving 17,066*l.* 18*s.* 5*d.* to the credit of the current half-year. The Warwick and Leamington, and Northampton and Peterborough lines were progressing satisfactorily, and the latter was rapidly advancing towards completion. The directors had to apply to the proprietors for powers to carry out the line from Chester to Holyhead, where the Government was about to erect a new harbour, and thus make it the great medium of intercourse with Ireland. Every endeavour had been made to accommodate the public, and, in order to do so, they had given to all passengers going and returning by the railway on the same day, the benefit of a reduction of one-third in their fares, and they allowed them to compound for two months' fares at half-price. They had also modified their rates to first-class passengers riding in the company's carriages, but travelling with their own carriages on the train, by charging them second-class fares. The report was adopted, a dividend of 5 per cent. declared, and 17*s.* on each of the 32*l.* shares of the company. A resolution was adopted, giving powers to the directors to provide capital for making the proposed railway between Chester and Holyhead, not exceeding in the whole 1,000,000*l.* sterling, and to take any other measures for the interest of the company.

**The Northern and Eastern Railway** continues to improve, and the dividend, the net profits return, is 5 per cent., which was the amount declared, although the directors in their report only recommended 4½ per cent. When the line is fully developed, the directors say that there can be no doubt of the shareholders receiving a dividend considerably in excess of the 5 per cent. guaranteed by the Eastern Counties Company, according to the agreement made between the two companies.

**North Midland Railway.**—The report declares a dividend of 2*l.* on every whole share, of 1*l.* on every half-share, and 13*s.* 4*d.* on every third-share, clear of income-tax, and then 4,956*l.* 3*s.* 4*d.* is left to be carried to the next half-year's account. The net profits of the past six months were 64,722*l.*, shewing an increase in revenue of 6,463*l.*, and a decrease in expenditure of 6,230*l.*

**The York and North Midland Railway** pays a dividend of 2*l.* 10*s.* on each whole share, and 1*l.* 3*s.* on each half-share, clear of income-tax. The total receipts of the half-year have been 47,594*l.*, and the expenditure 23,218*l.*, leaving about 24,400*l.* for division among the shareholders.

**The Chester and Birkenhead Railway** pays a dividend of 8*s.* 6*d.* per share on the 50*l.* share, and 4*s.* 3*d.* on the 25*l.* share; and this concern is now to be amalgamated with the new project of the Holyhead Railway. The terms on which the amalgamation takes place are purchasing the stock of the Chester and Birkenhead Company at par, and allowing the shareholders either to take new shares in exchange, or receive immediate payment.

**South Devon Railway.**—At the last meeting held at Teignmouth, to take into consideration the advantages of this railway, Mr. Brunel remarked that it appeared to the Great Western, Bristol and Exeter, and Bristol and Gloucester companies, that the South Devon line should go coastways, and he thought that any other would be injurious to Teignmouth. The South Devon line was as little complained of as any line he knew, and he had selected that line which would do the least possible injury, and which would connect the large populous towns with the metropolis, and which had secured the approbation of the landowners generally. G. S. Curtis, Esq., entirely approved of the projected line, and would support the plan. He moved a resolution, approving of the west line, which was seconded by — Watts, Esq. Mr. Curtis's resolution was put and carried.

**Committee on Railways.**—On Saturday last, in the House of Commons, Mr. W. E. Gladstone inquired of Mr. Wallace whether he purposed persevering with his motion with respect to the striking off the committee directors of railways and leading shareholders?—Mr. Wallace said that the course he intended to pursue was to move an instruction to the committee, which instruction he should put on the paper for to-night, declaring the principle which, in his judgment, ought to govern the House in this matter.—Mr. Gladstone said, under these circumstances, he should move the appointment of the committee.—The Speaker having read the names of the gentlemen to serve on the committee, Captain Pechell said, that he had received instructions from his constituents to oppose the appointment of directors on railways to serve on this committee.—After a short discussion, the motion was put, and the committee was appointed.

**France.**—The railroad question absorbs the whole attention of the Cabinet, as the Chamber of Deputies has so many interests at stake, that no opinion can be formed as to the plan which can combine the greatest number of affirmative votes. A large portion of independent deputies, scandalized at the jobs which the proposed companies sought to fix the country with, recommend the State to construct the roads, while the Minister of Finance, who sees that in order to do so he must come forward with two instalments of the loan, is anxious to decline the responsibility. Other deputies, who have a direct interest in companies desirous of making the roads, urge on the Cabinet the danger and impolicy of its attempting such an undertaking, while the personal friends of the ministers entreat that they will not let slip through their hands so fertile a source of patronage.

## BIOGRAPHICAL MEMOIRS.

**WILLIAM WALLACE, LL.D., Hon. M. Inst. C.E.,** late Professor of Mathematics in the University of Edinburgh, was born at Dysart, in the county of Fife, in 1768. From birth, fortune, or education, he derived no advantages whatever, and the eminent station he eventually occupied as a mathematician was achieved solely by his own industry and love of scientific knowledge, aided by natural talents of a high order. He was appointed, at the age of twenty-six, assistant teacher of mathematics in the academy of Perth. In 1803 he obtained a professorship in the Royal Military College at Great Marlow (afterwards removed to Sandhurst); and in 1819, upon the death of Mr. Playfair, and the removal of Mr. Leslie to the chair of Natural Philosophy, he was elected professor of mathematics in the University of Edinburgh.

Professor Wallace's pursuits and studies were chiefly connected with abstract mathematics, but some of the subjects to which he directed his attention may be here noticed, as having more immediate reference to the objects of this institution.

The Eidograph, an instrument for making reduced copies of drawings, which he invented about the year 1821, and exhibited at a meeting of the institution in 1839, is considered superior in many respects to the Pentagraph. It possesses greater smoothness and flexibility of motion, and while the copies may be reduced (or enlarged) in any proportion, their similarity to the original is preserved with

geometrical precision. By a particular modification, the instrument is made not only to reduce, but to reverse the copies, whereby it is rendered peculiarly applicable to the purposes of the engraver.

Among the papers which he contributed to the "Transactions of the Royal Society of Edinburgh," there is one on the subject of curves of equilibration, which is interesting to us on account of its connection with the theory of suspension-bridges. From the development of a certain functional equation, he deduces series for computing the co-ordinates of the catenary, and gives tables of the corresponding values of the co-ordinates so computed; thus furnishing engineers with a ready means of constructing arches having the forms of equilibrated curves.

Professor Wallace obtained a high reputation as a mathematician, at an early age, and during his whole life he laboured assiduously to extend and facilitate the study of his favourite science. Besides his contributions to the memoirs of scientific societies (chiefly the Royal Society of Edinburgh), he was the author of nearly the whole of the articles on pure mathematics in the fourth and subsequent editions of the "Encyclopædia Britannica," and likewise of the greater part of those in Brewster's "Edinburgh Encyclopædia."

His health having given way so far as to render him unable to discharge his duties in the University, he resigned his chair in 1838. During the remainder of his life, although an invalid, his scientific ardour suffered no abatement, for while confined to his chamber, he composed the memoir on equilibrated curves, as well as a work intitled "Geometrical Theorems and Analytical Formulæ," which was published in 1839. His disposition was amiable and benevolent; he was beloved by his friends, and respected by his fellow-citizens; and he died, universally regretted, at Edinburgh, on the 28th of April, 1843, in his seventy-fifth year.

**MR. JOHN BIDDLE, M. Inst. C.E.,** was born at Kyo, near Lancaster, in the county of Durham, in 1773, and resided there nearly twenty years, when he removed to Wallsend with his father, who had then attained considerable eminence as a colliery viewer.

The elder Mr. Biddle was a man of considerable attainments in mathematics; he was a correspondent of Hutton, Emerson, and other eminent men, and contributed many papers to the scientific publications of that period. He was remarkable for the systematic manner in which he conducted his professional avocations; and to him we are indebted for the introduction of iron tubing for sinking shafts, which, it is believed, was first used at the Wallsend colliery.

At an early age Mr. John Biddle evinced an attachment for active occupation, and an eager pursuit of experimental knowledge. These studies and pursuits were encouraged by his father, from whom he derived nearly the whole of his education, having only been at school during one year, when very young. He became very early the assistant of his father as a colliery viewer; and on one occasion, when, as usual in cases of emergency, the viewers of different collieries were called together, to consult on the means of stopping an extensive fire of gas in the Washington pits, he suggested the trial of a jet of water moved rapidly, alternately, across the flame, in the same manner as in his boyish experiments he had cut off the flame of gas with a knife: the plan was adopted, and being carried into effect by himself, was perfectly successful.

After the death of the elder Mr. Biddle, his son succeeded him in the management of the Wallsend colliery, and there, in 1810, he introduced those extensive improvements in ventilation which have been so much imitated.

He was engaged as a viewer and consulting engineer of a number of the principal collieries in the North of England. His experience in all the details of the coal trade led to his being frequently examined as a witness in Parliamentary committees; and he was also employed as consulting engineer on railways and general engineering questions. In 1838 he was appointed one of the Dean Forest Mining Commissioners, and his tact and experience materially aided in the successful completion



of their labours. As he advanced in life, he became the proprietor of coal-mines, as well as of landed, shipping, and other property, which, under prudent management, produced a considerable income; indeed, when it is remembered that he was a bachelor, and that his habits were very simple, it is surprising that he did not accumulate greater wealth.

He was very liberal, and his charities were extensive. He took great interest in the local scientific societies, and, even amidst his numerous engagements, found time to communicate to them some valuable papers.

To all who have visited the coal-mines of the North of England, or have taken any interest in the history of coal-mining, the name of Mr. John Buddle is familiar.

He was active, steady, and unremitting in the discharge of duties which were attended at all times with much personal fatigue, and frequently with imminent danger. He was extremely exact in his extensive correspondence, and kept a diary, which may probably furnish materials for a detailed and useful memoir.

In private life he was distinguished by many excellent qualities and social virtues. Among other accomplishments he was a superior musician; and his retentive memory, and happy mode of explaining and illustrating his subject, rendered him as agreeable a companion as he was a valuable friend.

His habits were extremely simple, but his house for nearly half a century was the resort of most of the scientific strangers who visited the North of England, and his hospitality was unbounded. Whether viewed in his professional or private character, he has left solid claims to admiration and esteem, and his death may justly be regarded as a public loss. He died on the 10th of October, 1843, at the age of seventy years, and was interred in the ground which he had given for a cemetery, and where a church had been erected, on his estate at Benwell, near Newcastle.—*From the Report of the Institution of Civil Engineers.*

#### CLENDINNING TESTIMONIAL.

TO THE EDITOR OF THE BUILDER.

SIR,—I send you a design for a public monument to the memory of G. Clendinning, Esq. It is of the Gothic or Pointed Architecture of the late period, which an antiquary with whom I have some acquaintance informs me is now generally denominated "*the Perpendicular style*," having been first so called by the late Mr. Rickman, the Quaker architect of Birmingham. Those who have not previously applied themselves to the subject will readily perceive that a succession of perpendicular lines reach from the base to the summit of the work, shewing that the appellation has not been without reason. The steps and basement of the structure I propose to be of granite, all the remainder of the work to form an open lantern of Caen stone. Within the first stage (A), in which a statue of the deceased is designed to stand, surrounded by an octastyle peristyle, attached to the eight piers of the arcade, and canopied over by a groined and ribbed stone ceiling, of the fashion shewn by the plan of that stage, but with the central compartments of the groining forming a star, left open, and without panel-work between the stone ribs, so that light from the lantern above may be shed over the statue.

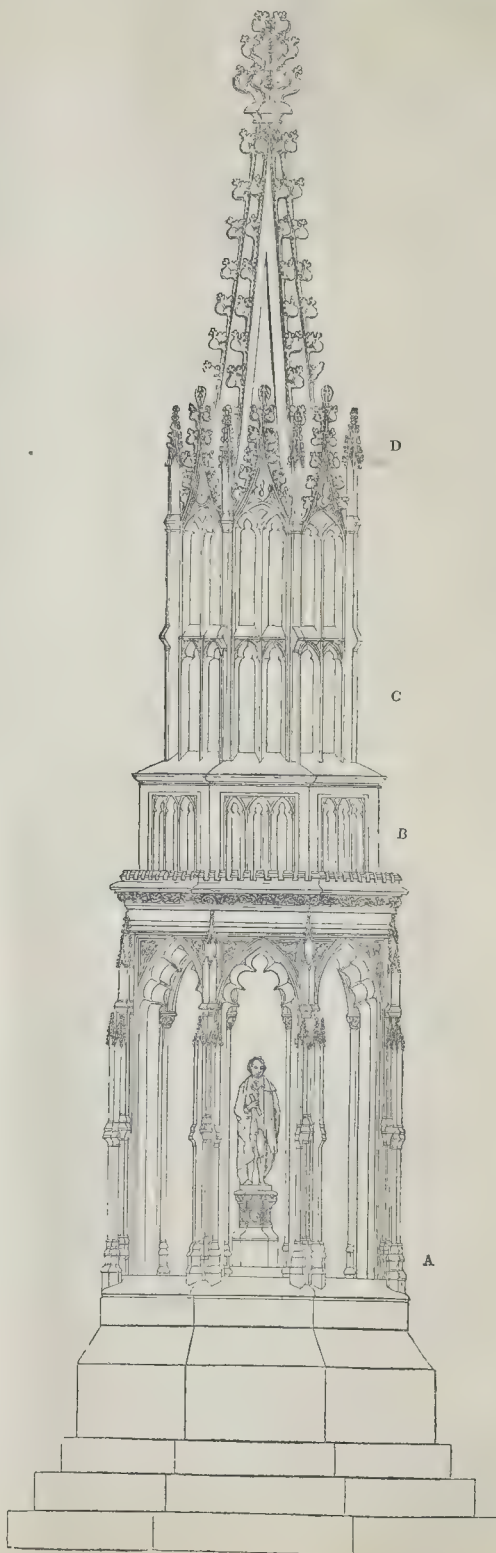
The letters B C and D attached to the elevations and plans exhibit the forms and dimensions of the succeeding stages of the work, as they proceed to its summit. The general form of the monument is exactly pyramidal, as may be seen by drawing lines from its lower step to the summit of the crowing finial, the corbel of canopy-heads and small pinnacles at the base of the spire-stage, D, alone playing lightly without the circular stringing lines, thereby giving, as in the case of many ancient works, more vivacity to the composition, without offending against unalterable rule.

I am, Sir, your humble servant,

W. R.

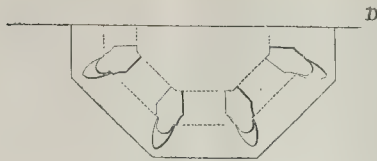
January 10, 1844.

#### DESIGN FOR THE CLENDINNING TESTIMONIAL.

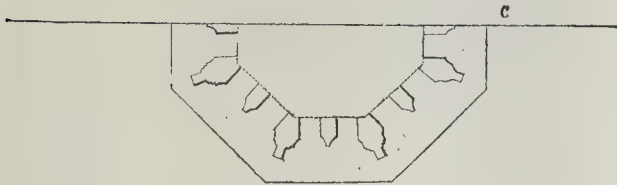


ELEVATION.

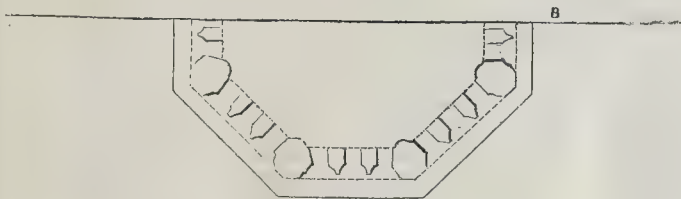




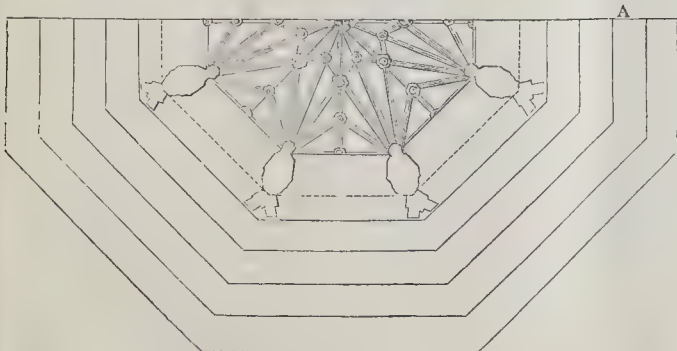
D



C



B



A

PLANS OF THE DIFFERENT STAGES.

## MONUMENT TO THE LATE DR. MALKIN

A HANDSOME monument has just been erected in St. James's Church, Bury St. Edmunds, in honour of the late Dr. Malkin. Soon after his decease, a number of his former scholars at Bury, who judged that his memory deserved well of themselves—of the school over which he so successfully and so splendidly presided, and of the town which was so largely benefited by his presidency, entered into a subscription for the purpose of extending, by enduring marble, the knowledge of him, and of their feelings towards him, to generations beyond that in which he and they should "live, and move, and have their being." It was at first intended that the subscription should be small, and the object simple; namely, to express on a plain tablet, and in few words, the sentiments which were entertained towards him: in short, to do him honour, not by an overdisplay of the sculptor's and the penman's arts, but by the fact of the erection of the memorial. When, however, this intention became known, a sum exceeding thrice the amount at first contemplated was brought together. This result is highly creditable to the Bury scholars of by-gone days, inasmuch as the individual whom they sought to honour had passed the last fourteen years of his life, not only divested of scholastic office, but also in distant retirement. Some of his learners "had paid the debt of nature," all were more or less widely dispersed: yet "the love of many was not cold;" manhood had not effaced the recollections of youth; the world had not extinguished the sympathies of school.

The committee, finding so large a sum at their disposal, resolved upon improving their object, and intrusted the fulfilment of it to Mr. Lough, of London, a statuary of fast-increasing reputation. There existed a bust of Dr. Malkin, executed during his life by Chantry, and worthy the chisel of that highly-gifted artist; this was shewn to Mr. Lough, and upon viewing the well-favoured, dignity-bespeaking, and statuesque style of features there represented, he determined to introduce a medallion likeness into the monument. This, accordingly, forms a prominent portion of the work; and it is both beautiful as a production of art, and faithful as a resemblance to the original.

The compartment containing the medallion profile is separated from that bearing the inscription by torches just extinguished—a classical emblem of the expiration of life, and appropriate in a memorial of the departed. The inscription is as follows—

"In remembrance of  
BENJAMIN HEATH MALKIN, LL.D., M.A.,  
Head Master of the Royal School in this town  
from 1809 to 1828,  
Who died at Cowbridge, May 26, 1842, aged 72.

Erected by his pupils as a tribute of  
gratitude, respect, and affection."

This is a simple but effective record: for what sentiments more honourable and more pleasing than these can an instructor of youth hope, or desire, to actuate the hearts of his former scholars, and to embalm his memory?

MONUMENT TO BISHOP LATIMER.—A monument has just been raised in the chancel of the parish church of Thurcaston, Leicestershire, to the memory of the celebrated Hugh Latimer, Bishop of Worcester. In the centre is a concave marble slab, bearing the following inscription:—

"H. S. E.  
The grateful memory of  
HUGH LATIMER,  
Lord Bishop of Worcester.  
The great champion of the Protestant Faith  
Was born in the parish of Thurcaston,  
In the year 1470.  
He faithfully followed in the glorious train  
Of his Lord and Master,  
And having joined the Noble Army of Martyrs,  
Sealed the truth with his blood.  
He was burnt at the stake in Oxford,  
In the year 1555,  
And then 'lighted a candle,' which  
Shall 'never be put out.'  
Hoc marmor ponendum curavit,  
Ricardus Waterfield,  
Rector de Thurcaston.  
1843."

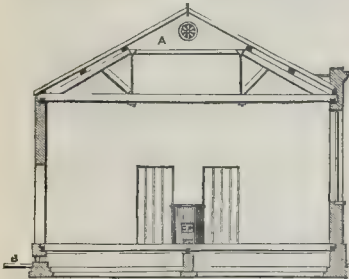


ON VENTILATING AND WARMING  
SCHOOL-ROOMS.

TO THE EDITOR OF "THE BUILDER."

THE proper ventilation and warmth of school-rooms ranks next in importance to the sufficient admission of light, both as regards the health of the children, as well as in an economical point of view. The ventilation of school-rooms is a subject of the utmost moment, but which, in very many instances, is grossly and often totally neglected; the only apertures by which a current of air can enter, or the vitiated part escape, being by the windows and door, a mode which, under the best circumstances, only very partially performs the object, and in cold or rainy weather becomes totally useless; thereby producing injurious and unpleasant effects on the teacher and children.

It is a well-known fact that, in a school-room occupied by a number of children, the atmosphere becomes specifically lighter than the surrounding parts, in consequence of the warmth of their bodies and by the heat of the fire, and which, therefore, has a tendency to rise and escape through the roof, while the cold air outside presses in to supply the deficiency. All that is necessary, therefore, to be done to insure perfect ventilation in a school-room, is to provide apertures in the gables of the roof, with valves for the outlet of vitiated air, and to cause a current of fresh air to enter in the most agreeable way, so as to prevent draught. This mode of ventilation is further explained in the accompanying diagram,



which is a section of a school-room, where A is the opening in the gable, furnished with a valve, having a cord for the purpose of opening or closing it, and B the opening in the wall, so as to admit air under the room, the floor of which is provided with openings and valves to supply the school-room with air to any required amount. If the floor be of asphalt, &c., a brick flue must pass under it to the air-valves. For warming school-rooms, common fire-places may possess some advantages, but these are more than counterbalanced by the disadvantages which must always attend them; two-thirds of the heat generated is carried up the chimney and wasted, and the remainder being confined to a short distance from the fire, leaves the remote parts of the room quite cold; added to this, a common fire consumes a great quantity of air, thereby occasioning draughts to enter by all the crevices, the effect of which being injurious to health, the trouble and annoyance arising from continually stirring and supplying the fire with fuel, the risk of smoky chimneys, and the almost insurmountable difficulty of avoiding them in the sudden changes of wind and temperature, render their use, when practicable, to be avoided, especially as a stove answers the purpose much more effectually. To warm a school-room with a stove, if placed near a wall the flue may be carried up in the brickwork about 3 inches square, but if in the middle of the room, an iron pipe must be fixed so as to communicate with the exterior. The advantages arising from the use of a stove are, that it requires fuel but once a day, the fire being kept always alight; the small quantity of air required precludes the possibility of draught; the temperature, by means of a thermometer placed against the wall of the room, may be kept at any requisite degree; the prime cost is less; it consumes much less fuel than a common fire, and all risk of accident to the children is avoided. A small vase of water with a perforated cover should be placed on the stove, and one of the

air-valves in the floor should be quite close to it, the others may be equidistant between the stove and end walls.

This is the best and most simple mode of ventilating and warming schools, and it behoves all who have the duty of forming new schools devolving on them, to give the proper ventilation of the rooms their most serious attention, as it produces not only corresponding good effects on the children's health, but also in many other important branches.

C. D.

[Supposing our correspondent means by "a stove" some kind of inclosed fire-place, as Arnott's, or an offset of the old German stove, we beg to remind him of the frequent banishment of all manner of iron stoves from buildings, from the head-ache and other inconvenience produced by the foul air reigning wherever such stoves are used, often compelling a recurrence to the old-fashioned, wholesome common open grates, with all their waste and weakness of operation. A century and a half ago, John Evelyn recommended, even in the heating of a green-house, the avoidance of iron, and the use of baked earth. Perhaps the French apparatus denominated the "*Calorifere*" (whereby a current of external air is introduced through heated pipes of terra cotta), makes the nearest approach to the wholesomeness of the hot-water warming-apparatus in its best form. We very seldom suffer naturally from head-ache, yet cannot stand against the noxious fumes generated by any of the race of iron pipe-stoves, Arnott's included.—Ed.]

## FIRES IN LONDON.

## IMPORTANT EXPERIMENTS.

A GREAT many proposals having lately been urged upon government with the view of establishing in London, and all the large towns throughout the provinces, a system for the more speedy extinction of fires, viz., by attaching hose or leather pipes, with branches, to the plugs and mains laid down in the streets, so that the water might be thrown to a sufficient altitude by its own pressure, without the aid of fire-engines, an experiment a few days since was made by Mr. Quick, the engineer of the Southwark Water Company, in order to ascertain how far it could be made applicable. The company not having the necessary apparatus to make the trial, the assistance of the Fire Brigade was granted to carry out the experiment, Mr. Braidwood, the superintendent of the force, being present on the occasion, the particulars of which will be found to be highly important. The report, which is extremely voluminous, states that it took place on the morning of Thursday last, between the hours of 4 and 9 o'clock, Mr. Quick selecting Old Gravel-lane, Union-street, and Tooley-street, as the most favourable spots to carry on the operations. During the whole period the pressure of water at the company's works at Battersea was kept at 130 feet, and every service-pipe or outlet was kept shut, so that the trial should be fairly made. The first experiment took place in Union-street, by having lengths of riveted leather hose (two inches and a half in diameter and 40 feet long) attached to six standcocks, placed into plugs, all situate within the space of about 700 yards. The water was conveyed from the head at Battersea, through 5,300 yards of iron piping, consisting of 4,250 yards of 20-inch main, 550 yards of 15-inch main, and 500 yards of 9-inch main. On one standcock being opened, the jet of water thrown from the copper branch (with  $\frac{1}{2}$ -inch hose pipe on) reached an elevation of 50 feet, and the delivery was at the rate of 100 gallons per minute. The next object sought was to ascertain the quantity of water that could be obtained from the plug. The branch-pipe for this purpose was taken off, but the length of hose remained on. The delivery was then found to be 260 gallons per minute, shewing that nearly two-thirds of the water was lost by confining it to a small jet. Had the standcock and hose been taken away, there would have been quite sufficient water to supply three fire-engines, each delivery being equal to the discharge from the first standcock. Another was then opened, and the jet from the former was reduced to 45 feet elevation. Other two were added, and the jet of the first was then 40 feet; and on three being opened, the jet from the first rose to 35 feet.

The fourth was opened, and the jet of the first decreased to 30 feet. The fifth was then brought into play (viz. six in all), and the jet from the first only measured 27 feet, fully shewing that there was a regular gradation in the height of the jets, according to the number opened. The next trial was made in Tooley-street, the standcocks being used as in the former case. Some slight difference was observed in the elevation to which the jets were thrown, the first gaining 60 feet; and when the whole were opened, the height was reduced to 40 feet, the delivery of the water being at the rate of 70 gallons per minute. Another trial was then made in a street leading into Tooley-street, where there was only a service-pipe laid down, called a 5-inch main. The first standcock threw a jet of 40 feet, and on the others being opened, the one furthestmost from the first started only emitted a jet of 24 feet, and a delivery of 58 gallons.

COMPARATIVE TABLE OF FRENCH METRES  
REDUCED TO ENGLISH FEET. 1844.

(From Letarouilly.)

Metrical Measures.		English Feet.	
Mètres.	Mets.	Ft.	In.
1 is written.....	1.000	3	3.37
2 .....	2.000	6	6.74
3 .....	3.000	9	10.11
4 .....	4.000	13	1.48
5 .....	5.000	16	4.85
6 .....	6.000	19	8.22
7 .....	7.000	22	11.59
8 .....	8.000	26	2.96
9 .....	9.000	29	6.33
10 .....	10.000	32	9.70
Decimètre.			
1 is written.....	0.100	0	3.94
2 .....	0.200	0	7.87
3 .....	0.300	0	11.81
4 .....	0.400	1	3.75
5 .....	0.500	1	7.69
6 .....	0.600	1	11.62
7 .....	0.700	2	3.56
8 .....	0.800	2	7.50
9 .....	0.900	2	11.43
10 .....	1.000	3	3.37
Centimètre.			
1 is written.....	0.010	0	0.39
2 .....	0.020	0	0.79
3 .....	0.030	0	1.18
4 .....	0.040	0	1.58
5 .....	0.050	0	1.97
6 .....	0.060	0	2.36
7 .....	0.070	0	2.76
8 .....	0.080	0	3.15
9 .....	0.090	0	3.54
10 .....	0.100	0	3.94
Millimètre.			
1 is written.....	0.001	0	0.04
2 .....	0.002	0	0.08
3 .....	0.003	0	0.12
4 .....	0.004	0	0.16
5 .....	0.005	0	0.20
6 .....	0.006	0	0.24
7 .....	0.007	0	0.28
8 .....	0.008	0	0.31
9 .....	0.009	0	0.35
10 .....	0.010	0	0.39

NORWICH.—The erection of the observatory on the Cathedral for the purpose of connecting this portion of the kingdom with the great system of triangles, which has now been carried over nearly the entire surface of England and Wales, afforded an opportunity for meteorological observations not to be neglected, and accordingly a series of experiments were commenced by the permission of Lieut. Da Costa, of the Royal Engineers, under the direction and management of the Rev. A. Bath Power. The bearings were taken of no fewer than 194 towers, but only 58 of them were identified.

IPSWICH.—The usual monthly meeting of the Dock Commissioners was held last week at the Town-hall. The chairman read the minutes of the committee of management, and from them it appeared that the Charity Trustees had been authorized to build a quay in front of the charity land, abutting on the new channel, under the direction of the engineer; and that the engineer had been directed to procure three drags and six life-lines, for the assistance of persons who may have the misfortune to get into the dock.



## COURT OF QUEEN'S BENCH.

CARPUE V. THE BRIGHTON RAILWAY COMPANY.

FRIDAY, Feb. 9.—Lord Denman this morning delivered the judgment of the court in this case. The only question remaining for decision was whether the defendants were entitled to notice of action under the 252nd section of the Act. For the necessity of such notice it was argued, that the declaration charged the injury to have been done to the plaintiff by the defendants' omission to do some of the works required by the Act, and the *dictum* of Baron Parke in the case of "Palmer against the Grand Junction Railway" was cited, where the notice was not thought necessary; but that *dictum* was this, that if the action was founded upon neglect in not fencing the railway, whereby the travelling became dangerous to those passing on it, assuming that obligation to be the result of the provisions of the Act, the case would have fallen within the section requiring notice; but when the matter was looked at and explained, he said it appeared the action was not of that nature, but the defendants were sued as common carriers, and the learned judge commented on the fact proved in that case, and considered it did not come within the Act. In defence to that *dictum*, leave was given to move to set aside the action, and a rule was granted and largely discussed, but the Court was not now called upon to consider how far that *dictum* was correct law, because the Court was clearly of opinion that this injury had arisen from the defendants' misconduct as carriers, and not as proprietors; but in considering the evidence it was impossible to exclude some reference to the state of the railway; hence the Court thought there was no foundation for any argument in favour of the necessity of notice, and the plaintiff was, therefore, entitled to retain his verdict.

Rule discharged.

LORD MINING UNDER HIS TENANT'S PREMISES.  
HILTON V. LORD GRANVILLE.

FEB. 10.—In this case, which was argued on Monday last, Lord Denman delivered the judgment of the Court. This was an action on the case for an injury done to two ancient houses, one occupied by the plaintiff, and the other held under him by a tenant. The declaration stated, that the plaintiff was lawfully possessed of certain houses, with the appurtenances, situate at Newcastle-under-Line, supporting which houses were certain foundations, which the plaintiff of right had enjoyed, and was enjoying, for the support of his house, and that on divers days and times, without the leave and license of the plaintiff, the defendant, intending to destroy the foundations, negligently and improperly worked certain mines underground, and dug for ores and minerals, and that by reason thereof the foundations of the house became and were greatly weakened, injured, and damaged, and rendered unsafe and incapable of supporting the house; in consequence whereof the house cracked, sank in, and was in great danger of falling down and being destroyed, and the value of it was reduced. The third plea to this declaration was as to the working of the mines underground; that, before the making of the lease to the plaintiff, the defendant had a grant of the right of mining from the present Queen; and it then proceeded to state, that from the time whereof the memory of man was not to the contrary, he had a right to get minerals and dig and work such mines under the dwelling-houses in such manner as might be expedient for the purpose of getting the ore, paying to the respective occupiers of the surface reasonable compensation for or in respect of the use of the surface, and without making any compensation for any damage occasioned to any messuages, &c., by any acts done for the purpose of working the mines underground; and the defendant justified that this injury arose from the working the mines underground. These acts were justified by prescription in the third plea, and by custom on the fourth plea, by which the defendant claimed a right to do what was complained of. These pleas were demurred to as setting forth a prescription and

custom which could not be sustained, they being uncertain and unreasonable. The Court made no distinction between the two pleas, for if either the prescription or custom were bad, the other must be so likewise; if one was valid, the other must be valid. The Court also thought the question as to the premises being freehold or copyhold did not affect the principle; if the custom prevailed to freehold property, it must also prevail as to copyhold. The principle on which the custom was said to be founded was laid down in a case where it was said that the objection to this custom, that it was only beneficial to the lord and prejudicial to the tenant, was of no weight, for it might have had reasonable commencement notwithstanding, for the lord might take less for the land; but the true objection was, that it was uncertain and unreasonable, as it might deprive the tenant of the full benefit of the land; and it was not to be supposed that any of the tenants would have taken the land subject to such a custom. The custom held invalid was, that so often as the lord of the manor sank pits on the freehold land for working the collieries, he had been accustomed to cart the earth, &c. coming therefrom on the land, there to remain so long as he thought fit. Chief Justice Willes, after pointing out the unreasonableness of the custom, said no custom was more unreasonable than the present—it might deprive the tenant of the whole benefit from the land, because the lord might dig as often as he pleased, and at what time of the year he pleased; so that the lord might stay upon the tenant's land for ever. The case had been removed by error into this court; and after having been argued three times, the judgment against the custom was affirmed. Justice Lee said the question was whether this was a reasonable *lex loci*, and the Court held it not to be so, as it laid a great burden on the land; it savoured much of arbitrary power, and might have put it in the power of the lord utterly to deprive the tenant of the benefit of the land, there being no restriction as to time; and in the report it was remarked that the custom was very unreasonable, for it laid such a great burden on the land, without any advantage to the tenant, as tended to destroy his estate, and savoured much of arbitrary power; and what was said at the bar touching the public utility of coal-pits could not be considered, because the pits might have been worked without it, and to suppose the custom would be to take away the whole benefit of the custom. The words "at the will of the lord" did not appear, but such might be understood, because the lord sought to have the power of going upon the land at any time. Several cases have been cited to shew that such custom might be valid, but they had no bearing on the point. In one case the plaintiff had sued in trespass for digging and taking away his land, and the defendant justified in one plea under a custom. The general custom was traversed under the special custom. The defendant pleaded that he had made sufficient compensation. Upon the trial at bar the jury found that the compensation was insufficient. The injury to the foundation was in no way connected with the question. On that trial the greatest reliance was placed on some decisions in which, the custom being derogatory to the rights of the tenant, the original grant could not be maintained. Lord Kenyon had said, if it must be taken to import that a lord after granting rights of common might help himself to any portion, to the exclusion of the grantee, it was incompatible with other cases, and could not be supported. The defendant justified under the usage, and assuredly whatever the lord could reasonably be supposed to have reserved out of his grant consistent with the grant, that usage might be set up; but a claim destructive of the grant could not be set up, it was repugnant and absurd. The custom here pleaded had that destructive effect, and it was too clear to admit of any doubt. The judgment would therefore be for the plaintiff.

The capital of Berlin is about to be enriched with a new cathedral. The designs have been executed by M. Stieler, after the suggestions of the king himself. It will be in the Italian style, and embellished with sculpture and painting. The vaults will be appropriated as a burial-place of the reigning family of Prussia. The estimate of the expense amounts to 38,000,000f.

## ASSESSED TAXES CASES.

Determined by the Judges on Appeal.

May 18, 1841.

Windows—Shop.

*A soda-water manufacturer held liable for the window of a shop where ginger-beer, soda-water, corks, &c., were exposed to sale, such shop being partly above and partly below the street, and part of the dwelling-house.*

At a meeting of the commissioners of land and assessed taxes, acting for the division of the town of Cambridge, on the 9th day of November, 1840, the following case was heard and determined (48 Geo. 3, c. 55).

Mr. Thomas Birch, of this town, soda-water manufacturer, appealed against the assessor's charge of eight windows, and contended "that under the Act of 4 Geo. 4, c. 11, s. 1, he was entitled to one as a shop window where goods are exposed to sale, namely, ginger-beer, soda-water, corks, &c.; the room is partly above the street and partly below." He claims the exemption as being the basement story.

The facts of the case are these:—The party manufactures soda-water and ginger-beer in an underground room of his dwelling-house, which in all similar houses is used as a kitchen or wash-house; he is a wholesale vender of the above articles, and not a general retailer, but may occasionally dispose of a bottle of either of the above waters if any person happened to go to his house and requested to be served with a draught of either soda-water or ginger-beer; the selling of the corks spoken of relates to those which are necessarily put into the bottles. The above facts being detailed to the commissioners, they were of opinion that the room used as herein described did not come within the meaning of the Act of Parliament; they therefore confirmed the assessment. The appellant being dissatisfied, demanded a case for the opinion of her Majesty's judges, which we sign accordingly.

SAMUEL EVANS,

S. ADCOCK,

Commissioners.

We are of opinion that the determination of the commissioners is right.

J. PATTERSON. J. GURNEY. T. COLTMAN.

Windows—Shop.

*Two windows of a shop of appellant who had retired from business, but in which a small stock remained, and which she continued to sell; such shop being used for no other purpose, no goods being exposed for sale, and the shutters of one of such windows being almost always kept closed:—Held, liable to duty.*

At a meeting of the commissioners of land and assessed taxes, acting in and for the hundred of Ardudwy, held at Llanddwywe, the 21st and 22nd days of August, 1840, for the purpose of hearing appeals against the first assessments (48 Geo. 3, c. 55, sch. A.):—Mrs. Margaret Griffiths, of Barmouth, appealed against a charge for twelve windows. The appellant stated that two out of that number are shop windows, for which she claimed exemption; that she had retired from business, and discontinued shop-keeping for some time, but there being a few trifling things of her stock remaining, such as books, &c. she continued to sell the same; the room is used for no other purpose whatever; that there are now no goods exposed for sale in the said windows, one of which is scarcely ever opened, the shutters thereof remaining almost always closed. The commissioners, conceiving the appellant clearly entitled to an exemption for such windows, by virtue of the 1st section of 4 Geo. 4, c. 11, allowed the appeal, and reduced her assessment to ten windows; but the surveyor having expressed himself dissatisfied with such decision, inasmuch that the appellant had entirely ceased to be a shopkeeper, that there is no external appearance of a shop in passing the house, there being no goods exposed for sale in the said windows, one of which is invariably closed, demanded a case for the opinion of one or more of her Majesty's judges, which is here stated and signed accordingly.

RICHARD DAVIES,

DAVID EVANS,

Commissioners.

We are of opinion, that the determination of the commissioners is wrong.

J. PATTERSON. J. GURNEY. T. COLTMAN.

Windows—Shop.

*Appellant was not brought into charge for two windows in a shop, and claimed exemption for one window in a room of his dwelling-house on the first floor and immediately over the shop, in which room drapery goods were kept and exposed for sale, as the 4 Geo. 4, c. 11, grants exemption for three:—Held, chargeable for such one window.*

At a meeting of the commissioners of land and assessed taxes, acting in and for the division of Estmanor, county of Merioneth, held at the White



Hall, Towyn, the 31st day of August, 1840, for the purpose of hearing appeals against the first assessments (48 Geo. 3, c. 55, sch. A.)—Mr. Robert Edwards, of Aberdovey, draper and grocer, appealed and claimed exemption for one window in a room in his dwelling-house in which drapery goods are kept and exposed for sale. The appellant stated that the shop forms a part of his dwelling-house in front, and on the ground floor thereof; that there are two windows in the same, which were allowed and not brought into charge; that the first section of 4 Geo. 4, c. 11, grants exemption for three windows in any shop or warehouse, being parts of a dwelling-house: he therefore claimed exemption for one other window which is in a room on the first floor immediately over the shop, wherein drapery goods are exposed to sale. The commissioners present denying the exemption provided by the said Act to extend to and embrace this case, allowed the appeals; but the surveyor submitted that in order to entitle the party to exemption for the said window, it is necessary that the room should be on the ground or basement story, which it appears is not the case in this instance, therefore not exempt from duty, and demanded that the case be stated for the opinion of her Majesty's judges.

Griffith Evans, } Commissioners.  
Edward C. Owen, }  
We are of opinion that the determination of the commissioners is wrong.  
J. PATTISON. J. GURNEY. T. COLTMAN.  
—Justice of the Peace.

### Correspondence.

#### MEASURING ROUND TIMBER.

SIR,—I was somewhat surprised to perceive in your last number a correspondent, signing himself "J. M.," calling the attention of your readers to a "blunder of his townsman," in reference to a letter of mine some weeks ago, descriptive of the true method of measuring round timber, and which was written in answer to an inquiry in your last volume into the cause of a discrepancy between two methods of doing it. He calls my attention back to the first part of mathematics, presents us with a very popular but very erroneous method of solution, with his bare assertion that the result is the content, calls it a demonstration, and trusts it will prevent many "committing such gross mistakes."

Permit me respectfully to assure him that I have made no blunder whatever. The blundering (I regret to say) is entirely with himself! and one of the gross mistakes of which he warns others, he has most egregiously committed himself. He has, in fact, fallen into the chief of those errors out of which I endeavoured to rescue your former correspondent, and which endeavour he might have rendered instrumental to his own enlightenment, had he given it the requisite consideration, and a moderate portion of his attention to that part of mathematics to which he calls mine.

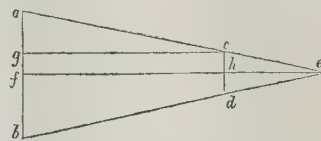
He has escaped the error of dividing by 4 for the girth, which brings him something nearer to the truth than your correspondent "L," but the error of measuring in the centre (which in a piece so conical is a monstrous one) he has retained; which keeps him wide of the mark in his result nearly 159 feet.

He directs us to lay down a triangle (he means a trapezoid) according to the rules of geometry, and says we can, with precision, find the mean diameter by measuring at 40 feet from the end, that is to say, in the centre. I admit that we can do so, but it is evident, and well known to all mathematicians, that the area of the circle to which that diameter refers is not the mean area, simply because "triangulation," or the methods of superficial mensuration, "will not apply to cube measure." The mean diameter is an arithmetical mean between the diameters of the extremes, whereas the thing wanted is a geometrical mean between the area of the extremes. It is this I have sought, and by it obtained the true mean or average area, in the method I laid down, and which is applied below, viz.:

$6^2 + 7^2 + (72 \times 6) \times 2618 = 1479-6936$ , mean area in inches; or  $10 \cdot 27565$  feet  $\times 80 = 822-052$  feet, contents of the piece,

Or  
 $(6^2 \times 7854) + (72^2 \times 7854) + \sqrt{(6^2 \times 7854) \times (72^2 \times 7854)} = 4439-0808$ . Then,  $4439-0808 \div 3 = 1479-6936$ , mean area in inches, agreeing exactly with the result of the former methods.

There is another way which might be advantageously pursued in the mensuration of such solids, and by which a proof more obvious to many of the truth of the former ones, will be obtained. It is to compute the contents of the cone of which the given solid is a frustum, and deduct the contents of the smaller cone by which that cone exceeds the frustum. The length of the smaller cone, and consequently of the larger one, may be found in the manner following, viz.:—Let  $ab, dc$  be the section through the axis or cen-



tre of the frustum; extend the sides  $ac$  and  $bd$  until they intersect at  $e$ , draw the axis  $fe$ , and also the line  $gc$ , parallel to  $fh$ ; then are the triangles  $agc, che$  equiangular, and therefore the side  $ag$  is to the side  $gc$  as the side  $ch$  to the side  $he$  (Euclid, prop. 4, book VI.); but the length of the three former are known;  $ag$  is 33 inches,  $gc$  80 feet,  $ch$  3 inches; therefore as  $33 : 80 :: 3 : 7 \cdot 2727$  feet, length of  $he$ , the axis of the smaller cone.

We have thus the dimensions of both cones, the larger one being 6 feet diameter at the base, and  $87 \cdot 2727$  long, the smaller one 6 inches diameter at the base, and  $7 \cdot 2727$  long; and to obtain the contents of each, we have only to multiply the area of the base by the height, and divide the product by 3; every cone being the third part of a cylinder of the same base and altitude. (Euclid, prop. 10, book XII.)

Thus for the first cone—

$6 \times 6 \times 7854 = 28-2744$  feet, area of the base; and  $(28-2744 \times 80) \div 3 = 822-52774296$  feet, contents.

For the second cone—

$6 \times 6 \times 7854 = 28-2744$  inches, or  $19635$  feet, area of the base; and  $(19635 \times 7 \cdot 2727) \div 3 = 475998215$ , contents; leaving  $822-051744745$  feet for the contents of the frustum.

This is a method distinct from the others, and yet it agrees with them in its result, within  $\cdot 000256$ , or about  $\frac{1}{4000}$  of a foot; and it would agree exactly, but for the necessary limiting of the places of decimals.

If I am correct, Sir, in these statements (and that I am, no mathematician will deny), you will admit that the error I have endeavoured to refute is a most egregious one, and to the interest of the merchant charging his timber under its influence, a most fatal one. Supposing the price 1s. per foot, he would, in the piece in question, lose 74. 19s.; and, of course, double and quadruple that sum in the same quantity of the more costly kinds. I should be obliged by the insertion of this communication in your next excellent paper, and remain, Sir, yours very respectfully,

S. HUGGINS.

Liverpool, February 6th, 1844.

SIR,—As a reader of THE BUILDER, your correspondent "J. M." has called my attention to a blunder committed by his townsman in finding the contents of round timber, and has not answered the question proposed, i.e. why the three parts measured separately amount to more, by the same method of measurement, than the tree when measured in one; but has merely cautioned me and many others not to commit such gross mistakes, by committing a greater one himself. Had "J. M." worked his proposition rightly, he would have found the method used by him produce the same results; for I find the contents of his two parts taken separately to be 672-007 feet and 110-446 feet, which exceeds the whole, viz. 663-663 feet by 119-791 feet. The discrepancy arises from the area of the section in the middle not representing the mean area throughout the whole length. Your correspondent "L," has measured the tree by the customary quarter-girth method, i.e. as a square prism, whose side is the quarter-girth in the middle of the length; by comparing the two following formulae, he will see the section in the centre does not represent the mean area to be multiplied by the length. Let  $l$  be the

length,  $C$  the greater quarter circumference, and  $c$  the less, then  $\frac{C+c}{2}$  will be the centre

quarter circumference, and  $\frac{C^2 + c^2 + C^2}{3} \times l$ ,

the solidity of the frustum of a square pyramid, and  $\frac{C^2 + 2Cc + c^2}{4} \times l$ , the solidity, by

customary method: by using the first of these, the tree might have been cut into any number of lengths, and their solidities added together would have been the exact contents of the whole. Your correspondent "J. M." takes the tree as a cylinder whose diameter is the diameter of the section in the middle of the length of the tree, which section does not represent the mean area throughout. Let  $l$  be the length as before,  $C$  and  $c$  the circumference of the two ends, then  $\frac{C^2 + Cc + c^2}{37-6992} \times l$ , the solidity of the tree as a

frustum of a cone, and  $\frac{C^2 + 2Cc + c^2}{50-2625} \times l$ , the solidity of the tree as a cylinder.

I am, Sir, yours, &c.,

Newman-street, Feb. 9, 1844. R. F. P.

N.B. If you think the above remarks worthy a place in your journal, you will oblige by inserting them, and, perhaps, some of your correspondents will oblige by letting me know where I may cut a tapered plank (whose length is  $l$ , and breadth of the two ends  $B$  and  $C$ ) parallel to its ends, so that the two parts may contain each the same area.

#### STUDY OF EUCLID.

SIR,—Having often heard the advantages of a knowledge of Euclid insisted upon, I have for some weeks past given a part of my time to the study of it. I have thus advanced some short way without, I fear, reaping all the advantages which I might had I studied with any definite object in view besides the mere mastering of the propositions, that is, had I known what were the practical advantages of the study, and something of its application to the profession which I am learning. If, then, Sir, either you or any of your correspondents will be kind enough to give me a little enlightenment upon these heads, they will confer a favour on

Your obedient servant,

F. L. P.

P.S.—I am well aware of its use in expanding the reasoning and calculating powers of the mind; I merely wish to know how the problems are applied in practice in architecture and engineering.

[Proceed, and the knowledge thence resulting will bring the right answer.—Ed.]

#### WESTMINSTER-BRIDGE.

SIR,—In reply to a letter signed "B." in your useful periodical No. 52, with all due respect to the great or bouncing B, under which initial I am convinced I do not address the great Barry, the scientific Burgess, the elaborate Basivi, the mechanical Brunel, or the indefatigable practical preceptor Bartholomew, the skilful Braithwaite, or, in fact, any of the eminent B.'s of the profession, —I beg merely to state, that I am only "an assistant's assistant" to those who require aid; with this view, I beg to refer that gentleman to the original article which drew forth my remark, in your 50th number, signed "A Practical Observer." By offering this assistance to "B.'s" memory, he will perceive no alteration or embellishment is proposed, until the piers were effectively constructed, or, to use his own words, "been underpinned (despite of the caisson), progressively, to the whole depth required, so as to obtain a sound and substantial foundation on such a stratum as might be relied upon for carrying the most massive erection." By this reference, the great "B." will perceive that it was not by the "Practical Observer" intended as "B." states, "that a pier incapable of supporting an arch of 70 feet span, with its superincumbent weight, would be equal to the support of one of 140 feet span, as proposed;" nor can I believe it to be "in Messrs. Walker and Burgess's wake," that it would be necessary to suggest, as "B." states, "it is manifest that instead of throwing two arches into one," &c., and of course doubling the pressure (if not of lighter construction), that "the correct system of procedure would be to increase their number, and reduce the span of the arches, inconveniently narrow as they are." The



advantage of rebuilding this long patched-up bridge, and, I may add, *abhorribly so*, is admitted; but the economy of doing so, by reserving the present line of approaches, and the ingenuity displayed by the "Practical Observer," is not the less deserving of emulation; the merit of *finding fault*, or submitting other modes of remedying the present evil, is still open, it is hoped, not only to the great "B.," but the whole alphabet of scientific men, their assistants, and their assistants' assistants' best energies, so as to produce in the reconstruction a work of art and science worthy of this great city. With the fullest assurance of respect to your correspondent "B.," I beg to state in reply to his inquiries, that I am really

A CIVIL ENGINEER of the G. W. R.

#### ARCHITECTURAL VOLUTES.

SIR,—Having lately been excessively bothered with Ionic volutes, I think it would greatly benefit not only myself, but a large class of architectural pupils, if you would request some of your correspondents to furnish you with the best methods known to them, and in what works they may be found; or perhaps, if not asking too much, you might find room to assert at least one or two of the best, and I am quite sure it would be conferring a great benefit on the architectural world in general, and on pupils in particular. I have tried Nicholson, but find it utterly impossible to attend to the decimals and logarithms in scales so small as these to which most of our drawings are made. I have also tried the volute inserted in the *Civil Engineer and Architects' Journal* for this month, but it is so complex, and so intolerably carelessly described, that it is impossible to make any thing out of it. Wishing long life and success to THE BUILDER,

I am, yours obediently,

AN ARCHITECTURAL PUPIL.

SIR,—I should be greatly obliged if informed through the medium of your valuable journal, which is the best method of hanging sympathetic folding-doors; and whether the proper apparatus is sold by any one.

I am, Sir,

Your well-wisher and constant reader,

J. W. P.

#### Miscellanea.

**CURIOUS PHENOMENON.**—A good many years since a breast-work or quay was built at Ardental, in Argyleshire, for shipping stones from a quarry at which much work has been done. When Mr. David Smith, builder, at Oban, was erecting the beacon of Skervuil, in Jura Sound, for the Northern Lights' Board, he fitted the courses of blocks for that work to their places on the quay, and has occasionally had upwards of 200 tons of stone upon it at a time, without accident. The quarry has lately been worked for the repairs of the Caledonian Canal, and on the 23rd ult. there were between 170 and 180 tons of dressed stones lying upon the quay ready for shipment, when, to the astonishment of the quarriers, the crane upon the quay was observed to move and shake without any visible cause, and some openings appeared at the surface of the quay, which were rapidly widening; the men on the instant cried out for the foreman, who rushed to the spot, and saw the quay, with its crane and the cairn of blocks upon it, moving outwards from the shore, and sinking in the deep water; and in less than two hours the whole had proceeded seaward about 50 yards, and settled with a depth of 11 feet water over them. This quay was 48 yards in length, and had a large space behind for arranging materials for shipment. The face wall was founded one foot under the lowest tide-mark, upon a bed of strong blue clay, covered with a thin stratum of gravel; and at 100 yards from the site of the quay the water deepens to 4 fathoms. It is remarkable, that with much heavier loads, this breast-work should have stood so long without any apparent failure, and after the foundation was so much consolidated, that it should have completely left its site and settled in deep water. The whole mass is now so completely absorbed in mud and clay, that although the height of the quarry and materials could not be less than 20 feet, it has not lessened the depth of water at the entrance of the place.—*Scotsman*.

**DESTRUCTION OF HILLINGDON-HOUSE.**—Hillingdon-house, the seat of Mr. R. H. Cox, has been destroyed by fire; the bare walls alone are standing. We are happy to learn that nearly the whole of the costly furniture has been preserved, the principal portion uninjured. The whole is deposited in an extensive green-house in the park, in the stables, and at the houses of Mr. Mills and Mr. Greville. The valuable pictures are also safe, as is also the extensive library, the whole of which (seven waggon-loads) were removed to the premises of Mr. Lake, bookseller, at Uxbridge, for the purpose of being cleaned and arranged. The engines continued to work upon the ruins during the night, under the directions of Gerard and Bailey, two of the London Brigade, who were despatched to Hillingdon on Sunday evening, on the intelligence of the fire reaching Mr. Braidwood. From an early hour of the morning until nightfall yesterday, hundreds of persons of all classes visited the ruins, which still emitted volumes of smoke. No portion of the mansion remains but the bare walls, and some portions of the inner ones have fallen during the night, and have forced in the roof of the ale-cellar, which contained nearly 3000. worth of fine ales. Some portion was destroyed by the barrels bursting, but sixteen large double butts were observed amongst the ruins, which appeared to be uninjured. Beyond the ale-cellar is the wine-cellar, which contained a splendid stock of old wines, the whole of which is believed to be comparatively uninjured. All classes of persons unite in expressing a strong and warm feeling of sympathy with Mr. Cox and his family in consequence of the calamity, that gentleman and his lady being highly respected and esteemed throughout the district for their kindness and amiable qualities. The whole of the servants have been great sufferers, having lost all their clothes, money, &c., it having been impossible to save any of the property in the upper rooms. Mrs. Mills has given each of the female servants 2l. to enable them to obtain change of linen, &c. Mr. Cox, with the Earl of March, Mr. Mills, and other members of the family, were about the ruins immediately after the fire, engaged in giving directions, &c.

**THE NEW PEAL OF TWELVE BELLS FOR YORK MINSTER.**—A suggestion from Hull.—In accordance with the munificent bequest of the late Dr. Beckwith, of York, the Minster Restoration Committee have directed an eminent bell-founder (Mears, of London) to complete a peal of twelve musica bells; the tenor bell to be 53 cwt., in the grand key of C. Mr. Thomas Dykes, jun., of Hull, has thrown out a suggestion on the subject, which has been published in some of the York papers. He says—"It has long been my opinion that the bells of York Minster were not in accordance with the dignity of the capital of the largest county in the kingdom, and of the most magnificent cathedral, perhaps, in Europe. The tenor bell of York Minster is C. Let us keep up the honour of the place. C is very well for the parish church of Leeds, but not for the cathedral of York. A peal of twelve bells in A, and the clock bell, or 'Great Tom,' in F, would be an harmonious treat to the inhabitants of York and the circumjacent country. The musical effect of a deep-toned bell cannot be surpassed. Let an inhabitant of York, whose ears have been well saturated with the C of its minster, go to Lincoln and catch the A as it undulates from her Lady Tower. No words can describe the witchery of that tone, or rather combination of tones. Here is a fine specimen of a chord formed by the harmonics; and if so in A, what would be the effect in F? for the deeper the tone, the more perfect the harmonics. I should then recommend a peal of twelve bells in A, with a 'Great Tom' F, or rather, I would say, a peal of thirteen bells in A, one of which should be a half-note, as in the parish church of Leeds, by which arrangement another key-note is gained, and if four of the ringers should be absent, eight might ring in the key of E."

**SIR WALTER SCOTT'S MONUMENT AT EDINBURGH.**—On Monday last a meeting of the contributors to the intended monument to Sir W. Scott was held in the New Music-hall, Edinburgh, the Lord Provost in the chair. The chairman stated that the object of the meeting was to increase the fund, which had fallen short, chiefly on account of the expense attendant upon a proper preparation of the site, which required to be raised to a level with Princes-street. The height of the monument was designed to be 182 feet—the money in hand would only raise it to the summit of the pinnacles of the abutment towers, 102 feet; thus leaving 80 feet of the upper part unbuilt, to complete which would require 3,000l. in addition to the funds already subscribed. Sir T. Dick Lauder then read letters of apology, and remittances towards the object of the meeting, from his Grace the Duke of Buccleuch, 50l.; Viscount Melville, 20l.; the Lord Advocate, 10l.; Mr. M. Innes, 20l.; the Earl of Stair, 10l. 10s.; Mr. Campbell, of Blythwood, 10l. 10s.; and from Lord J. Stewart, Mr. G. Trail, M.P., Mr. Ramsay, of Barnton, M.P., &c. Professor Wilson, in a most eloquent speech, moved the first resolution. An enthusiastic spirit pervaded the meeting, and there is little doubt of the necessary funds being raised almost immediately. Upwards of 500l. was subscribed before the meeting broke up.

**CANAL BETWEEN THE MEDITERRANEAN AND THE ATLANTIC.**—A project has been brought forward for cutting a "canal of the Pyrenees," to connect the Mediterranean with the Atlantic, and avoid the circuitous route by the coast of Spain. The plan, as it at present stands, was first matured by M. Galabert, member of the French Chamber of Deputies. The French legislature granted to a company that was to carry it into execution the property in perpetuity in the canal, with several other advantages, but required a deposit of 3,000,000l. until the act was passed. The subscriptions were completed, and the company was in active operation. In consequence of this deposit not having been made, the grant has remained subject to forfeiture; but, nevertheless, the scheme has not been abandoned, and the notion exists of raising capital in England. There is no occasion to enter at present into a subject which is so far from mature, but it is as well to remark, that the particulars up to the present time are contained in a pamphlet written by Mr. Bush.

**RAPID INCREASE OF POPULATION IN MANCHESTER.**—It would scarcely be credited, at the first avowal, that the population of this town has increased more than eleven-fold within living memory, were not the fact easy of proof. The Rev. William Turner, formerly of Newcastle, but now a resident of Manchester, in speaking on a recent occasion of the interest he took in the welfare of this town, said that when he first knew it, it had a population of not more than about 27,000 individuals! In the year 1778, there was a sort of census, not an estimate, but an actual enumeration of the inhabitants of Manchester and Salford, in short of all that is classed under the general name of Manchester, and the numbers were stated to be 27,246. By the official census, in June, 1841, the numbers of the same aggregation of buildings were upwards of 308,000, an increase of more than eleven times that of the year 1778.—*Manchester Guardian*.

**BATH.**—The consecration of the cemetery at Lyncombe was solemnized last week by the Right Rev. the Lord Bishop of Salisbury. Nature seems to have marked this secluded site for the very purpose to which it is now happily dedicated. The carriage-road, diverging from the public thoroughfare to Prior Park, by a gradual and easy ascent, sheltered by majestic elms, terminates in an edifice of the purely Anglo-Norman style of architecture, in front of which there is a spacious area, commanding one of the finest views of the city of Bath, embracing a *coup-d'œil* of the public buildings, squares, parades, crescents, and masses of building, more perfect than can be obtained from any other point. The soil is rich, but not deep, resting on a substratum of crumbling oolite, in every respect suitable for a cemetery.—*Bath Gazette*.



**ATHENS AS IT IS.**—We see Athens in ruins. On the central rock of the Acropolis exist the remains, in a mutilated state, of three temples—the Temple of Victory, the Parthenon, and the Erechtheum; of the Propylaea in the same place; at its western entrance, some walls and a few columns are still standing; of the theatre on the south side of the Acropolis, in which the dramas of Æschylus, Sophocles, and Euripides were represented, some stone steps remain. Not a vestige survives of the courts in which Demosthenes pleaded. There is no trace of the academic porches of Plato, or of the Lyceum of Aristotle. The pæcile of the Stoics has vanished; only a few stones of the long walls which run along the plain and around Athens with its harbours are yet visible. Even nature herself appears to have undergone a change. The source of the fountain Callirhoe has almost failed; and the bed of the Ilissus is nearly dry; the harbour of the Piræus is narrowed and made shallow by mud. But while this is so, while we are forcibly and mournfully reminded by this spectacle of the perishable nature of the most beautiful objects which the world has seen, while we read in the ruins of those temples of Athens, and in the total extinction of the religion to which they were dedicated, an apology on behalf of Christianity, and a refutation of paganism, more forcible and eloquent than any of those which were composed and presented to the Roman emperor by Aristides and Quadratus in this place; we are naturally led by it to contrast the permanence and vitality of the spirit and intelligence which produced these works, of which the vestiges either exist in a condition of ruinous decay, or have entirely disappeared, with the fragility of the material elements of which they are composed. Not at Athens alone are we to look for Athens. The epitaph—"Here is the heart; the spirit is everywhere"—may be applied to it. From the gates of the Acropolis, as from a mother-city, issued intellectual colonies into every region of the world. These buildings now before us, ruined as they are at present, have served for two thousand years as models of the most admired fabrics in every civilized world. Having perished here, they survive there. They live in them as in their legitimate offspring. Thus the genius which conceived and executed these magnificent works, while the materials on which it laboured are dissolved, has itself proved immortal. We, therefore, at the present time, having witnessed the fact, have more cogent reasons for admiring the consummate skill which created them, than were possessed by those who saw these structures in their originality, glory, and beauty.—*Wordsworth's Greece.*

**ANCIENT RUINS.**—We have been informed by a gentleman who has traversed a large portion of the Indian country of Northern Texas and the country lying between Santa Fe and the Pacific, that there are vestiges of ancient cities and ruined castles or temples on the Rio Puerco and on the Colorado of the West. He says, that on one of the branches of the Rio Puerco, a few days' travel from Santa Fe, there is an immense pile of ruins that appear to belong to an ancient temple. Portions of the wall are still standing, consisting of huge blocks of limestone, regularly hewn, and laid in cement. The building occupies an extent of more than an acre. It is two or three stories high, has no roof, but contains many rooms, generally of a square form, without windows, and the lower rooms are so dark and gloomy that they resemble caverns rather than the apartments of an edifice built for a human habitation. Our informant was unable to describe the style of architecture; but he believes it could not have been erected by Spaniards or Europeans, as the stones are much worn by the rains, and indicate that the building has stood several hundred years. From his description we are induced to believe that it resembles the ruins of Palenque or Otulun. He says there are many similar ruins on the Colorado of the West, which empties into the Californian Sea. In one of the valleys of the Cordilleras traversed by this river, and about 400 miles from its mouth, there is a large temple still standing, its walls and spires presenting scarcely any trace of dilapidation, and were it not for the want of a roof, it might still be rendered habitable. Near it, scattered along the declivity of a mountain, are the ruins of what must have been once a large

city. The traces of a large aqueduct, part of which is, however, in the solid rock, are still visible. Neither the Indians residing in the vicinity, nor the oldest Spanish settlers of the nearest settlements, can give any account of the origin of these buildings. They merely know that they have stood there from the earliest periods to which these traditions extend.—*Texas Telegraph.*

**IN THE REIGN OF EDWARD III., the WAGES** paid to a master carpenter were at the rate of 3d. a day, other carpenters 2d. A master mason 4d. per day, other masons, 3d.; and their servants, 1½d. a day. Tilers, 3d., and their *knaves*, 1½d. Plasterers and other workers of mud walls, in like manner, without meat or drink, and this only from Easter to Michaelmas; during the remainder of the year a reduction was made, according to the direction of the justices. These wages were increased in the year 1445, reign of Henry IV., to a master mason or carpenter, 4d. a day, or without meat or drink, 5½d. Master tiler or slater, mason, or mean carpenter, and other artificers concerned in building, 3d. a day, or without meat or drink, 4½d. During the reign of Henry VII., there was a like rate of wages, but with a slight advance; for instance, a master carpenter, mason, bricklayer, master tiler, plumber, glazier, carver, and joiner, were each allowed from Easter to Michaelmas to receive 4d. a day, or without meat or drink, 6d.; but from Michaelmas to Easter they were to abate one penny. A master having six men under him was allowed one penny a day extra.

### Tenders.

**TENDERS** delivered for erecting two houses at Stockwell Common, for F. Dansey, Esq.—William Rogers, Esq., Architect:—

Hayward and Nixon .....	£2,754
Notley .....	2,496
Taylor .....	2,489
Gerry .....	2,439
Wilson .....	2,394

**TENDERS** for erecting Coal Stores at Ben Jonson's Fields, Stepney, for the Commercial Gas Company:—

J. and J. Ward .....	£419
Gerry .....	450
Cooper and Davis .....	459
Ibbett .....	473
Kempster .....	480
Blackburn .....	499
Burnshaw .....	535

### NOTICES OF CONTRACTS.

**TENDERS** for a HYDRAULIC PUMP and APPARATUS for PROVING PIPES.—Directors of the New Gas Company, Aberdeen. Feb. 19.

**TENDERS** for Two GAS HOLDERS.—Directors of the New Gas Company, Aberdeen. Feb. 19.

**WEST LONDON RAILWAY.**—Contract for Four fixed five-ton Cranes, and three portable three or four-ton Cranes.—Mr. John Thompson, Secretary. Feb. 20.

**WORKS REQUIRED FOR THE NEW FISH MARKET, GREAT YARMOUTH.**—Plans, &c. to be seen on application to Mr. A. T. Tillett, Architect, King-street, Great Yarmouth; Town Clerk. Feb. 21, 1844.

**YORK AND SCARBORO' RAILWAY.**—Tenders for 60,000 Larch and Memel Sleepers.—Secretary of the York and North Midland Railway Company. Feb. 21.

**BUILDING A COUNTY LUNATIC ASYLUM AT LITTLEMORE, OXFORD.**—Plans, &c., at Mr. R. Clarke's, Architect, Clinton-street, Nottingham, or at the Office of the Clerk of the Peace, Oxford.—J. M. Davenport, Clerk of the Peace. February 22, 1844.

**CONTRACT** for Building an Infants' School-Room, near St. John's Church, Bury St. Edmunds.—Rev. Robert Rashdell. March 1.

**BRIDLINGTON PIERS AND HARBOUR.**—Erection of a new south pier, removal of present pier, and other works for enlargement of Harbour.—Plans and Specifications at the Office of Mr. Sidney Taylor, Solicitor, Bridlington. March 1, 1844.

**PARISH OF ST. GEORGE, HANOVER-SQUARE.**—Contract for Workmen's Tools and Hammers, Iron Lamp Posts and Gas Fittings, and for keeping in order the garden in Hanover-square, for one year from the 25th March. R. Lees, Clerk, Board Room, Mount-street. March 6.

**PARISH OF ST. GEORGE, HANOVER-SQUARE.**—Contract for Masons' and Paviors' Work, and supply of Guernsey Granite Chippings, and Yorkshire Paving, for one year from the 25th March.—Mr. R. Lees, Clerk, Board Room, Mount-street. March 6.

**CONTRACT** for Renovating present Wooden Turret, and erecting a Stone Turret in lieu thereof, with other works, at Preston Hospital, near Wellington, Salop.—Plans, &c., by Mr. Haycock, Esq., Architect, Shrewsbury, or at Mr. Potter's, Bridgman-place, Walsall. March 9, 1844.

### COMPETITION.

**PREMIUM** of 20 guineas for the best plans and estimates for erection of a new gaol, Banbury.—All information may be obtained on application to the Town Clerk. March 1, 1844.

### TO OUR CORRESPONDENTS.

"C. H. S."—The drawing of the mantel piece has been received, but we request the favour of being furnished with correct details of the carvings, &c. on a larger scale, before our engraver can commence.

"I. K. L."—The sketch of the window has been received, and will appear in an early number.

The interesting communication of "M. R. I. B. A." has been received, and the diagrams have been placed in the hands of our engraver.

"A. B."—We are unable, at present, to answer the inquiries of our correspondent, relative to the Clendinning Testimonial, to be erected at Westport. Perhaps some of our friends in Ireland can inform us whether the design has been selected and arrangements have been made for its completion, or if the time for sending in designs has been extended. In an announcement which appeared at page 465 of our first volume, the 1st of January, 1844, was the day named for the purpose.

The letter of "O. P. Q." came too late for answer this week.

### MEETINGS OF SCIENTIFIC BODIES,

To-day and during the ensuing week.

**SATURDAY, Feb. 17.**—*Asiatic*, 14, Grafton-street, 2 P.M.; *Westminster Medical*, 32, Sackville-street, 8 P.M.

**MONDAY, 19.**—*British Architects*, 16, Lower Grosvenor-street, 8 P.M.; *Chemical Society of Arts*, Adelphi, 8 P.M.; *Medical*, Bolt-court, Fleet-street, 8 P.M.; *Statistical*, 11, Regent-street, 8 P.M.

**TUESDAY, 20.**—*Linnean*, Soho-square, 8 P.M.; *Horticultural*, 21, Regent-street, 2 P.M.; *Civil Engineers*, 25, Great George-street, 8 P.M.; **WEDNESDAY, 21.**—*Society of Arts*, Adelphi, 8 P.M.; *Geological*, Somerset House, 8½ P.M.; *London Institution*, Finsbury-circus, 7 P.M.

**THURSDAY, 22.**—*Royal*, Somerset House, 8½ P.M.; *Antiquaries*, Somerset House, 8 P.M.; *Royal Society of Literature*, 4, St. Martin's-place, 4 P.M.; *Medico-Botanical*, 32, Sackville-street, 8 P.M.; *Numismatic*, 41, Tavistock-street, Covent Garden, 7 P.M.

**FRIDAY, 23.**—*Royal Institution*, Albemarle-street, 8½ P.M.; *Philological*, 49, Pall Mall, 8 P.M.

**SATURDAY, 24.**—*Royal Botanic*, Regent's-park, 4 P.M.; *Westminster Medical*, 32, Sackville-street, 8 P.M.

**BRITISH MUSEUM.**—Open to the public every Monday, Wednesday, and Friday, from 10 till 7 during May, June, July, and August, and from 10 till 4 the rest of the year; except the first week in January, May, and September, Ash-Wednesday, Good Friday, and Christmas Day, and Fast or Thanksgiving Days. The *Natural History Collections* are open for study and comparison of specimens, to persons having permission, on Tuesday and Thursday from 10 till 4. The *Reading Room* is open to persons having tickets of admission every day (except Sundays, and when the Museum is closed, as above mentioned), from 9 till 7 in May, June, July, and August, and from 9 till 4 during the rest of the year. The *Gallery of Antiquities* is open to students having tickets every day in the week, except Saturdays and Sundays (and those times when the Museum is closed), at the same hours as the Reading Room.

**ROYAL COLLEGE OF SURGEONS.**—The Museum is open to visitors on Monday, Tuesday, Wednesday, and Thursday, from 12 till 4, except during the month of September; on Friday to gentlemen for studying in it; and on Saturday from 10 till 1 to gentlemen desirous of comparing specimens with those in the Museum. The Library is open to members and students of the college, and visitors having tickets of admission, daily (Sundays excepted), from the 1st of October to the 1st of April, from 10 till 4; and from the 1st of April to the 1st of September, from 10 till half-past 5.

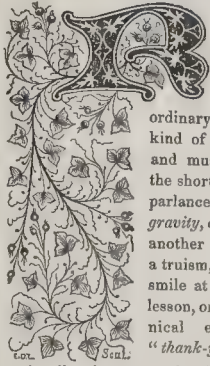
**LINNEAN SOCIETY.**—Library open on Monday, Tuesday, and Thursday, and the Museum on Wednesday and Friday, from 12 o'clock to 4 in the afternoon.



# The Builder.

NO. LV.

SATURDAY, FEBRUARY 24, 1844.



**A**RELY is any work perfected at first: few that are not endued with an extraordinary quantity of that kind of mental, nervous, and muscular ballast, in the short-hand of common parlance termed simply *gravity*, could, on perusing another iteration of such a truism, remain without a smile at receiving such a lesson, or perhaps the ironical ejaculation of a "thank-ye for the information."

and yet no truism is more frequently forgotten in the affairs of life. In almost every business and transaction, some one forgetting such an old saw and its right use, and remembering not his own trespasses, for the forgiveness of which he daily prays, begins cutting away at his neighbour or friend, because some trivial error may have been fallen into, some change of plot may have become necessary. In violation of the retention of judgment which a good and talented man should ever hold in all his transactions, we have had this week sent to us drawings of a fabric, the iron-work of which during its construction was somewhat altered from the original design for it, so as to run into the mould, and be delivered perfect and without fracture, from the volume of metal in different parts of the work being adjusted to cool about the same time, and so prevent that rigidity in the thinner parts of the work which must give way by snapping at the parts of the work which obtain mastery over them by their condensation as they solidify and lose their heat. We have no objection to insert in this periodical all obtainable information relative to the arts connected with architecture and building; and if our correspondent will send us a drawing, shewing to a larger scale sections of this work as at first designed, and as eventually executed, with mere plain statements of the facts, without any observations, which we think if published would not only be subversive of that good and gentlemanly Freemasonry which should subsist among all members of the building, architectural, and engineering community, but a positive actionable libel—we should take pleasure in inserting such a contribution. Every one must admit the propriety of our correspondent's observations, that "*It is of the utmost importance that engineers should well consider and digest their plans before they place them in the hands of the operative department; as any error or failure is generally attended with delay to the works, additional expense to the contractor, and reflects any thing but credit on their skill and professional reputation.*"

But, because a professional man in making a new design may not exactly see the end in every minute matter; may have made a slight oversight (as a general sometimes does at the cost of the lives of a hundred thousand men, and, perhaps, the glory—perhaps, the political existence—of his nation), it does not

follow that some person connected with the work, who possibly might have himself committed greater errors, should volunteer anonymously to be the accuser; albeit he may declare, "although the publication of such palpable error must be very galling to the feelings of those connected with the works, still, for the benefit of the professional community, it is necessary it should be made known; so that they may avoid the rocks their more careless coadjutors have foundered on."

Now there are many modes of imparting precept for the benefit of others without galling any one: if contractors are to suffer through misdirection, that error will soon be cured; if they can obtain no other redress, the courts of law are open to them, and we opine few directors of works who are in fault, would allow any case to go there, but would tender such amends as an affair required.

We beg to draw our correspondent's notice to the following good and wholesome law of the *Free-Masons of the Church*, in which we heartily concur:—

"That all members of the college shall abstain from personal altercation with each other, and from all public depreciating strictures, either by speech or writing, upon each other's works, knowledge, and talents; but shall endeavour, in all possible ways, to impart kindly and fraternally each to other whatever knowledge they may possess, (*except in every such secret matter as could not be divulged without breach of trust*), so as to produce a kindly community of the most advanced science, knowledge, and experience, and in order that the college and each professional member may alike gain honour, strength, and revenue, by the efforts of all unitedly tending to that end, each member of the college always bearing in mind that he is '*a brother of the Free-masons of the Church*,' and therefore of the high calling of a Christian gentleman, which title he would forfeit if acting otherwise."

Such a law we are convinced will have a great effect upon the science and conduct of architecture and its practitioners. We believe science works silently as galvanism, little seen, little understood, by the multitude, yet powerfully. Weak minds alone are afraid of its thunders; but much personal unhappiness may be caused by the snappishness and unguarded remarks of the sour-tempered and virulent, who are ever descending from the grand and patriotic design of general reformation and general good to petty waspish stinging.

We now turn to another subject, emanating from the same cause as that to which we primarily alluded, viz., the imperfection of first workmanship.

We mean the new Bill relative to metropolitan improvements, lately brought by the Earl of Lincoln and Sir Thomas Fremantle into the House of Commons and on the second day of this month, ordered to be printed. We shall close this article by presenting to our readers a copy of the Bill in question; but before doing so, we beg to say, after making all due allowance for the frequently inevitable imperfections and incompleteness of acts and measures, resulting from official persons having often over-much to do, and for the delays arising from the jarring of contending interests, that a necessity for a species of compensation has thence arisen. We have watched attentively for years the injury to particular property accruing from the long precursive rumours of intended improvements, their partial performance, their hanging half done, the waiting for additional powers, the stagnation arising from obtaining new Acts of Par-

liament to amend explain and enlarge former Acts; new applications for monetary clauses, for the amendment of pure oversights contradictions and ambiguities; the tenants in the mean time leaving, leases running out, and no one willing to tenant afresh the estate. We have observed in one district alone dozens of houses fall to ruin during a twelve-years' abeyance of this kind. We know one long court, crossing a proposed new public avenue, where the tenants first went; then the materials of the houses went; and, were it possible, the very soil of the estate would go too—sportive boys plucking away every brickbat found imbedded in it.

Surely wherever any corporate or other body, by mooted any project of the kind, and then leaving it, occasions, or has occasioned, any such evil, there should be some power for the redress of the pecuniary damages thence resulting.

elp.

*A Bill to enlarge the Powers of an Act of the Fourth and Fifth Years of her present Majesty, empowering the Commissioners of Her Majesty's Woods to raise Money for certain Improvements in the Metropolis, on the Security of the Land Revenues of the Crown, within the County of Middlesex and City of London. 7 VICTORIA.*

WHEREAS, by an Act passed in the Session of Parliament holden in the fourth and fifth years of the reign of her present Majesty, intituled, "*An Act to empower the Commissioners of her Majesty's Woods to raise Money for certain Improvements in the Metropolis, on the Security of the Land Revenues of the Crown, within the County of Middlesex and City of London*," it was enacted, that it should be lawful for the Commissioners of her Majesty's Woods, Forests, Land Revenues, Works, and Buildings for the time being, and they were thereby authorized and empowered, by and with the consent and approbation in writing of the Lord High Treasurer, or of the Commissioners for executing the office of Lord High Treasurer of the United Kingdom, or any three or more of them, notwithstanding any provisions, restrictions or clauses contained in any Act or Acts of Parliament relating to her Majesty's Land Revenue, from time to time to borrow and take up at any rate of interest not exceeding Five Pounds per centum per annum, and on such terms and conditions as they should think proper, such sum or sums of money as the said Commissioners, with such consent and approbation as aforesaid, should judge necessary for the purpose of carrying into effect and completing the several improvements and new streets authorized and directed to be made by them by the several Acts therein recited or referred to, on mortgage of all or any part or parts of the houses, buildings, lands, tenements and hereditaments of or belonging to her Majesty, her heirs and successors within the county of Middlesex and city of London, or either of them (other than Royal Palaces and Parks), and for securing the repayment of the sum or sums so to be borrowed, or any part or parts thereof, with interest for the same, with such consent and approbation as aforesaid, to grant, demise or mortgage all or any part or parts of the same houses, buildings, lands, tenements and hereditaments respectively unto any person or persons, body or bodies corporate, who should lend and advance such sum or sums of money respectively, his, her or their heirs, executors or administrators, successors or assigns, or to whom he or they or any such body should appoint for any term of years, so that every such grant, mortgage or security were made with a proviso or condition to cease and be void when such sum or sums of money thereby to be secured, and the interest thereof, should be fully paid and satisfied:

And whereas doubts are entertained whether the said recited Act extends to empower the Governor and Company of the Bank of England and certain other Public Companies and Corporations to advance and lend moneys to the said Commissioners on the security of the said Land Revenues of the Crown, the said Governor and Company of the Bank of Eng-



land and other Public Companies and Corporations not being expressly named and empowered in and by the said recited Act; and it would facilitate the raising of such monies if such doubt were removed;

1. *Bank of England and other Corporations empowered to lend on Mortgage of the Land Revenues.*—BE IT THEREFORE ENACTED, by The QUEEN'S most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, THAT it shall be lawful for the Governor and Company of the Bank of England, and for any person whomsoever, and any bodies politic or corporate or companies whatsoever, to advance and lend from time to time to the Commissioners for the time being of her Majesty's Woods, Forests, Land Revenues, Works and Buildings, any sum or sums of money, or any part or parts of the capital, or other monies or funds of or belonging to such Governor or Company, person or persons, bodies politic or corporate or companies respectively, which the said Commissioners, by and with the consent and approbation in writing of the Lord High Treasurer or the Commissioners for executing the office of Lord High Treasurer of the United Kingdom, or any Three or more of them, shall from time to time judge necessary for the purpose of carrying into effect and completing the several improvements and new streets authorized and directed to be made by them by the said several Acts in the said recited Act of the fourth and fifth years of her Majesty's reign recited or referred to, on mortgage of all or any part or parts of the houses, buildings, land, tenements and hereditaments of or belonging to her Majesty, her heirs and successors, within the county of Middlesex and city of London, or either of them (other than Royal Palaces and Parks), so as that all such loans be made with the approbation of the said Lord High Treasurer, or Commissioners for executing the office of Lord High Treasurer, or any Three or more of them, to be signified by his or their warrant or warrants for that purpose, notwithstanding any thing contained to the contrary in an Act passed in the fifth and sixth years of the reign of their late Majesties King WILLIAM and Queen MARY, intituled, "An Act for granting to their Majesties several Rates and Duties upon Tonnage of Ships and Vessels, and upon Beer, Ale and other Liquors, for securing certain Recompenses and Advantages in the said Act mentioned to such persons as shall voluntarily advance the sum of One million Five hundred thousand Pounds towards carrying on the War against France," or in any other Act or Acts.

2. *Commissioners of Woods Incorporated, and Powers of Recited Act Extended to this Act.*—And be it Enacted, That the Commissioners for the time being of her Majesty's Woods, Forests, Land Revenues, Works and Buildings shall be and they are hereby constituted a corporation for the purposes of this Act, as well as for the purposes of the said recited Act of the fourth and fifth years of her Majesty's reign, and may have such seal as in the said recited Act is mentioned; and that all and singular the powers, provisions, exemptions from stamp duties and enactments in the said recited Act contained, with respect to moneys borrowed and mortgages made under the authority of the said recited Act, and the application of such moneys, shall, so far as the same are applicable, extend to all moneys to be borrowed and mortgages to be made under the authority of this Act; and that all sum and sums of money which by the said recited Act are made applicable to the repayment of moneys borrowed on the credit of the Land Revenues of the Crown, under the powers and provisions of the said recited Act, and the interest thereof, shall equally be applicable and be applied in repayment of any sum or sums of money which may be borrowed on the credit of the Land Revenues of the Crown, under the powers and provisions of this Act, and the interest thereof.

3. *Commissioners of Woods Empowered to Lend, notwithstanding Mortgages.*—Provided always, and be it Enacted, That it shall and may be lawful for the Commissioners for the time being of her Majesty's Woods, Forests, Land Revenues, Works and Buildings, in all respects to make and grant such leases, and

agreements for leases, and to accept a surrender of any lease or leases granted, or to be granted, of any hereditaments comprised in any mortgage made, or to be made, in pursuance of the said recited Act passed in the fourth and fifth years of the reign of her present Majesty, or of this Act, and on any such surrender to grant any other lease, or separate leases, of the hereditaments so to be surrendered, for any term which they are or may be authorized to grant, in all respects whatsoever as they could have done if such mortgage or mortgages had not been made, and the said last-mentioned Act and this Act had not passed, so as the rent to be reserved in respect of any hereditaments to be comprised in any new lease to be made in pursuance of any surrendered lease be not less in amount than the rent which was reserved by the surrendered lease, or when more than one lease shall be granted of any hereditaments comprised in a lease which shall have been surrendered, so as the aggregate amount of rents to be reserved by the separate leases shall not be less in amount than the rent reserved by the lease so surrendered.

4. *Saving Rights of Distress, and Entry of Mortgages.*—And be it Enacted, That the person or persons, bodies or body to whom any such mortgage as aforesaid has been or shall be granted, shall (in respect of such leases so to be granted, and during the continuance of such mortgage securities) have such and the same powers of distress, entry or otherwise, for the recovery of the rents, by any such leases so to be granted, reserved, and shall have the full benefit of the covenants in such leases to be contained, and on the part of the lessees to be performed, as they would have had if they had been parties to such leases, and the rents and rights of distress and entry had been reserved to them, and the covenants entered into with them in all respects whatsoever, but not so as to give any subsequent mortgagee any right or priority over the prior mortgagee.

5. *Act may be Amended or Repealed this Session.*—And be it Enacted, That this Act, or any part thereof, may be amended or repealed by any Act to be passed in the present Session of Parliament.

#### THE "TIMES," MR. BOWEN, AND JOINT-STOCK BUILDING-SOCIETIES.

AN anonymous pamphlet, entitled, "Building-Societies and their Traducers," has been published by Messrs. Whitaker & Co., of Chancery-lane, containing a copy of the article which appeared in the *Times* paper, and as inserted in our 50th No., with a reply thereto, sent to the *Times* for insertion, but which has not appeared in that journal. As the subject is so important, and should be fairly stated to the public in all its bearings, we here copy the whole of the reply, which is as follows:—

"SIR,—The article which appeared in your paper of Friday last, on the subject of these societies, seems open to very considerable objection. If they are contrivances of 'ravenous capitalists for transferring into their own pockets the little savings of the frugal poor,' so base and heartless a combination should be opposed by every honest man, and searching and truthfully investigated by every able one. In this case, however, your notice, instead of assisting, would prejudice the desired object, inasmuch as the nature of a Building-Society is so unfairly and insufficiently stated, that any man of ordinary understanding and knowledge of the subject would justly consider that the conclusions arrived at from such statements are very different from what they would, or could have been, had the facts been more fully and impartially disclosed. No such man, therefore, would be deterred from becoming a victim to the 'ravenous capitalists.' If, on the other hand, these societies may be beneficial to a number of prudent people amongst the middle classes (and to such only do they peculiarly address themselves), your notice will do harm, for it will very likely prevent many timid and uninformed persons from joining the societies. I do not pretend to determine under which of these descriptions the Building-Societies ought to be ranked. I have an interest, however, in common with many hundreds of others in London alone, that the question should be rightly determined without loss of time. Being merely a member, a shareholder

in one such society, and holding no office of any kind therein, being, in fact, one of the plundered, if your statements be correct, I have no interest or inclination whatever to attempt bolstering up the designs of sharpers, upon the hard-earned savings of the honest and industrious.

"Having, however, taken considerable trouble to inform myself of the nature and objects of the society, both before and since becoming a member, I must say that nothing can be further removed from even the appearance of collusion, partiality, or injustice, than all the proceedings have uniformly been. Of course, notwithstanding this, I may be deceived, and the society may be a mere job after all; and, if so, it would be an act of real benevolence on the part of any one of the many able actuaries or accountants in this metropolis to step forward and demonstrate in the columns of your extensively circulated paper, that the objects contemplated, and the prospects held out by these societies, are not within the compass of reasonable probability. Such a proceeding would have a very different effect upon the minds of thinking men, from what your notice on Friday can be expected to produce. As I have often observed much space devoted, and great talent well applied, in your influential paper, to the exposure of public abuses, and to the correction of public error and prejudice, I would earnestly solicit a thorough investigation of this subject, so important to many of the industrious and frugal in all parts of the kingdom. This investigation, however, can only proceed, or be brought to a satisfactory termination, by the whole nature and objects of the societies being impartially stated, and then shewing, by suitable calculations, that they (the societies) are, as asserted or insinuated by them, mere jobs for defrauding the credulous and ignorant. *This has not yet been proved*; until it be, there should not be any unnecessary calling of hard names. If it be not proved, I am afraid your notice on Friday can only be considered as a very garbled statement, mixed with a pretty free sprinkling of gratuitous abuse. I have no small share of respect for many of your sentiments and decisions, but the mere circumstance of even your stigmatising the societies as 'awindling bubbles,' 'self-evident mares' nests,' conducted by 'sleight-of-hand and legerdemain,' would not deter me, or any reasonable man, from exercising our own judgment on the matter, as far as you have furnished us with the means in the article which has occasioned this communication.

"In reference to that article, and to my assertion, that the nature of a Building-Society is unfairly and insufficiently stated therein, I beg to offer the following remarks, solely with a view to elicit from some competent person such a fair and candid statement and calculation as will finally settle the question:—

"1st. It appears incorrect to assert that the society 'does not profess to trade with its money, so that all the advantage it gives is simply derived from the money, as it passes within itself from one side of the society to the other,' and that 'if the borrower is benefited, it must be at the expense of the lender.' As I understand the societies, however they may differ in some respects, they all agree in this, that the only condition upon which they will advance money to any member is, that he does immediately trade with it, that is, that he does immediately purchase some freehold, copyhold, or long leasehold property with the money so advanced, and deposit the title-deeds with the society, as a security for the regular monthly payment, for ten years, of certain sums of money, previously agreed upon at an open meeting of the members. Of course, if so disposed, he may go on further to trade, by selling his property at a profit (if shrewd or lucky enough to have made a good purchase), or he may retain it for his own occupation, or otherwise remain satisfied with the success of his first trading. Now this seems to me to be so important a feature of the societies, that it cannot be brought too strongly into light, in comparison with the statement that all the advantage they give 'is simply derived from the money passing within itself.' Why, the fact is just the contrary! The advantage is derived from the money passing out of 'itself' into the hands, probably, of builders, and others who, from whatever causes, may have cheap houses to sell, and who have a hundred ways of trading with, and turning such



ready money to account, so as to make, no doubt, very sufficient profits, and suit their own purposes better than keeping the houses. The persons *taken advantage of in some such transactions* may possibly be those whose misfortunes compel them to dispose of their property greatly below its value; but with this the society has nothing to do; the same thing would occur whether the purchase fall in the way of a member of the society or any other person; although it is undoubtedly by means of such trading, and such advantageous purchases, that the society expects, in an indirect way, to realize in some degree the promised benefit to the whole of its members.

"Well, then as to the arranged payments, these begin to come in to the society from the borrower, by *monthly* payments, and the society is very soon again in a condition to supply ready money to the members, whose observation may have been stimulated, so as to be on the alert for a purchase, sufficiently advantageous to warrant them in taking up money on the terms offered by the society.

"So that, in fact, the main principle of the society, during the principal part of its existence, is *not* to have the money 'within itself,' or to allow it to be foolishly 'passing from one side of the society to the other,' but to circulate it amongst the trading and enterprising, *not being members of the society at all*, and who, for such means, might never have had the opportunity of trading with and turning it to advantage.

"2ndly. It seems very unfair to place in juxtaposition the two classes of 'rich capitalists' and 'poor borrowers,' as the description of persons respectively lending and borrowing money in these societies. It is extremely questionable whether a single member, in several such societies I could name, can be correctly described as belonging, in fact, to either class. They are generally speaking all of one, the middle class, voluntarily combined for the purposes of profit, by means of a purely trading principle, and apparently to the advantage of all, at least very much to the general satisfaction, for they pay their hundreds of pounds per month, with the cheerfulness of men who knew what they were about, and whose minds were made up as to the result.

"As to the assertion that the society is a 'swindling *felo de se*, contradicting itself, and cutting its own throat,' those terms are simply surplusage, of a rather coarse kind; at best they only apply to what is an entirely incorrect description of the societies in a very important particular.

"3rdly. With regard to the deduction from the ultimate value of each share, to which parties are willing to submit, in consideration of an immediate advance,—it should, in the first place, be considered that persons do not, *cannot*, take up money from these societies, for any 'pressing necessities;' and that it must indeed be a very singular 'recklessness,' a very indescribable kind of 'despair,' that induces a man to submit to a 'ruinous loss' in order to buy a house that he need not buy unless he chooses. It should also be considered that men are generally (when not pressed by any urgent necessity) pretty good judges of their own concerns, and know very well whether or not it will suit them to submit to a reduction of 65*l.* or 50*l.* for any specific purchase they wish to make,—for the difference between those two sums is not, as stated by you, 'all the difference as to the advantageousness of the terms to the borrower.' The real question with him is, whether or not the *object* for which he takes up the money is worth his submitting to the highest deduction. If it be, he will take up the money; if not, he will leave it alone. Of course a man may make a bad purchase, or an imprudent or injudicious investment; but he would not be more likely to do so in trading with money borrowed from the society than in trading or purchasing under any other circumstances. He would be rather less likely, on account of the absolute necessity of making the profits of such purchase or investment materially assist his payments to the society. It may be very fairly doubted whether any of the members of these societies are so very 'inexperienced, sanguine, or needy,' as to be induced to 'bid one against another,' for the purpose of obtaining and laying out a sum of money upon an investment, the probable returns of which they have not tolerably well calculated. It is altogether

a matter of business amongst them; there is very little 'recklessness,' 'despair,' 'ignorance,' or 'misfortune' in the matter.

"Lastly, the statements and calculations published by you, by which you state Mr. Bowen 'makes the hedgehog unroll itself,' are objectionable on two grounds. The statements are not all true, and the calculations are far from clear. The statement you make that 'so far from Mr. Bowen's scale of deduction being too high a one, he declares it is frequently a full 10*l.* higher in such societies;'—this is not true. It is so palpably untrue, that it may be doubted if any society, acting regularly or frequently upon such a scale of deductions, could ever have had an existence of such duration as to be worth naming. There may certainly have been instances of speculating borrowers consenting to submit to exorbitant deductions, but in the general sense asserted in the last lines quoted it is untrue.

"The greatest deduction made in the society to which I belong never amounted to 58*l.*, and the deduction has been very regular at from 50*l.* to 55*l.* This may be proved by a person taking the trouble to inquire of any one or more of the three or four hundred respectable men of the middle class (I am almost certain they are not 'ravenous capitalists') who belong to the Metropolitan Society, held at the London Tavern. The last shares sold were at a deduction of 51*l.* odd shillings. This is of itself sufficient to disprove Mr. Bowen's last-quoted declaration. Information obtained from other London societies would further prove that such declaration is not worthy of credit. 2ndly, with regard to the calculations, it is not proved (and until it be proved, it must be doubted) whether the table of any existing society shows 'that a man can borrow 350*l.* of them, and repay the same at an interest of only 7*l.*' This must be doubted, because any man knows he cannot borrow 350*l.* for ten years without paying for it in the course of that time 175*l.* at a simple interest of 5*l.* per cent., and without being any nearer the repayment of the principal than when he started.

"Whether or not the 350*l.* would cost him, as you state Mr. Bowen shews, 300*l.*, or what sum it would in fact cost him, would manifestly depend upon circumstances connected with time and mode of payment, which you do not touch upon. Even admitting the correctness of such statement, whether or not such payment would be a hardship upon him, would seem also to depend entirely upon the use he had for the money. Neither do you attempt to shew (what it would have been very important to have done) that, whether at an interest of 300*l.* or any other sum, the 350*l.* and *all interest*, would not be repaid to the society in about ten years. If it were so, and the man then had his house, even though he paid 10*l.* a year more to the society, than he had been previously paying for rent, he would probably be well enough satisfied with his bargain, be the gain to the society what it might.

"Mr. Bowen is of course here treated as a secondary person. His pamphlet may or may not be capable of entire refutation; but so far as can be judged of it from your extracts, it is not of that temperate and impartial character likely to be very useful, and it would probably without your notice have done little good or harm: but you are responsible for the use or abuse of very different kind of power; and it certainly does appear to me, that in the prominent notice you have taken of Bowen's 'Bubble,' you have not exercised your usual discrimination and good judgment. You have, in a leading article, advanced the weight of your powerful influence in support of statements, which, to say the least, are, as you have printed them, extremely vague and unsatisfactory, and, thereupon, passed a sweeping sentence of condemnation on these societies. The injustice is evident. The sentence will go forth to thousands, who, resting satisfied with the authority, will probably never trouble themselves about its justice.

"In concluding, allow me, Sir, to ask you one question. What on earth do you suppose Mr. Bowen could have been thinking of when he penned the grandiloquent flourish with which you conclude your notice? As well as having, as you state, 'an indubitable nose for a job,' he must also be endowed with a vigorousness and play of fancy and imagination, the flights of which, to mere ordinary

men of business, like the bulk of those who compose these societies, will, I should think, be totally incomprehensible. It seems to me to be perfectly bewildering to conceive what in the world there can be 'so detestable in principle,' 'so degrading to our common nature,' in men adopting, for an absolutely necessary purpose, the same means as are daily used at every sale by auction to ascertain who is disposed to give the most for something that is to be sold! What other means could, in fact, be had recourse to, where there are several men equally desirous of purchasing, and differently circumstanced with regard to what sum it will suit their purpose to bid. There is no 'encouraging the needy to bid one against another.' They are not needy at all! They have a reversionary interest in 120*l.*, due ten years hence, and they want its present value, because they have an opportunity of using it to immediate advantage. I suppose it is not contended that they ought to have it for nothing! If not, I should really like to know, when the matter is stripped of all this nonsense about 'pressing necessities inducing men to submit to ruinous loss from the recklessness of despair,' where exists the detestable principle, in half a dozen men voluntarily bidding for a sum of ready money, which they can only obtain on condition of having very sufficient security to invest it upon. As they must have this security they cannot be so very needy, and they mostly belong to a frugal class, opposed to recklessness of any kind.

The legislature of this country have, at one time or other, unfortunately, enacted laws, the advantage of which to the mass of the people is extremely questionable. When not actuated, however, by the selfish influence of powerful classes, the legislature cannot be fairly accused of deliberately making bad and corrupt laws. At all events I have still too much respect for the 'collective wisdom,' to give ready credence to the assertion, that under the specious guise of 'affording encouragement and protection to certain societies, called Building-Societies, established in different parts of the kingdom, principally amongst the industrious classes' (see 6 & 7 Will. 4, c. 33), our government has been coolly preparing a trap 'for transferring the little savings of the frugal poor into the pockets of ravenous capitalists.'

"I am, Sir, very respectfully,

"Your most obedient servant,

"A MEMBER OF THE METROPOLITAN BUILDING-SOCIETY."

In addition to the preceding letter the pamphlet contains some additional remarks, of which the following are a portion:—

"Not more than three or four months ago, a letter, purporting to be from Messrs. Wilkinson and Cobbold, was addressed to the *Times*, stating, amongst other facts, that 'it had been found by experience that the interest of the borrower (for whom the benefit of the act was chiefly designed) was more consulted by reducing the value of the share to 120*l.*, and his monthly payments to 10*l.*, and it had been also found and proved by experience that taking 50*l.* per share as the average premium paid for an immediate advance, ten years and a half would suffice to raise the full sum of 120*l.* per share,' and moreover offering 'to shew any person making the inquiry from fair motives, a series of calculations working out a society upon this hypothesis for ten years and a half, and demonstrating that at the expiration of that period the capitalist will receive 120*l.* for each share, and the borrower have his deeds returned without further payment,' and further offering to 'shew balance sheets of various societies demonstrating the statement in actual practice, and proving that where (as is the case in most of the London societies) the premiums paid average about 60*l.* per share, a shorter period than ten years will suffice.' Now, for any thing that appears to the contrary, Messrs. Wilkinson and Cobbold, members of the Incorporated Law Institution, London, are as good authority as John Bowen. They do not, it is true, draw any delusive comparisons, having more sound than sense, between Building-Societies and the National Debt, and, being practical men, their letter is very meagre of passages about 'necessitous men submitting to ruinous loss from the recklessness of despair;' but, such their letter appears to address itself very much to the *real*, the *actual* state of the case for all that."



## INSTITUTION OF CIVIL ENGINEERS.

ADDRESS OF THE PRESIDENT TO THE ANNUAL GENERAL MEETING—JANUARY, 1844.

The time has again arrived when I, with the other members of Council, have to surrender my trust into your hands, and to thank you for the manner in which you have, by your attendances and otherwise, supported me during the year.

I have to congratulate you on the accession to our ranks of several members, at the head of whom stands the name of the most exalted subject in these realms, the only honorary member elected during the last session; one who is not more distinguished by his rank than he is by his virtues, and by the manner in which he discharges the various duties which his high station has assigned to him. Our honorary member, Prince Albert, appears to possess extraordinary moral power, to have been enabled to steer a straight course without attaching himself to any political party, and yet attaching all parties to him. Not a whisper has, I believe, been uttered to his prejudice; and the way in which he is respected and beloved by all ranks proves that the love and attachment of the inhabitants of this country may be easily gained by those in exalted stations, when they really deserve it. That the Prince should encourage and countenance the sciences and arts, which have been mainly instrumental in raising this country to its present position, was to be expected from his taste and judgment; and, as it is probable this was his motive for acceding to our wishes and becoming a member, he has conferred a high compliment upon the Institution, which was enhanced by his honouring us with his company at the conversazione last year at my house.

The election of the Duke of Buccleuch, Hon. M. Inst. C.E., took place during the session of 1842. His Grace's splendid present, named in the Report of the Council, has been made during the last session. It is valuable, as proving the estimation in which his Grace holds this Institution, with the character of which he is so well acquainted. The same inference may be drawn from the present made by Mons. Legrand, our honorary member, as announced in the Report.

All those who knew the Institution in 1834-5 must remember the efficient and zealous offices of Captain Stoddart, who discharged, gratuitously, the duties of secretary for one session, and are probably aware that the same individual is the Colonel Stoddart whose sufferings at Bokhara have excited the sympathies of Europe, and to which we, who are his friends, and have profited by his exertions, cannot be indifferent. Dr. Woolf has been sent out by the united exertions of a few noblemen and gentlemen to ascertain whether Colonel Stoddart be yet living; and if so, to endeavour to rescue him. I felt it my duty to attend the public meeting, and to add my name to the list of subscribers. Captain Grover, the zealous chairman of the committee, has been in communication with the secretary of this Institution, and by applying to him, gentlemen desirous of subscribing to the expense of the mission have the opportunity of doing so. The last news respecting Colonel Stoddart strengthen the hope of his being still alive; and should he return to England, we may easily imagine his pleasure at finding that the members of a society for which he laboured actively, though but for a short period, had taken such an interest in his fate. The last letter I received from him was dated from Teheran, in 1837; the following extract from it may be found interesting:—

"The Shah takes a great interest in the Artesian wells; I brought out drawings of the tools, which I handed over to an engineer officer from Bengal serving here; the tools have been made very well, and the pipes are about to be made. Private individuals are also extremely anxious for the result of the first experiment, as, wherever water can be obtained, the soil becomes fertile, and the revenue accruing to its proprietor is proportionably increased.

"Ten miners, to work the iron-mines of Karadagh, are also come from England, but they are not yet paid their expenses out; and I fear, though iron is plentiful, and the price of it in the Tabuez market would be clearly reduced to one-third of its present rate, that the non-payment system of the government will

oblige the miners to retire, at a loss to themselves, from the undertaking. This is the only engineering news in the country."

The original communications that have been received are fewer than might have been expected, considering how many are due, the number of individuals who are unemployed, and the frequent applications and earnest representations that have been made.

Want of energy to make the trial, joined to the fear that it would be unsuccessful, is perhaps the principal operating cause of this, particularly with the graduates and young engineers, who thus allow their faculties to rust. If desirous of being employed upon a public work, or in an office, the applicant states that he can draw, measure, plan, and in fact do almost anything; he has been probably articulated to an engineer, and although two years may have elapsed since his pupillage expired, and he may not have had any employment, and although he has been some years a graduate, it too frequently happens that he has not sent in a paper, nor a description of any work; his excuse is, "that he was not sure what would be acceptable," or he had "thought of and commenced several subjects, none of which pleased him;" and it appears at last that he has not only never sent any paper to the Institution, but he has nothing of his own drawing or writing to shew. Such want of energy is more apt to cause sorrow than anger, but frequently gives rise to both. Let such individuals learn the effect of a contrary conduct from the experience of those who have usefully employed their minds, redeemed their engagement, and brought themselves into notice by drawings and papers presented to the Institution.

I am aware that all essayists, from Johnson downwards, have experienced and complained of the difficulty of choosing a subject. The printed list of subjects for Telford and Walker premiums is intended to aid in this choice; but if it is found deficient, I am sure that any further assistance will be given on application to our secretary.

There are many works either executed or in progress, in this country, of which the detail of the success, or still more of the failures (for the history of these points out the best way to avoid them), would be very important to have recorded, and there are plenty of young men, unfortunately not much occupied, who would benefit themselves, as well as the institution, by describing them; but yet the duty is omitted. Measuring and planning executed works, is the lesson next in point of importance to actually constructing them, for acquiring correct knowledge. As drawing from the living subject is the best study for the young artist, so inspection of works in progress and the practice of drawing and describing them correctly, is one of the most useful employments for the young engineer. By describing, I mean specifying and reporting at length on the nature, component parts, and quality of the work; which most essential part of an engineer's employment is, however, too frequently overlooked and undervalued by the younger members of the profession. If they consider what is necessary to enable them to direct the construction of works, they will perceive that the most correct drawing is but one of the means employed. The facility of describing, in language, a work and its various processes, is with some persons more difficult than the drawing; but it is essential to be learned, if the student in engineering ever looks forward, as he ought, to the higher grades of employment in the profession. The number of their future employers who can understand and appreciate drawings, however explanatory and detailed, they will find to be much less than of those who can comprehend a well-written description or report.

Let it not be understood, however, that I would recommend the study of the works of others exclusively, or even principally, after a certain degree of progress and experience. This is an error to be carefully guarded against, as in most cases mental rest is more agreeable than mental exertion. The effect of beginning by consulting authorities, and seeing what others have done, when a subject is proposed, is, by falling into their track we are contented to remain in it. The question whether there is another way probably never presents itself to us. If, instead of this, the first call were made upon our own powers of invention and

construction, we should probably find our labours rewarded beyond our previous expectations, by the satisfaction of seeing that the result of our thoughts had some sanction from authorities; or even where differences existed, or errors were apparent, we should better feel our own inferiority, as well as the nature of the error, and perceive therefore how they were in future to be avoided. If we would walk alone through the world, we should begin soon to avoid dependence upon the support of others. In what I have said, however, I would by no means countenance that professional confidence which is above being controlled and corrected by experience, which none of us are too old to learn from. The designing which is the result of our own mental exertion, and to which I have referred, is not to go far beyond the study or the confidential friend until it has been matured, compared with, and corrected, by what has been recommended and done by others.

I have been led into these remarks by an anxious desire that the institution should contain good accounts of executed works, that members of all classes should profit by the production of them, and that while they discharge their obligation, they should enable the Council to withdraw their names from the list of defaulters, which it must be the duty of the Council soon to lay before the meeting; and if what I have said shall tend to reduce the list, my object will have been attained.

To this short address, I hope I may be permitted to add my congratulations on the continued and accelerated march of civil engineering in this country. The practice of using steam expansively, first, I believe, explained by Watt, but for prudential reasons not much used by him, when there was so much to introduce; and then contrivances have tended, and are daily tending, to reduce the cost of steam power, and to increase the general utility of the steam-engine. For the two new purposes to which this wonderful machine has been applied within a quarter of a century, viz. travelling by land and by water, it has so triumphed beyond all calculation, that it is difficult to set reasonable bounds that it may not pass.

In 1825 the speed of steam-boats was estimated at from six to eight miles per hour; had an opinion then been given that within twenty years the speed would be more than doubled, notwithstanding the rapid ratio of increase of the resistance of the water, it would have been received as at least wild and improbable.

The increased velocity of the locomotive engine, not having the same law of resistance to keep it in check, has been still greater. The rate which was assumed in the reports for the Liverpool and Manchester Railway in the year 1829, was twelve miles per hour, the speed which has lately been calculated by me for the travelling of the Irish mails between London and Holyhead is thirty-six miles per hour; and, I believe, the present companies make no objection to it. It would not be just towards our former member Mr. Clegg, to omit stating that the Atmospheric Railway patents, Messrs. Clegg and Samuda, consider my calculation for the lower portion of the line (Chester to Holyhead) as too low, if their system be adopted. You are probably aware that two miles of Atmospheric Railway are laid down between Kingstown and Dalkey (Dublin), through the exertions of our zealous and enterprising associate Mr. Pim, and that carriages with loads of passengers are carried upon it daily, although it is not yet opened to the public. Having had occasion lately to visit Kingstown professionally, I witnessed with pleasure the performance of this ingenious invention; and without prognosticating as to the future, I may state that the results of the experiments are much superior to those with locomotive engines, at a corresponding early period of their introduction upon railways.

The interest of this session is likely to be increased by communications on the subject of the working of the Atmospheric Railway; which, whatever the ultimate results or extent of its application may be, cannot fail to be interesting to the philosopher and the engineer, as a new application of the wonderful laws of nature to the use of man.

The duties of the Publication-committee, and the reasons for the restriction of their labours, have been noticed in the report of the



Council. You are aware that the domestic affairs of the Institution are managed by the House and Finance Committee, who have also the task of examining and certifying all the accounts, and approving the payments that are made. The improvements in the rooms and in the general arrangements, as also in the lighting and ventilating of our theatre, will have convinced you that much time has been devoted to these labours, for which our thanks are justly due to these gentlemen, and particularly to Mr. James Simpson, whose attention continues to be conspicuously useful.

Before leaving the chair I must express my own opinion, in which I believe every member of the Institution who has had an opportunity of judging will agree, of the ability, zeal, and obliging manner, in which the important duties of secretary are discharged by Mr. Manby.

FEB. 20.—The President in the chair.

The discussion on the screw propeller, which was carried to so great a length at the last meeting, was resumed.

Mr. Grantham explained the construction of the propeller used on board the Liverpool Screw. It was formed of four arms, with broad shovel-ends, set at an angle of 45°; and from his account its action appeared to have been very satisfactory. He also spoke very high of Ericson's form of propeller as better adapted for large diameters than any other kind. This statement was confirmed by Mr. Braithwaite, who promised, at a future meeting, to give the results obtained on board the Princeton steamer, United States of America. Several other members addressed the meeting, and almost all in favour of the principle of screw-propelling, which appears now to have assumed a practically useful shape.

The discussion upon the valves of pumps was also resumed. The resemblance between the disc valve of Palmer and Perkins, and that invented by Belidor was examined, and the general feeling appeared to be that Messrs. Palmer and Perkins' valve would be very useful in large pumps for mines through which much sand or chips passed. The general question of valves with large openings, with their influence on the working of the deep mines of Cornwall and other places, was noticed.

The discussion occupied so much time that no papers could be read; those therefore which had been appointed for the 20th were announced for reading on the 27th instant, viz.

No. 698, "Description of a bridge across the river Shannon at Portumna," by T. Rhodes, M. Inst. C. E.

No. 658, "Description of the bridge over the river Whitadder at Allanton," by J. T. Syme.

No. 625, "Description of a cast and wrought iron trussed girder for bridges, with a series of experiments on their strength," by F. Nash.

#### ELECTRO-METALLURGY.

AN article appears in the *Mechanics' Magazine* of the 3rd instant, being a "Contribution towards a History of Electro-Metallurgy," by Henry Dircks, Esq., the author of the essay upon "Improvements connected with Gilding," which appeared in our last number, and who gives in succession the names of Mr. Henry Bessemer, Mr. C. J. Jordan, Mr. John Dancer, and lastly, Mr. Thomas Spencer, of Liverpool, who for about five years has enjoyed the distinguished honour of being considered the discoverer, and therefore, "the father of electro-metallurgy." The introductory portion of Mr. Dircks's very able *exposé* of this strangely successful piece of artifice, explains in a few words the circumstance which led to its composition. He observes, that in looking over the *Mechanics' Magazine* for several years past, his attention was drawn to Vol. 36, for 1842, in which appears a paper entitled "Books on Electro-Metallurgy" (a review of the works of Mr. G. Shaw and Mr. A. Smee on that subject), and in which critique the claims of Mr. T. Spencer to priority of invention are strongly advocated. He then proceeds to remark, that the earliest published account of the manipulation requisite for obtaining casts by galvanic action is contained in the letter of a Mr. C. J. Jordan, dated May 22, 1839, and published in the *Mechanics' Magazine* for June 8, 1839. Both Mr. Jordan and

Mr. Spencer describe Dr. Golding Bird's small galvanic apparatus; and it appears, that in the processes employed by each there is such similarity, that it would not be saying too much to assert, that if Mr. Spencer's paper had never been published, Mr. Jordan's letter would have quite as fully supplied us with all the useful information. Mr. Jordan's letter is then given, and will be read with considerable interest by electricians, and all who are conversant with the increasingly useful art of electrography.

Mr. Dircks, however, has not stopped here; he has given verbatim a letter from Mr. John Dancer (formerly of Liverpool, now of Manchester), which clearly places Mr. Spencer in the light of borrowing assistance, which he has never acknowledged. The modest, unassuming manner in which Mr. Dancer makes his statements, in the letter from him to Mr. Dircks, dated June 17, 1840, is very praiseworthy. He concludes that—"The whole of the matter may be summed up thus: I never did, nor ever wished to, take credit for Mr. Spencer's experiments; but if he had, as he now states, produced compact precipitated copper at the time when I shewed him the piece in question, he was wrong in allowing me to suppose otherwise; and that, whether he had or not, the experiments that I tried originated with me in the manner described—and this is all I have ever desired to maintain."

The case of Mr. Thomas Spencer is briefly this:—He read his paper, "On Voltaic Electricity applied to the purpose of Working in Metal," before the Liverpool Polytechnic Society, on the 12th of September, 1839. In recapitulating what he has advanced, Mr. Dircks notices, that Mr. Spencer received his first promptings at the Liverpool meeting of the British Association, assisted by Dr. Bird's ingenious galvanic apparatus—that the scientific journals were discussing applications of electricity—that the appearance of Mr. Jordan's letter and intercourse with Mr. Dancer altogether afforded Mr. Spencer broad and sufficient hints. In a note appended to the article written by Mr. Dircks, the editor acknowledges the cogency of the statements brought forward, and expresses his surprise that not only himself, but likewise Mr. Noad (the author of an excellent work on electricity), should have fallen into and perpetuated the same error of supporting the untenable claims of Mr. Spencer; still more, however, is it a matter of surprise to him, that neither Mr. Jordan, nor any of his friends, should have before now stepped forward "to vindicate his claims to the promulgation of an art which justly entitles him to take a high place amongst the benefactors of his age and country."

CLEANSING THE STREETS.—The powers of an engine for cleansing the streets, for which a patent has been obtained, and of which all the particulars are to be learnt at No. 3, Trafalgar-square, were tested yesterday in the streets in the neighbourhood of Guildhall, in the presence of many gentlemen who were invited to attend, and amongst whom were some of the Commissioners of Sewers. The engine could scarcely be said to have had a fair trial, for the streets were not sufficiently muddy to shew what might be done by it. As far as the experiment went, it was most satisfactory; it cleared away the dirt and mud with rapidity and certainty, and surpassed all inventions of the same sort which we have hitherto witnessed. It unites simplicity, strength, continuity of work, and cheapness of construction, and is the best thing of the sort hitherto produced. An extract from the prospectus, published by the patentee, will explain its properties and its merits:—"The engine is simply and effectively constructed; is enclosed in a case open only at the bottom part of it, to enable the brushes to come in contact with the street or road, so that neither dust nor dirt can escape from it. The mud or dirt is discharged into a receiving truck travelling in front of the engine; the truck when filled is easily detached and drawn away to the laystall or shute; another empty truck is instantly attached to the engine, which proceeds on its work without the delay of taking it from the street with the receiver when it requires to be emptied; thus the engine remains constantly at its work. This is a distinguished and most important feature of this engine."

#### Literature.

1. *Architectural Illustrations of Kettering Church, Northamptonshire. The Drawings and Descriptions by Robert William Billings; the Engravings by George Winter.* London: T. and W. Boone, 29, New Bond-street, for R. W. Billings, Manor House, Kentish Town, and G. Winter, 5, Frederick-place, Gray's Inn-road; 1843. Medium 4to. 20 plates, 16 pp.
2. *The Architectural Antiquities of the County of Durham. From Drawings by Robert William Billings; the Engravings by J. H. Le Keux, and George Winter.* London: T. and W. Boone, for George Andrew, Saddler-street, Durham, R. W. Billings, Manor House, Kentish Town, and George Winter, 5, Frederick-place, Gray's Inn-road. Parts 1 and 2, containing 4 plates each. Medium 4to.

#### [FIRST NOTICE.]

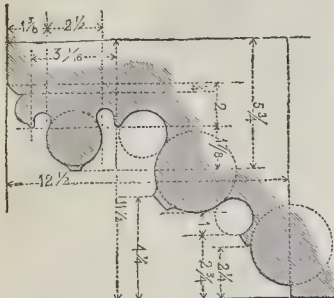
It is not our intention to go upon the present occasion into a review of these works further than to recommend them for their usefulness, as we intend reserving our critical remarks till we have space to enlarge in a detailed manner upon every statement and graphic representation contained in them. We shall, therefore, confine ourselves this week within very narrow limits, for the purpose rather of stating our own intentions than of developing the merits of Mr. Billings and of his engravers.

The work on Kettering church being very beautifully executed, is, on that account, and from its number of illustrations, extremely useful, though issued at a low price; but in order to obtain the extended support of the public, and by the circulation of a more numerous edition obtain remuneration for the inevitable trouble and outlay, Mr. Billings projected the publication of a lower-priced series of works, and in pursuance of that project has put forth two parts of the Durham Architectural Antiquities; but the lowness of charge for this latter work, and of those which he proposes to publish as companions to it, has, of necessity, induced and compelled the confining of the illustrations to pictorial representations of the subjects delineated; which mode of treatment, though suited to the general public taste, is, however, insufficient for the man of practical architecture. Feeling deeply the loss which would ensue from the lapse of any opportunity which the visitings of Mr. Billings (who is *l'incarnant Delineator of Architecturas Subjects to the Freemasons of the Church*) afford for the collection of the exquisite details of Gothic architecture which lie, many of them buried as it were, in obscure country villages, we have given him unlimited orders to collect, in his professional journeyings, accurate drawings of windows, doors, capitals, bases, crockets, finials, bosses, panels, fonts, and other details, which he has undertaken himself to draw upon the wood, so as to insure authenticity in every desirable particular.

In order to shew the manner in which architectural subjects will in future be treated in THE BUILDER, Mr. Billings has delineated for us on the wood, the eastern window of the chancel of Kettering church, which, though simple in form, is of peculiarly fine and lofty proportions; qualities rendering it a subject much more proper for imitation than the later "Decorated" examples, which are so often low and crouching in general shape, and dry and mean in the profiles of their mouldings; whereas the example in question, which we here give, preserves the graceful loftiness of the "Early English" with an union of the geometrical animus, with lines flowing alike in the tracery and in every moulding of the work. The circles in the window-head are without foliation, sub-divisions, and cusps; and yet so admirably are richness and simplicity united in the design, that no want is apparent on that account. We have desired Mr. Billings, in this, and in all the other drawings of windows which he may send us, to add a plan, or horizontal section, and also a vertical section through the centre of the work, in order to shew the peculiar construction of the inner arch, which, being level at its crown, and not flung or splayed, naturally fits upon and meets the window-jambs with an inclined line, which may be seen in this section of our subject running from the inner arris-moulds up to the head-tracery; and we have further desired him to afford us an elevation of the inner



arch, wherever any peculiar development or construction of the work ought to be shewn. In the elevation are marked the centres from which the curvatures of the work are struck. Mr. Billings has also given us an enlarged section or plan of the external parts of the window-jamb; but we should have been better



*External Mouldings of the Window-jamb.*

pleased if the same draught had contained also the inner mouldings of the jamb, including those peculiar ones at its arris : we should have liked the whole section of the mullion and the profiles of the different parts of the tracery-moulds, and also the section of the sill within and without the building, so that a workman might execute every part of the masonry correctly, without a doubt, and without a blunder.

The label, a section of which we here give, is designed without the elegance of spirit which dictated the rest of the invention: its abundance of small mouldings renders it illegible to the eye, while its general shape does not follow the beauty usually so perspicuous in the profiles of examples of Pointed Architecture.

ture. We give it here rather for avoidance than imitation. When the spirit of Pointed Architecture reanimates the science in modern times masonically and corporeally, mere timid imitation will be exploded, the errors of former works will be corrected with the same anxiety as it is not only



*Label moulding.*

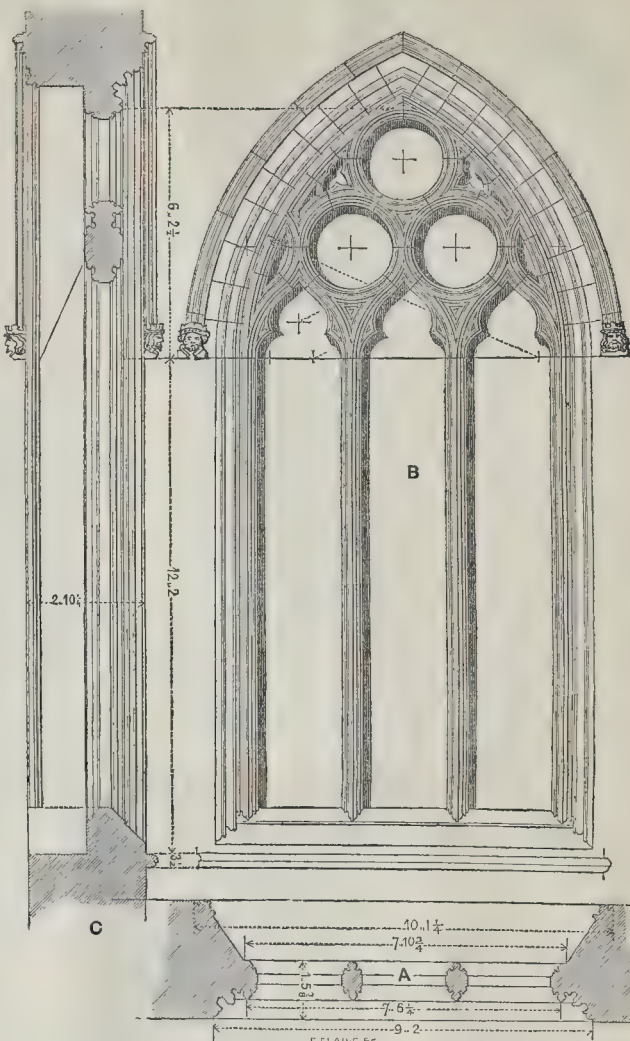
but evident and patent, the freemasons ever strove to act in the olden times, constantly aiming (while architecture was ordained to advance towards its zenith) to improve upon former endeavours.

In future draughts from buildings we should also like represented to a scale suitable for the carver any bosses or animal springers to the labels; and when the styles of such ornaments come to be properly understood, it will be found that often such enrichments, which add great interest to a building, may be executed at little if any expense beyond that which would be requisite for forming merely mitred knees to the mouldings.

We make these observations in order as well to shew our own views, and our intentions and directions with regard to the delineations in future proposed to be inserted by us, as to afford our correspondents a just idea of how their kind contributions in furtherance of motives so good may be doubly appreciated and become ten-fold more useful to the practically architectural, and may thence work a revolution by which every person concerned in the use and patronage of pure architecture may derive benefit and pleasure.

We now proceed to say wherein our present definitions of the Kettering window fall short of our ideal of just requirement. We deem them imperfect, from not shewing exactly the jointing of the masonry of the jambs mullions and sill; we should wish the insertion of the saddle-bars and stanchions, and the pattern of the glazing; and, further, if there be any settlements or breaches in the work, we should

CHANCEL WINDOW OF KETTERING CHURCH.



### A. Plan of the Window.

### B. External Elevation of the Window.

**C. Vertical Section through the centre of the Window.**

desire to have them distinctly shewn, in order that judgment may be formed of the causes of such failure, and thence philosophical deductions be made for their avoidance in a shrewd modern reproduction of the work. To these we desire to have added the date of the subject as far as can be authenticated, as well by documents as by the taste of its design; also the nature of the materials used in the work, how they have been affected by time, and whether they have been repaired by cements or otherwise, or if they have been renewed; whether the superincumbent weight has not been, by the great head-arch, duly discharged from the tracery and mullions. We desire to have an account of what derangement and fractures have occurred in the mullions and tracery; also what effect has been produced on the masonry by the iron-work fixed therein.

The mode of inserting the dimensions upon the drawings we find imperfect, inasmuch as their values are not given by setting over them "*Feet, Inches*" or "*ft., ins.*" or the marks  $\text{'}^{\circ}$  and  $\text{'}$ ; they do not, therefore, convey definitely their meaning, which has to be only implied from the supposition that they cannot mean any thing else than the true one. This is not sufficient; they should be so plainly indicated that a youth, an amateur, or any foreigner not well acquainted with the customary measures of English workmen, may acquire their meaning without any extraneous questioning. We here add a scale which we have made for the general elevation plan and section of the window, which was deficient in the drawings; and we at the same time beg to say this exhibits the mode in which we wish scales to be made, written to, and figured.



We shall take an early opportunity of shewing the Free-masonic mode in which we desire to receive from our correspondents information and delineations of any stained glass which they may meet with in ancient windows, or other distinctive marks of colour in mosaics and paintings, which in a spirit friendly to the

cause of genuine architecture they may desire  
to impart.





## COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.

TO THE EDITOR OF THE BUILDER.

SIR,—I beg to inclose to you a few suggestions for the formation of an architectural vocabulary or glossary, a branch of architectural literature which is, perhaps, in a state more imperfect than any other.

I am, Sir, your humble servant,

G. R. F.

**ABACUS.**—This word is thus defined by Mr. Gwilt in the glossary of terms in his admirable *Encyclopædia of Architecture*:—"Abacus (Gr. *αβάξ*, a slab). The upper member of the capital of a column, and serving as a crowning both to the capital and to the whole column. It is otherwise defined by some as a square table, list, or plinth, in the upper part of the capitals of columns, especially of those of the Corinthian order, serving instead of a drip or corona to the capital, and supporting the nether face of the architrave, and the whole trabeation. In the Tuscan, Doric, and ancient Ionic orders, it is a flat square member, well enough resembling the original title, whence it is called by the French *tailloir*, that is, a trencher, and by the Italians *credenza*. In the richer orders it parts with its original form, the four sides or faces of it being arched or cut inwards, and ornamented in the middle of each face with a rose or other flower, a fish's tail, &c.; and in the Corinthian and Composite orders it is composed of an ovolo, a fillet, and a cavetto. The word is used by Scamozzi to signify a concave moulding in the capital of the Tuscan pedestal." (p. 885.)

We find the abacus in its simplest form in Egyptian architecture, where it is sometimes seen as a simple cube of stone intervening between the column and the architrave above, in fact, it is the capital itself. Of this, which would seem to be the earliest form of the abacus, two specimens are given by Mr. Gwilt in his edition of Chambers's *Architecture*, both communicated by Mr. C. Barry: one of these is here introduced.



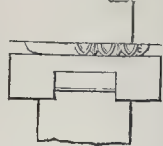
The next in order appears to be that form of abacus wherein the same square tablet being placed above the bundle of reeds, produces by its pressure that swelling out of the head of the shaft from which it is not impossible that the Greeks derived a hint for the moulding called the echinus; for examples of this kind the reader is referred to page 449 of *THE BUILDER* (No. 37). We generally find that the over-hanging abacus is used in Egyptian columns where the capital has a bulbous or cushion shape, but where the capital partakes of the vase or bell shape, and is flowered, the abacus is found to recede. (See also p. 483 of *THE BUILDER*.) In the Indian early architecture of the cavern temples, the abacus much resembles in its massive overhanging character that of Egyptian capitals.

In the Grecian Doric we behold the abacus in its simplest and most beautiful form, consisting of a quadrilateral figure, which, contrasting favourably with the circular shape of the column below, seems to form an admirable bed for the entablature above, whilst it is connected with the shaft by the graceful outline of the echinus. It is sometimes found with a very remarkable projection beyond the lower diameter, which is considered as an indication of the antiquity of the buildings in which it is so found, as at Corinth, Paestum, Eggesta, &c.

Those writers who discover for every part of Greek architecture, a corresponding prototype in timber construction, derive the abacus from the intervention of a cube of wood between

the architrave and the sustaining shaft, so placed to protect by its overhanging the column, and to afford a broader bed for the entablature to rest upon. But this doctrine can hardly apply to Egyptian architecture, unless that can be proved throughout to be derived from an imitation of the construction of timber houses.

In Ionic and Corinthian capitals, the abacus, losing its plain and massive character so suitable to the simplicity of the Doric order, becomes in a degree assimilated to the greater richness of the two later orders, by being moulded and sometimes carved in imitation mostly of the mouldings which are found in members of the entablature belonging to the same example; thus in the abacus of the Ionic capitals in the Temple of Minerva-Polias, there is a repetition of the egg-and-tongue enrichment found above the corona of the cornice, whilst in



many of the Corinthian examples at Rome the abacus is either carved with the egg-and-tongue or egg-and-anchor ornament, or cut into foliage of various designs, having in the centre of each of its incurved

sides a flower or other enrichment. The reputed temples of Jupiter Stator and Jupiter Tonans afford rich examples of this kind.

In the Doric and Corinthian orders, the abacus is that member of the capital which has the greatest projection, but in the Ionic, the volutes of necessity project beyond it, consequently the abacus recedes, bearing therefore, in this respect, a resemblance to its position in those Egyptian capitals wherein heads of Isis are introduced, and which have been considered by some writers to furnish the origin of the Ionic capital. In their application of the abacus we perceive the admirable knowledge of effect possessed by the Greeks; in each case usefulness is joined to beauty. In the Doric, the ponderous form of the abacus is evidently best fitted for the heavy weight above, and affords a shelter to the shaft below it; this projection and heaviness would in the Ionic capital be fatal to the effect of the volutes, whilst in the Corinthian capital the abacus, by its concave form, harmonizes with the outline of the vase, and the horns



serve to protect the graceful and delicate volutes below. In some Corinthian examples the horns of the abacus terminate in a sharp point, as in the Temple of Vesta, at Rome; in others, and most frequently so, the horns are blunted, the angles being taken off at a right-angle with the diagonal of the square of the capital, that is at an angle of 45° from the front of the abacus. In the



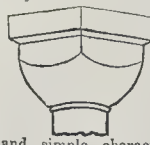
Grecian examples of the Ionic, and in the Roman one of the Temple of Fortuna Virilis, where the columns at the angles of porticos have their outer volutes turned diagonally, so as (instead of the ordinary cushion pillow or drum on one side) to present externally the same appearance on each of the two sides meeting together at the same angle of the building, the abacus is partially curved like that of the Corinthian order, but only on the outer angle, the rest being square, as in the Doric. In the Roman Doric order (as in the Theatre of Marcellus) the square abacus of the Greeks is retained, but surmounted by a cyma-reversa and fillet, and this practice, so subversive of the simplicity of the original, is followed by many of the modern school.



The Tuscan abacus consists of a fillet, cavetto, and band, according to Vignola and Chambers. Describing a Corinthian capital, Vitruvius says, "The breadth of the abacus is so regulated that its diagonal from angle to angle may be twice as much as the height of the capital, for this gives a proper dimension to each of its faces. The fronts of the abacus are bowed inwardly from its extreme angles a ninth part of its breadth; the thickness

of the abacus is the seventh part of the height of the capital." This description is found to agree very nearly with the capital of the Pantheon at Rome. The practice of modern days, of sometimes omitting the abacus altogether, cannot be too strongly reprobated.

The abacus is found as a columnar crowning member in every period or style of Gothic architecture. Mr. Britton's definition is as follows:—"In Christian architecture, the abaci form the bases of arches, and in shape and ornament are greatly diversified. Mr. Rickman thinks that the square abacus is a sure guide to distinguish the Norman from what he calls the early English (p. 55), but several examples of Norman buildings may be pointed out where the abaci are circular and octangular." In buildings which have been considered to belong to the Anglo-Saxon period, arches frequently spring from an impost which consists of a plain abacus, sometimes with its under edge chamfered. In the Norman and later styles the abacus is the crowning portion of the capitals of columns or piers, and it is found in many varieties of shape, as square, multangular, and circular, all of which, but more usually the first, may be seen in Norman examples; the following is a very common form. In the later styles, the abaci usually follow the plans of the columns, whether clustered, circular, or multangular. In the Norman style we see, in its square

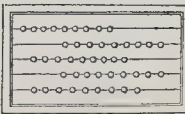


and simple character, a close resemblance to the Grecian and Roman Doric abacus; it is also found cut into fillets. In the early English, Decorated, and Perpendicular styles, the abacus consists of many mouldings, such as quarter-rounds, with deep hollows between ogees and inverted ovolos, and numerous fillets; the variety, in fact, is almost infinite.

Besides the strictly architectural sense in which we have just explained, in a very imperfect manner, the meaning of this word among the ancients, it signified also a *sideboard*, in which sense it appears from Livy and Sallust to have been borrowed by the Romans from the Asiatic Greeks, and to have been used for holding vases and other vessels necessary for a banquet. From the same authors we learn that the abacus thus applied was sometimes made of the most rare and precious woods, covered with gold and inlaid with ivory. From remains found at Pompeii and Herculaneum, the abacus in houses of moderate size was no more than a marble slab or table, without feet, attached to the wall, and capable of being let down after the service, in fact, it was what we should term a hanging-flap. To such a side-board Horace alludes when he says

"Lapis albus—pocula cum ciatho duo sustinet"

(that a white stone supported two cups with a cyanthus). Juvenal, in describing the abacus of the poor poet Codrus, says, that it was ornamented with six little water-ewers or pitchers, beneath it a small cantharus, and a reclining figure of Chiron. At Pompeii was found a slab (abacus), above which, as over a modern dresser, are shelves to hold plates, dishes, &c. Among mathematicians the abacus signified a little table or board, rubbed with wax and strewed over with dust or sand, on which they drew their schemes and figures; in this sense the word seems to be formed from the Phœnician *abak*, dust.\* The abacus, or counting-board of the Greeks, was an oblong frame, divided by several brass wires, stretched parallel to each other, and mounted with an equal number of little ivory balls like the beads of a necklace, by means of which all kinds of calculations were easily performed. The ancient Romans had, and the Chinese now have, similar apparatus for reckoning with: and at the present day the abacus of the ancients is made an useful toy whereby children



are taught to reckon, and may be found in every toy-shop in London.

\* אבן, or perhaps from אבן, finger, and אבן, oblong; the idea may arise from an oblong finger-board, which an abacus of the kind indeed is.



## THE NEW ROYAL EXCHANGE.

THE following letter, in reference to the proposed improvements at the east end of the building, appeared in the *Times* a few days since:—

"Sir,—I rejoice to perceive, by the report of the proceedings of the Court of Common Council, that the intention of improving the site of ground abutting eastward on the New Royal Exchange has not been totally abandoned.

"It does appear somewhat marvellous that disinterested persons can be found willing to advocate the propriety of keeping up the comparatively few remaining houses between the new building and Finch-lane. By slow, but sure degrees, some of those ancient, but unsightly excrescences, the 'middle-rows' of London, have ceased to exist; but, as if their demolition had been cause of regret, certain 'men of taste' have stepped forward to renew, or rather perpetuate, the deformity.

"The plan I would suggest is, that the city should not only purchase the houses alluded to, but that they should also become proprietors of the houses on the east side of Finch-lane.

"I would then form a frontage of houses extending over a portion or the whole of Finch-lane. This latter purchase would most amply repay the outlay; for the new street would unquestionably become more valuable than any other in the city of London. An archway entrance into this new line of houses might be formed towards Merchant Tailors'-hall, and a good view of the Hall of Commerce obtained by carrying the frontage of the new street in an oblique direction.

"With respect to the value of the buildings proposed to be removed, it is notorious that no inconsiderable portion of them were purchased for 'an old song' some five or six years ago."

According to public notice, the extensive premises known as Bank-buildings, Thread-needle-street and Cornhill, lately occupied by the directors of the Sun Fire-office, Messrs. Ladbroke and Sons, the bankers, the Colonial Emigration-office, and Mr. Thomas, the bullion-dealer, were brought to the hammer by Messrs. Pullen and Son, auctioneers, of Fore-street, by direction of the City Board of Works, on Monday last, to make way for the improvements that are to be made in the vicinity of the Royal Exchange. For the previous week a palisade had been erected round the buildings, which had been marked out in lots. Long before the hour of sale hundreds of persons inspected the premises and the building-materials, which are of excellent quality, and brought good prices. The fixtures are very substantial, and will be disposed of during this week and next; after which this trapezoidal pile will be pulled down, and on its site will be erected the equestrian statue of the Duke of Wellington by the late celebrated Chantrey, which is now nearly ready to be placed before the grand western entrance to the new Royal Exchange.

## THE PRIZE CARTOONS.

SOME time since the prize cartoons were placed in the Suffolk-street gallery for the purpose of having reduced drawings made of them, in order to their being forthwith copied in lithography. Considerable progress has been made in the reduced representations of these highly meritorious works; and if the subject of the cartoons have by this time lost some of its novelty, we fancy that its interest will be revived by the inspection of the very clever reduced drawings made by the Messrs. Linnell, which are now exhibiting at the Suffolk-street Gallery along with the original cartoons. It is pleasing to compare these reduced copies with the originals, which are now hung in a light more calculated to display their best qualities than the feeble and dungeon-like glimmer in which they were exhibited at Westminster Hall. The copies already finished are those of

Caractacus led in Triumph, by Watts,  
The First Trial by Jury, by Cope,  
The Fight for the Beacon, by Townshend,  
St. Augustine and Ethelbert, by Horsley.  
Considerable progress has also been made in reducing the cartoon of Julius Cæsar, by Armitage, Una and the Satyrs, by Frost, and

Queen Eleanor, by Severn. It is intended, we hear, to sell the set of eleven plates for five guineas—a moderate price, considering the great care and labour which must, from first to last, necessarily be expended in their execution. It is said that the cartoons will be removed from Suffolk-street before the end of the present month, to make room for the pictures and statuary which will form the approaching exhibition there.

## BIOGRAPHICAL MEMOIRS.

MR. JOHN PENN, M. Inst. C.E., was born near Taunton, in Somersetshire, in the year 1770, and was apprenticed to a millwright at Bridgewater, whence he travelled to Bristol, and worked there as an operative. He soon became the foreman of an important work, when only twenty-two years of age, and was celebrated for his theoretical and practical knowledge of the forms of the teeth of wheels, which branch of construction was, at that period, only imperfectly understood by mechanics. He removed to London about the year 1793, and after working at and being a foreman in several works, he commenced business on his own account in 1801.

His attention was at first chiefly directed to the construction of flour-mills, in which he made many improvements, particularly in the substitution of metal for wood framing. In consequence of the injudicious proceedings of the Millwrights' Union, he was induced to oppose a determined resistance to their demands, and by the introduction of self-acting tools, and the instructions given by him to another class of workmen, the millwrights lost many of the privileges they had previously enjoyed.

The tread-mills for prisons were first constructed at Mr. Penn's works, and latterly he (in conjunction with his son) manufactured many marine engines, particularly those with oscillating cylinders.

Mr. Penn was well versed in general science: he was an amateur astronomer, and possessed some valuable instruments; much of his leisure time was devoted to horticultural pursuits, which led to several improvements in the methods of heating conservatories and forcing houses.

He died suddenly on the 6th June, 1843, in the 73rd year of his age, having enjoyed for many years the confidence and esteem of a large circle of friends.

MR. DAVID AHER, M. Inst. C.E., was born in the year 1780; he attained very early a proficiency in physical science, and at fifteen years of age commenced his studies as a civil engineer.

In 1803, he surveyed and superintended several of the works of the Grand Canal Company (Ireland), and subsequently directed the collieries in the County Kilkenny and Queen's County; an occupation for which he was well suited, from his knowledge of geology, a science at that time but little cultivated in Ireland. By his judicious direction of borings and other trials, discoveries were made which have proved very valuable to the neighbouring coal-proprietors. His inventions and improvements in mining and boring machinery (which have been generally adopted), are remarkable for the mechanical ingenuity displayed in them, for the simplicity of their construction, and for their practical utility.

In the years 1810, 1811, and 1812, he was engaged in making experiments and reports for the commissioners appointed by government to inquire into the nature and extent of the "Bogs in Ireland, and their capability of being made available for cultivation, or other purposes."

While engaged in the direction of the collieries, he laid out nearly all the new lines of road which have been made through the county Kilkenny and neighbourhood, and also the Great Leinster and Munster Railway, from Dublin to Cork, by Kilkenny, Clonmel, Cahir, &c.

In 1840 he met with some disappointments and losses, which weighed heavily on his mind, and were the principal cause of the illness which terminated his life. He died in the 62nd year of his age, respected for his high professional attainments and strict integrity of character, and regretted by all who knew him. —From the Report of the Institution of Civil Engineers.

## MONUMENT TO THE LATE THOMAS RICKMAN, F.S.A.

SOME of the friends of the late Mr. Rickman having proposed to subscribe for the erection of an appropriate monument over his grave, in St. George's church-yard, in Birmingham, it has been thought that many others might be willing to contribute to such an object, either from personal regard, or as a testimony of respect to the memory of one who laboured with so much zeal, industry, and success, in the revival of the true principles of Gothic architecture. A committee, consisting of the following members, has been formed, for the purpose of carrying the object of the subscribers into effect.

It is supposed that a sum not less than 250*l.* will be necessary to erect a fit and durable monument.

Subscriptions will be received by any members of the committee.

Lord Prudhoe, F.R.S., S.A.; Venerable Archdeacon Burney, D.D., F.R.S., S.A.; Rev. J. H. Spry, D.D., Rector of St. Mary-lebone, F.S.A.; Rev. W. Whewell, B.D., Master of Trinity College, Cambridge, F.R.S., S.A.; Rev. J. W. Whittaker, D.D., Vicar of Blackburn; Rev. J. Garbett, M.A., Rector of St. George's, Birmingham; Rev. James Raine, M.A., Vicar of Meldon, Librarian of Durham Cathedral; Rev. R. Hussey, B.D., Christ Church, Oxford; E. Blore, Esq., D.C.L., F.S.A., Manchester-square, London; George Barker, Esq., F.R.S., Birmingham; H. Petrie, Esq., F.S.A., Stockwell; W. Twopeny, Esq., Temple, London; J. J. Lightfoot, Esq., Tranmere Hall, Liverpool; T. Fulljames, Esq., Gloucester; R. C. Hussey, Esq., F.S.A., Birmingham.

Subscriptions will also be received at Bristol, by S. C. Fripp, Esq., Architect, Lower College-green; Mr. Strong, Bookseller, Clare-street.

Cambridge, Mr. Elliott Smith, Trinity-street; Messrs. Deighton, Booksellers; Mr. Stevenson, Bookseller.

London, Literary Gazette Office, Waterloo-street, Strand.

Oxford, Mr. J. H. Parker, Bookseller.

NAVY ESTIMATES FOR 1844-45.  
NEW WORKS, IMPROVEMENTS, AND REPAIRS  
IN THE DOCKYARDS.

THE most important of the estimates are those to be voted under this head, and which is on all hands admitted to be the most judicious and reasonable. The following are the new works in contemplation, and the sums of money to the commencement of which they are intended to be applied:—

At Devonport, a new steam basin, estimated cost 400,000*l.*, amount of money required for the ensuing year 30,000*l.* For new pier and entrance to the two docks, 10,000*l.*; for repairing the north jetty and dockyard-wall, 7,000*l.*—At Woolwich, a new dock, engine, and saw mills; estimated cost 86,200*l.*, amount required for the present year, 20,000*l.*; for additional buildings to steam-factory, 13,000*l.*; for a roof over a slip, 6,000*l.*; for new boundary-wall, &c., 3,000*l.*; to be provided in future estimates, 2,000*l.*—At Chatham, for re-constructing building-slips and sea-wall, the estimates are 102,000*l.*, of which 15,000*l.* are required for the ensuing year; for building metal mills and steam-engine and machinery for it, 13,600*l.*—At Pembroke, 25,795*l.* for various improvements.—At Deptford, 7,000*l.* for a new slip.

For the works commenced and in course of completion, the following large sums are required:—At Portsmouth, for the new steam basin, 30,000*l.*; 60,000*l.* in future estimates to complete it; for repairing sea-wall and building slips, and constructing three new building slips and roofs, 25,000*l.*; and for completion, 39,600*l.* in future.

For Plymouth breakwater, 15,000*l.*; and to be provided in future estimates, 120,000*l.* For the Marine Barracks at Woolwich, 15,000*l.*; and 48,000*l.* in future estimates; 4,000*l.* for machinery for building and fixing engines of steam-vessels. At Chatham, 4,000*l.* for clearing the mud in the harbour.

For the naval establishments abroad, at Malta, 13,000*l.* is required for the new dock, and 12,000*l.* in future; and 7,000*l.* for erecting a new bakery and machinery for grinding corn; and 1,694*l.* for store and wharf for coal-steamers.



## CHURCH-BUILDING INTELLIGENCE, &amp;c.

**All Saints, Maidstone.**—The work of restoration in this fine old structure is steadily progressing. Another arch, besides the elegant screen on the north side of the altar, has been denuded of its disfiguring whitewash. On this screen, on the whitewash being removed, were found traces of its having been splendidly embellished with gilding and painting, the pattern of which is sufficiently distinct to enable it to be restored.

**Eastwell.**—The Earl of Winchelsea has restored the parish church of Eastwell. The church is a very ancient one, and possesses some interesting historical associations. Amongst others it may be mentioned that the son of Richard, the Plantagenet, who was killed at the battle of Bosworth Field, was buried there.

**Brandeston Church.**—The President and Scholars of St. Mary Magdalen College, in Oxford, at a general meeting of the society on the 3rd inst., granted a donation of 40*l.* in aid of the restorations now in progress there, from designs by Mr. Blore.

It is with the most heartfelt gratification we record the splendid donation of 2,000*l.* by the Lord Bishop of Gloucester and Bristol, towards the erection of churches in his diocese, for the especial benefit of the poor.

Earl Powis has given notice of his intention to bring forward a motion for repealing the Act which authorizes the union of the sees of St. Asaph and Bangor. The University of Cambridge is about to petition for the same object.

**Establishment of Ecclesiastical Districts.**—There are about one hundred and fifty applications to the Ecclesiastical Commissioners for England, chiefly from the northern parishes, for the establishment and endowment of ecclesiastical districts under Sir Robert Peel's Act of last session; not one of which is to contain less, and many considerably more, than 2,000 souls. Taking the average (which may be safely done) at three thousand, here are proposals for at once providing direct, authoritative, independent, pastoral superintendence for a population of 450,000 souls.

## RAILWAY INTELLIGENCE.

**Railway at Elgin.**—There is a scheme at present in cogitation to establish a railway communication betwixt the new harbour at Stothfield Point and Elgin, and from the latter place to Rothes. In speaking of this undertaking, the *Elgin Courier* says—"When the proposal was made to form a company, with a capital of 20,000*l.*, for the purpose of building a new harbour at Stothfield Point, the idea was looked upon as monstrous and visionary, and the promoters were often told that, to raise such a capital in a poor remote district like this was impossible; and yet we have seen the harbour completed at an expense of 14,000*l.*, for which it yields a fair return, and now holds out every inducement to extend its advantages to the surrounding district. The surface of the county betwixt Elgin and Stothfield Point presents no natural obstacle to the construction of a nearly level railway; but simple as the matter looks to one who has only to examine a finished survey, with a previous intimate acquaintance with the ground, already have several important and undoubted improvements been suggested on the line as surveyed. From Elgin to Rothes the line shews itself through the remarkable glen lying midway. Nature has here provided an inlet to the rich and beautiful highland strath, along a course in which the summit level to be overcome does not exceed three hundred feet in six miles. From this short description of the course of the railway, taken in conjunction with the cheapness of labour here, the estimate of construction, at less than 3,000*l.* per mile, will, we feel assured, be admitted; and if so, will present a marked contrast to the enormous cost of railways in other places."

**The Sussex Railways.**—Bills are about to be introduced into Parliament to authorize the formation of two branches of the London and Brighton Railway, one an extension of the Shoreham line westward to Chichester, the other running from Brighton eastward to Hastings.

**Gravesend.**—A meeting of the Town Council took place on Tuesday last, the proceedings of which were one continued scene of confusion and contention. A motion for rescinding all that has been done for the purpose of uniting the interest of the rival piers was proposed, and after a warm discussion was carried; but it was then discovered to be informal, and was consequently withdrawn. The principal apple of discord now seems to be the proposed Rosherville railway, which naturally excites great alarm in the borough.

**Margate.**—The surveyor of the South-Eastern Railway Company has been sojourning in this town during the past week, and from his report it is understood that there is every probability of the railway from here to Ashford being completed in twelve months from the present time; operations will commence immediately the standing crops of the ensuing season are off the ground.

**Hawkhurst.**—On Monday last a public meeting was held at Hawkhurst, to receive the report of a committee appointed some time since to confer with the Rye and Hastings committee on the subject of a railroad to Staplehurst by Hawkhurst, instead of by Rye to Headcorn. Lord Beresford in the chair.

**Railway Signal.**—The directors of the railway from Breslau to Freyburg, in Silesia, have established in each of the carriages a signal, by which passengers, in case of necessity, may have the train stopped. This is done by hoisting a flag through an aperture in the roof, and this being perceived by a conductor, he orders the stoppage of the locomotive, and proceeds to inquire into the cause of the signal.

**French Railways.**—The second part of the works of the railroad from Rouen to Havre, between Barentin and Flamenville (about nine English miles) has been contracted for (says the *Journal de Chemins de Fer*) by Messrs. Mackenzie and Brassey, at the sum of 2,008,635*fr.*

## Law Intelligence.

## SMITH'S PATENT WIRE ROPE.

VICE-CHANCELLOR'S COURT, FEB. 10.  
(Before Sir James Wigram.)

**MATTHEWS v. SMITH.**—Mr. J. Russell and Mr. Willcock moved, on behalf of the defendant, that an injunction which had been granted in this case, restraining him from assigning, vending, or disposing of certain patents and leasehold premises of the partnership business of wire rope manufacturers (in which he, the plaintiff, had been engaged), and from removing the books of the firm from the premises, might be dissolved, or that the plaintiff might be committed for contempt. The case has been recently before the Court, when it appeared a bill had been filed by the defendant praying a dissolution of partnership. The plaintiff had also instituted a suit, the object of which was to obtain a declaration of the Court that the partnership was subsisting. An injunction was also prayed by the plaintiff, in the terms above mentioned, but requiring in addition that the defendant might be restrained from granting licenses to parties to vend the patent wire rope, and also for a receiver. With the latter part of the motion the Court had refused to interfere, and the suit as to the validity of the partnership is still pending. The ground upon which the motion was now made for dissolving the injunction, or for commitment, was, the insertion by the plaintiff of two advertisements, headed "Wire Rope Patent," and warning the public that the patent could not be parted with or disposed of, or any business thereunder granted, without Matthew's consent—and that all persons having any dealings with Mr. Smith in respect to this article, without the consent of the plaintiff, after such notification, will do so at their peril. It was contended, that the advertisements, referring as they did to the suit between the parties, were an interference with the order of the Court, and that, as their tendency was also to interfere with and ruin the business, the Court would interfere by acceding to the present motion. The advertisement was a misrepresentation of the order of the Court, and, as such, was cognizable by it.

Mr. Kenyon Parker and Mr. Grove opposed the motion, disclaiming, on the part of the plaintiff, any intention of giving offence to the Court, or any design to injure the defendant, or to ruin a business in which he had much interest, and from which he expected to realize a large sum. He had merely cautioned the public against dealing with his partner alone without his sanction.

His Honour suggested, that as the effect of another advertisement, simply recalling those complained of, might probably have an affirmative declaration that all parties might deal with Mr. Smith alone, it would perhaps be better that the counsel for the parties should agree upon the form of an advertisement, not only recalling what had been said, but also stating the nature of the suit pending, and what had been done on the motion. To this the counsel on both sides agreed; and leave was given to mention the case again, if necessary, on a future day.

[This case has been before the Court on three separate occasions, besides the one noted above.]

MONDAY, FEB. 12.

(Before Sir L. Shadwell.)

**RANGER v. THE GREAT WESTERN RAILWAY COMPANY.**—This cause was spoken to this morning as to finally settling the minutes of his Honour's decree, as delivered out by the registrar. After a lengthy and desultory discussion between the counsel,

His Honour made the following order,—viz. "Let the decree be drawn up according to the minutes issued by the registrar, except that they are to be prefaced by the following declaration:—Declare that for the general purposes of the decree the portion of the railway in the pleadings mentioned, described as No. 1 B extension, must be considered as included in the contract No. 1 B; and the line of railway substituted for the line in the contract No. 8 L, must be considered as included in the contract No. 8 L; also, that where the decree directs the plaintiff's 'bill' to stand dismissed, the word 'bills' is to be inserted; and that the costs are to be paid by the plaintiff to the defendants; and also the following direction, that the defendants (the company) upon reasonable notice, at all proper times and in a proper manner, permit the plaintiff, his solicitor or agent, to survey and inspect the line of railway, and the works thereon, included in the contracts 1 B and 2 B, and the line of railway described as 1 B extension, and the Reading line."

## DEOXIDATION OF METALS—CRAUFURD'S PATENT.

TUESDAY, FEB. 13.

(Before Sir L. Shadwell.)

**PATFESSON v. HOLLAND.**—This is a dispute between rival patentees of similar inventions for protecting iron and other metals from oxidation and corrosion, by means of a coating of zinc, or zinc and tin. The plaintiff's patent was originally granted in 1837, to Mr. W. H. Craufurd, and subsequently to the plaintiffs, who were formed into a company to carry it into operation. This invention appeared simply to consist in covering iron or certain other metals with a coating of zinc, by means of sal-ammoniac or muriatic acid, and sometimes superadding a covering of tin, but producing an electro-negative quality in the iron, which was said to resist the chemical action of the atmosphere. The defendant (who confessed in Court that his invention was communicated to Morewood, his original patentee, by one Peter Naylor, an American) first covered the iron with a fine coating of tin, and then added a coating of zinc, in a manner similar to the process of the plaintiffs. This invention, which was also protected by a patent, granted in 1841, was alleged by the plaintiffs to be in effect the same as theirs, with a mere colourable variation; and they now moved for an injunction to restrain the infringement. The defendant, by reference to the long known process of tinning, and the description in chemical books of the principle of resisting oxidation by a coating of metal, insisted that there was no validity in the plaintiffs' patent for a new invention, and, moreover, that there was no infringement. The only question was,



whether there was such a *prima facie* case of a valid patent in the plaintiffs, and an infringement by the defendants, as to justify the Court interfering by injunction, as it appeared to be admitted on both sides that the dispute must be ultimately settled on a trial at law.

The Vice-Chancellor said, the only question was, whether the Court ought to interfere by injunction, as it was manifest that the principle claimed by the plaintiffs' patent was known and published as long ago as 1807 (as appeared from Mr. Aikin's and Prof. Brande's works), and, therefore, that it was a very fit case for the opinion of a court of law. It was shewn that the plaintiffs' patent had not been brought into active use (or had been kept in abeyance, as it was termed) for many years; and though this was no reason why the Court should not interfere to protect the patent, yet the probable mischief that might arise from the sale of the defendants' was much diminished by this circumstance—and it might, on the other hand, be a great injury to the defendants now to interfere by injunction. He thought, therefore, the proper thing to do was, to make no order on the motion, but to direct the plaintiffs to bring an action to establish their patent, with liberty to either party to apply to the Court.

#### SHERIFF'S COURT.—FEB. 1. THE VALUE OF A LODGING-HOUSE.

The claimant, named Newton, landlord under an unexpired lease of fifteen years, of three lodging-houses in Buckenidge-street, St. Giles's, sought compensation at the hands of the Crown for injury done to his leasehold property and business. The claim set up amounted to 1,187*l.* The houses were held under lease at 60*l.* a-year; and it was shewn in evidence that, some time since, they were worth to the claimant 125*l.* a-year, on an improved rent of 65*l.* annually. Valuing the lease at ten years' purchase, he claimed 650*l.* In one of the houses he carried on the business of a chandler, at a clear profit of 150*l.* a-year, and taking it at a two years' purchase, he claimed 300*l.* The houses altogether contained about fifty beds, let chiefly to night lodgers, at 3*d.* a-head, or 6*d.* for a whole bed. After deducting the outgoings, the beds produced nearly 200*l.* a-year. There was but one servant to attend to the beds, thirty-six of which she made with her own hands every day, and for doing so, and washing the bed-clothes, and keeping the bed-rooms clean, in all the three houses, she received sixpence a day, out of which she had to feed and clothe herself. Several surveyors and auctioneers were examined, who estimated the claimant's leasehold interest at sums varying from 500*l.* to 600*l.*; the value of fixtures at from 40*l.* to 50*l.*; and the loss of business at 300*l.* The jury awarded claimant 627*l.*—namely, for leasehold interest 352*l.*, for fixtures and other damages 275*l.*

**IMPORTANT DECISION CONCERNING SCOTCH GLEBS.**—A case of considerable importance has recently been decided in the Sheriff-court of Fort William, involving the question whether the parish minister has a right to cut down the trees on his glebe. Several of the seceding clergymen in the Highlands, answering this question in the affirmative, laid the axe to the root of many a goodly tree, about the time of the Secession; among others, we noticed, at the time, the cases of Lochbroom and Kilmalie. The facts of the Kilmalie case are simply these—Mr. Davidson, late minister of that parish, maintained, in point of law, that as a minister he was entitled to cut down every tree on the glebe without control, up to the moment of this decision. The Sheriff-Substitute took a different view of the matter, on being appealed to by Lochiel and other heritors; and Mr. Davidson having appealed to the Sheriff-Depute of Argyll (Mr. Bruce), the decision has been affirmed against the claim of the minister.—*Inverness Courier.*

**HUNGERFORD AND LAMBETH SUSPENSION-BRIDGE.**—It was stated at the last half-yearly meeting of the company, that the bridge would be completed by Midsummer. It is contemplated to take a half-penny toll, that amount including the right to return.

The great fountain now in progress at Chatsworth is expected to play to a height of upwards of 200 feet.

#### ASSESSED TAXES CASES.

*Determined by the Judges on Appeal.*

May 18, 1841.

Windows—Dairy.

*Appellant, a farmer, who had been allowed for two glazed windows, one in a dairy and the other in a cheese-room, claimed to be entitled as for a third dairy window, partly wire and partly glass.—Held, not so entitled, such third not being made wholly of glass.*

At a meeting of commissioners, held 1st September, 1840, at Brailford, for hearing and determining appeals against the first assessments of land and assessed taxes, for the hundred of Appletree, for the year ending 5th April, 1841 (48 Geo. 3, c. 55, sch. (A), exemption case 4; 57 Geo. 3, c. 25, s. 5)—William Osborne, of Sutton-on-the-Hill, farmer, appealed against the assessment made upon him in respect of eighteen windows. It appeared that the appellant had been allowed two glazed windows, the one in a dairy and the other in a cheese-room, but he claimed to be exempt for a third dairy window, part wire and part glass, to which latter exemption the commissioners considered the party entitled; but Mr. Clarke, the surveyor, submitted that by the 4th section of 6 Geo. 4, c. 7, the appellant had received all the benefit which that Act allowed him, and that Case 4 of exemptions to 48 Geo. 3, c. 55, did not apply to the third window in dispute, as it should have been made "wholly without glass." The commissioners, however, allowed the appeal, and reduced the assessment to seventeen windows; and at the surveyor's request this statement of facts is given for the opinion of her Majesty's judges.

Richard Wilcockson, of Biggin, appealed at the same time in respect of eight windows. He is by trade a miller, and in the occupation of a corn-mill. He occupies land, milks five cows, and prayed exemption for two windows, both of glass, one in a dairy and the other in a cheese-room. The commissioners relieved the appellant, subject to a case demanded by the surveyor.

Charles Hazledine, of Bradley, also appeared and claimed to be exempt for two glazed dairy and cheese-room windows, included in the number, viz. fourteen, assessed in respect of his dwelling-house. The appellant is a licensed victualler, keeps seven cows, and occupies about twenty acres of land. The commissioners considering this to be a farm-house, and that the party derived his livelihood principally by farming, considered the appellant entitled to the exemption; but the surveyor contended that the house was clearly not a farm-house (*bona fide*) used for the purposes of husbandry only, to which description of houses glazed windows could only be allowed. The surveyor being therewith dissatisfied, demanded a case for the opinion of her Majesty's judges, which is hereby stated and signed accordingly.

Elisha Browne, of Shirstone, licensed victualler, also appealed against an assessment of thirteen windows, and claimed an exemption for two of them, being glazed windows, one in a dairy, and the other in a cheese-room, both distinct; from which the appellant was relieved by the commissioners, on the same terms and conditions as are set forth in the foregoing case; with which determination the surveyor was dissatisfied, and demanded a case.

Mary Wheeldon, of Mugginton, also appealed against an assessment upon her for ten windows. The appellant is a licensed victualler, keeps a dairy of cows, and occupies land accordingly; and on that ground claimed to have two windows, both of glass, allowed her for a dairy and cheese-room. The commissioners relieved the appellant, and the surveyor demanded a case.

Ann Bembridge, of Hulland Ward, also appealed against eight windows; she keeps a public-house, occupies land, milks six cows, and makes butter and cheese. The commissioners allowed the claim to exemption for two glazed windows to a dairy and cheese-room; but the surveyor submitted that this house was not a farm-house (*bona fide*) used for the purpose of husbandry only; that the appellant therefore was not entitled to the relief granted; and requested a case for the opinion of her

Majesty's judges, which is stated and signed accordingly.

Witness our hands to this and the several other preceding cases this 15th day of January, 1841.

E. S. CHANDOS POLE,  
REGD. C. POLE,  
ROGER COX, } Commissioners.

We are of opinion, that the determination of the commissioners is wrong.

J. PATERSON, J. WILLIAMS, W. H. MAULE,  
R. M. ROLFE.—*Justice of the Peace.*

#### Correspondence.

##### WARMING AND VENTILATING.

SIR,—My object in writing these remarks, is not so much to endeavour to bring you to coincide with my views, as to shew your readers that when I make assertions I am generally able to prove them, though it may be perhaps not satisfactorily.

To the promiscuous use of stoves in warming ordinary buildings and dwelling-houses I am decidedly opposed, and I am aware that in many cases common grates have been substituted for them, and often at great expense; but for the purpose of warming school-rooms they are almost invaluable. In such a case, I never knew of their being removed; on the contrary, I have heard of an instance in a school-room where the chimney-openings were bricked up, and stoves being used, have given great satisfaction. The use of the hot-water apparatus is so costly at first, and so expensive in operation, that economy precludes its use, or else their use would certainly be preferable; consequently there is no choice left to the architect but the use of stoves or of common grates. The principal objection raised by you to the use of stoves, seems to be the generation of noxious fumes; but I think you will allow that this will not hold good, by the utter impossibility of any being generated in a good stove, the flue of which passing under the floor would render leakage in that part of no consequence, and, by combining effective ventilation, and the precaution of supplying moisture to the air by means of water, that the bad effects, if any were generated by such a stove, would be entirely obviated. In some schools the only ventilation afforded is by the door and a few broken squares of glass; this, with a rusty ship's-stove in the centre of the school, generally red-hot, with a long iron pipe to the ceiling, every joint of which emits a deadly stream of gas, is a mode which ought to be opposed in every possible manner, and is certainly one which I should not advocate; but I contend that the numberless disadvantages attending the use of common grates, the ineffective manner in which they perform their duty, and their much greater expense, afford an argument for the use of stoves which ought not to be slightly passed over, and I am further strengthened in my opinion by actual observation and good authority.

I remain, yours, &c.

February 19, 1844.

C. D.

[We have small faith in the economy of any of these close stoves—descending flues are to be mostly deprecated; nearly all the great conflagrations which have occurred of late years in England have emanated from them. It little matters whether smoke or noxious vapour escape in a school-room or under it, since in either case it is sure to find its way into the school; but on the score of want of cleanliness they are most to be deprecated, as the havoc they cause that way renders them the most expensive means of warming which could be adopted. Much of the smoke from all stoves and chimneys comes from them when fresh coals are put upon the fire; and in all manner of pipe-stoves there is on every such occasion a great fume puffed from the stove; and if the flue descend, we know from close watching, often all the smoke for some time refuses to be drawn into the flue, unless, indeed, the whole front of the stove be shut in closely, so as to prevent its being vomited into the room. With regard to ventilation, we advise that not only should there be louvres and valves in the roof and ceiling, wherever practicable, but that air-flues should be carried up in the thickness of the walling, with valves within the building, and external gratings to prevent their being stopped by birds building nests within them; the external gratings may be made as fixed



quatrefoils and in other forms, and we have often so made them. We have lately observed in one of the beautiful alcoves in the north aisle of the nave of St. Paul's Cathedral, a curiously-horrible nondescript apparatus, half-Brobdingnagian-brazier, half-giant-German-stove, placed there as a pattern, we have been told, for twelve or more such things, to be set in the sacred edifice, under the vain idea of raising sensibly the temperature of the vast body of air within the fabric; but instead of doing which, will be sure to deface the marble statuary, to soot and grime the interior of the church, and certainly not bleach its exterior, by the vile iron-piping so tastefully thrust through the great window-glazing, to discharge the smoke all about the masonry, and rebound from every cornice and projection of the edifice. These demi-coal-cauldrons demi-fume-funks

seem, indeed, prepared for the festive occasion of the recovering the Gypsies into the bosom of the Church. Maintaining these censors and their bituminous pit-coal incense and of the consequently sooty windows, will only cost about twice as much as maintaining instead pictorial and historical Scripture subjects in stained glass throughout the fabric.—Ed.]

## VENTILATION.

Sir,—I know not which most superabound, cracked arches or cracked architects and builders. Could any man in his senses build a house with fire-places of the mode and dimensions which we usually see them, and at the same time carefully endeavour to make the rooms as air-tight as possible, except at those times when the doors or windows are open?

Heating and ventilating are one question—as well might we endeavour to sustain a man by giving him all victuals and no drink, as to give him all heat and no ventilation. Well may the head-ache arise from the operation of an Arnott's stove; because, unfortunately, even that most barbarous excuse for ventilation, the chimney, is closed, that the Arnott's stove may be affixed to the flue. But had the true principles of heating an apartment been borne in mind, then, before such a stove had been put into operation, pipes for the admission, and pipes for the emission, of air would have been constructed, and those pipes would have been connected with wire-gauze valves, &c., acting through a perforated cornice, skirting, &c., according to the local circumstances of the room; and thus a regulated admission of pure air, and a regulated emission of heated and deteriorated atmosphere, would be commanded, and Dr. Arnott's stove have a fair chance of its merits being judged. Colds would be less frequent, as wholesome warm air would be had without the catarrh-bringing draughts attendant upon the present unscientific chimneys.

The heating of a room is governed, in all cases, by the principle of fluids finding their level in accordance with their density or weight. As a certain portion becomes heated, it rises, and its place is supplied by that portion which is colder, and consequently heavier. This is carried on by the Arnott's stove, as we now see it employed; but, unfortunately, although the air of the room may become warmer, it also becomes impure, because the same air again and again circulates about the heated stove; in fact, we may say it becomes burnt, or arid, and unfit for human respiration. But were this mode of heating combined with a proper system of ventilation, and that ventilation capable of being regulated at pleasure, no such ill effects would arise.

The circulation of the water in the pipes, as used in the hot-water mode of heating, is exactly analogous in its operation to what we have just said of the atmosphere, and may be an useful comparison to those who may not have given this subject much consideration.

Should not the many thousands of cracked arches be so many thousand reasons why architects and builders should alter their mode of constructing such arches? And should not the many thousands of zinc pipes, iron pipes, and earthen pipes, now so awfully disfiguring the tops, alike of the mansion and the citizen's dwelling, be as so many thousand loud-sounding trumpets, calling with stentorian notes upon the learned men of the 19th century to alter their modes of heating apartments? *Finitis*

coronat opus. Save our houses from such crowns, such finials! J. J. EDWARDS.

P.S.—Should you see any utility in it, I would, at an early period, send you plans for the ventilation of apartments, schools, and school dormitories.

February 19, 1844.

[We should be happy to receive from our correspondent any good suggestions for the purpose.—Ed.]

## MEASURING ROUND TIMBER.

Sir,—You did me the favour of inserting my elucidation of the round timber measurement in your last number. I know several of your readers who do not now understand it, by their not being acquainted with algebraic notation. I used the following mechanical method to convince them how the discrepancy arises, which succeeded well. Judging by analogy, there are many others who read *THE BUILDER* for their improvement equally at a loss to understand it. I submit it to you, that if you think it worth a place in your journal, it may be inserted. Let the annexed figure with the dotted lines represent the stick of timber in question, the line *bb* its centre circumference; then imagine the butt-end of the tree to be slipped off from the centre, similar to a telescope, and leaving that part a cylinder, as represented by the lines *bc, bc*, whose diameter will be the diameter in the middle of the length of the tree, i. e. 3 feet 3 inches; then suppose the trunk so slipped off to be turned round, and the top of the tree inserted therein; the tree would then be represented by the lines *abd, dbc*.

Now, from the inspection of the figure, it is evident, to make the tree a perfect cylinder, as per "J.M.'s" measurement, the circumference of the middle circle must fit the circumference of the inner circle, representing the top of the tree, and the outer circle, *dd*, must exactly coincide with the middle circle; but the circumference of the top of the tree is 15708 feet, the circumference in the centre of the tree 102102 feet; I should, therefore, have 8-6394 feet left. The circumference of the large end is 18-8496 feet, which is an excess over the middle circle of 8-6394 feet also. Let the 102102 feet be measured from *d* to *d* on the outer circumference, and the 15708 feet measured from *e* to *f* on the middle circumference, then imagine the component parts of the wood giving way with each other, so that the lines *odf* and *ode* could be brought round exactly to coincide with each other on the line *ogh*; by cutting out the truncated pyramid *ddo*, we should then have a cylinder 80 feet long and 3 feet 3 inches in diameter. But then we have a pyramid left with a base 8-6394 feet by half the difference between the middle and large diameters of the tree, i. e. 1 foot 4½ in. and 40 feet high, which, supposing the tree to be measured as the cylinder is rejected, hence the whole tree is not measured. The solid contents of the tree, per cylindric method, is 663-663 feet as before, the solidity of the rejected pyramid  $\frac{8-6394 \times 1375}{3} \times 40 = 158-389$  feet,

which added to 663-663 feet = 822-052 feet, the solidity of the tree measured as the frustum of a cone, which proves the cylindric method does not measure the tree truly by nearly 4th part.

Now, by cutting the tree in two on the line *bb*, and measuring each part separately, and following the same steps in each, as we have done in the whole tree, we can easily see why the two parts together measure more than the tree in one; for, in this case, we shall have to reject two truncated pyramids, 20 feet high each, and whose two bases are each 4-3197 feet by 6-375 feet, and united solidities only 39-59725 feet; this, taken from the former pyramid, viz. 158-389 feet, leaves 118-79175 feet, the excess of the two parts, when measured

separately, more than the tree when measured in one.

Measurement in two parts {	Fact.
	672-007875
	110-446875
<hr/>	
	782-45475
Tree in one as before.....	663-663

Excess as before ..... 118-79175

Then the contents of the two cylinders added to the two pyramids will again equal the frustum of the cone,  $782-45475 + 39-59725 = 822-052$ , as before.

The tree, measured by the quarter-girth method, may be contrasted with the square pyramid in the same manner as I have done the cylinder with the frustum of the cone, when your correspondent "L." would instantly see the answer to his inquiries. Apologizing for occupying so much of your paper,

I remain, yours respectfully,

R. A. P. not R. F. P.

Newman-street, Feb. 19, 1844.

N.B. I beg to inform your well wisher, "J.W.P." he may obtain SYMPATHETIC HINGES for folding-doors, either with or without springs, at No. 4, Poland-street, Oxford-street. I used some from there last week, which act exceedingly well.

## USELESS TROUBLE TO CONTRACTORS.

Sir,—Seeing an advertisement in five different papers, and a notice of the same in your useful publication, of works to a turret and other works to be contracted for to be done at Preston Hospital, near Wellington, I took the trouble of going to examine the drawings, &c., expecting to find something worth looking after; but imagine my disappointment when I found the turret to be about 17 feet high, 7 feet in length on the plan, and 4 feet wide, and the other works—a privy! Now, whatever might be the motive for so extensively advertising such a concern, I do think that it is "too bad," to call tradesmen from their employment, and put them to considerable expense for so paltry an affair, which I believe altogether will not exceed 50*l.*; therefore I have taken the liberty to send this account thereof to you as the advocate of the rights of the trade, leaving you to make what use you think proper of the communication. I am, Sir, yours truly, P. Wolverhampton, February 20, 1844.

## DOUCEUR.

Sir,—Permit me to make an observation in your publication of this week in reference to an advertisement that appeared in your last week's number.

I find some person undertaking to offer a douceur of 4*l.* to any foreman of a good shop, if he will undertake to rob his master once per week for twelve months, viz., by giving the advertiser twelve months' work, at, of course, 30*s.* per week—about 10*s.* per week more than his real worth.

If there is a class of individuals creeping into employment in any shops on such disreputable terms, I hope the master-builders will have an eye to such business, and discharge any foreman who would be base enough to commit such an indirect robbery as that proposed in the advertisement of last week.

I am, Sir, your obedient servant,

February 20. A BUILDER'S FOREMAN.

## NEW CHAPELS AT THE NUNHEAD CEMETERY.

Sir,—I am desired to inform you that the artists who have competed for the chapels at the Nunhead Cemetery will be admitted to an inspection of all the designs on Monday and Tuesday next, Feb. 26 and 27, between the hours of 11 and 5 o'clock, at this office.

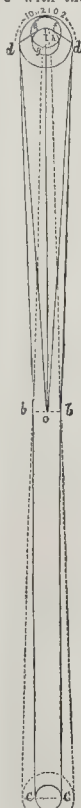
I am, Sir, your obedient servant,

C. BURLS, Jun., Sec.

London Cemetery Company, 15, Bridge-street, Blackfriars.

Sir,—Will any one of your numerous readers inform me why it is that a plumber receives more wages, and works fewer hours, than a joiner? I have been in practice some time as a surveyor, but never could discover any reason for it other than custom. The plumber's art does not, as appears to me, require more ability than the joiner's, and the joiner's tools are certainly much more expensive than those of the plumber. I am, Sir,

A CONSTANT READER AND SUBSCRIBER.





INIGO JONES.

SIR,—In page 255 of your last year's volume, there appears a view of a windmill stated to have been designed by Inigo Jones, and erected somewhere in Warwickshire, which so much resembles a building in America, imagined to be of remote and unknown antiquity, that my attention being called to the subject, I have endeavoured, but vainly, to find some account of it in such topographies and such lives of Inigo Jones, as I have by me. I therefore beg, through the medium of *THE BUILDER*, to ask for some further account of the locality of the object in question; the mouldings of which, notwithstanding the fine things said of them in the aforesaid page 255, are either very badly drawn, or by time have been degraded, or by injudicious renovation grossly corrupted.

I am, Sir, your humble servant,

AN ARCHAEOLOGIST.

London, Feb. 17, 1844.

SIR,—Will you be so kind as to inform me by means of your valuable paper, what is a good method of separating water from a clayey soil, in order to put a foundation of a building upon it; or of drying the soil in any way by means of lime, coal ashes, or some such substance? By so doing you will confer a favour on,

Your humble servant,

A SUBSCRIBER.

20, Berkeley-street, West, Hyde Park-square.

SIR,—Will you or any of your correspondents be kind enough to inform me where tools requisite for sinking or boring an artesian well can be procured; also in what work I can find the best description of the process now in use?

Yours obediently,

S. E. A.

### Miscellaneous.

DECORATIONS AT BUCKINGHAM PALACE.—The interior of the new Chapel Royal at Buckingham Palace is being decorated. The carved stucco work, the mouldings and other ornaments of the ceiling have been gilt, and the compartments into which it is divided painted light blue. The capitals of the columns supporting the ceiling, and parts of the bases, have been gilt. The front of the royal closet has also been painted in light blue, and the frets and other ornaments of the cornice richly gilt. The Doric columns supporting the royal closet have had their capitals gilt and the shafts painted. The organ screen has also been decorated in a similar rich and tasteful style.

THE NEW ROYAL EXCHANGE.—The sale of the first portion of Bank-buildings, which was commenced on Monday by Mr. Pullen, the auctioneer, and concluded the following day, has realized a good return, amounting to about 1,300*l*, the property disposed of including the spacious banking-house and residence of Messrs. Ladbroke and Co., and three other houses. On Monday next the sale of the second portion will be commenced among the buildings to be sold, being the Sun Fire-office. By the conditions of sale the buyer must remove the first part in 28 days; the same period being allowed for the removal of the second division. The whole will be cleared away by the end of March.

METROPOLITAN IMPROVEMENTS.—The large space of ground in Broad-street, St. Giles's, which has been obtained by the removal of the houses at the north end of Monmouth-street, is now open to the public, a granite roadway having been completed and laid down. The demolition of the houses, and the formation of the new thoroughfare, have added greatly to the improvement of this locality, as a very spacious thoroughfare has been made. At the end of Belton-street, adjoining the same spot, some houses have been cleared away, which has considerably widened that part, and, when paved with stone, will open the communication from Waterloo-bridge to St. Giles's. In Belton-street (for the line of this new street) nearly half the houses between Broad-street and Long-acre are taken down on the west side. Among the number was the Guy Earl of Warwick public-house, which was established a great many years ago. Upon a site near to this house a chapel of ease to the parish church of St. Giles-in-the-Fields will be built.

SIR JOHN SOANE'S BEQUEST TO DISTRESSED ARCHITECTS.—The trustees appointed by Sir John Soane will meet at the Museum, No. 13, Lincoln's-inn-fields, on Monday, the 25th day of March, at 3 o'clock in the afternoon precisely, to distribute the dividends which shall have accrued during the preceding year from the sum of 5,000*l*. Reduced 3 per Cent. Bank Annuities, invested by the late Sir John Soane amongst distressed architects, and the widows and children of deceased architects left in destitute or distressed circumstances. Forms of application may be had at the Museum, and must be filled up and delivered there on or before Saturday, the 16th of March, after which day no application can be received.

A NEW PROPELLER.—An invention has been made by an ingenious mechanic of Edinburgh, of a new mode of creating motion to vessels, doing away with paddle-wheels and boxes, as well as the Archimedean screw. It is a simple revolving cylinder, placed amidst-ships, which acts as a windlass, and makes a rope of the sea; in fact, the velocity acquired is in proportion to the quantity of water discharged by the agency of the cylinder, through a discharging nozzle at each side of the vessel; and what is curious, the discharging nozzles can be turned by a simple operation on deck, so as to stop the vessel, make her move backward or round as on a pivot, within her own length, without even the knowledge of the engineer, or the assistance of the rudder, as no stoppage of the engine is necessary for the purpose. The convenience is a smaller consumption of fuel, and the capability of the broadside carrying an entire armament.

ROLIAN SEA SIGNALS.—Another method of applying the waves of the sea has been recently contrived, which promises more practical results than the propelling scheme. The object is to make the breakers on a dangerous coast serve as their own warning signals to sailors. The inventor proposes to have hollow buoys moored near the dangerous coast or sand bank, to which buoys' pipes, somewhat like organ-pipes, are to be affixed. Metal tongues, on the principle of accordians, are to be fitted to the pipes, so that when the buoys are tossed up and down by the breakers, the air may be forced through, and cause them to utter warning sounds, which would become louder and louder as the sea raged more fiercely and the danger increased.

GOTHIC ARCHITECTURAL SOCIETY OF OXFORD.—The second meeting of this society was held at its rooms on Wednesday, the 14th inst., the Rev. the Rector of Exeter College in the chair. Thirteen new members were admitted, and the remainder of the evening was occupied by the reading of an interesting paper "On the Church of St. Peter-in-the-East," Oxford, by the secretary, H. Adington, Esq., who contended that the style was Transition Norman, of about the same date as the choir of Canterbury Cathedral, 1175–84, opposing the tradition of its having been built by Grimbald, in the time of Alfred the Great.

YARMOUTH.—Mr. Hutt, of Cambridge, has presented, through W. E. Randall, four beautiful models to the Gorleston Museum, viz.:—Goton Font, Cambridge; circa 1150. Font in St. Peter's Church, as restored by the Cambridge Camden Society; style, semi-Norman; circa 1180. Font in St. Edward's Church, Cambridge, as restored by the Cambridge Camden Society; style, perpendicular; circa 1450. Font placed in the Church of the Holy Sepulchre, Cambridge, by the Camden Society, 1844.

NATIONAL THEATRE AT HANOVER.—At the ensuing session of the Hanoverian estates, the government intend asking a grant of 300,000 thalers towards building a national theatre at Hanover. An estimate for that purpose has been delivered by the Court architect, Mr. Laves, and the expenses calculated at 800,000 thalers. Should the grant of 300,000 be voted, the city of Hanover is to furnish 100,000 thalers, and 400,000 the king has munificently proffered from his private purse.

The Dockyard at Deptford is to be re-established forthwith for the building and repairing steamers. The number of workmen to be employed is 350.

Letters received from Varna mention the total destruction of that city, by which a loss of four millions of piastres has been caused.

### Tenders.

TENDERS delivered for additions and alterations to St. Luke's Workhouse.—Messrs. Penrice and Plum, Architects:—

Palmer.....	£3,993
Camden and Hack.....	3,600
Stevenson.....	3,575
Want and Son.....	3,469
Thompson.....	3,429
Reynolds.....	3,400
Burtenshaw.....	3,375
Mitchell.....	3,300
Crocut.....	3,293
Travers and Son.....	3,250
Gesry.....	3,227
Smith.....	3,196
Kempster.....	3,168
Cooper and Davis.....	3,163
Crook.....	3,159
Carter.....	3,115
Ward.....	2,972
Jay.....	2,889
Norris.....	2,577

The tenders were not opened in the presence of the parties.

### NOTICES OF CONTRACTS.

CONTRACT for the Erection of a new Union Workhouse at Birchfield Wood, Sunbridge, Kent. —Mr. Mason, Architect, 24, Lime-street, London, Feb. 29.

CONTRACT for 80 Fathoms of Yellow Deal Ends for the Kensington Workhouse.—Mr. S. Coonell, 1, Canning-place, Kensington New Town. Feb. 29.

CONTRACT for Building new Sewers in Portpool-lane, Leather-lane, Woburn-place, and Great Coram-street.—Messrs. Stable and Lush, Hatton-garden. March 8.

CONTRACT for better Paving, Repairing, and keeping in order the Stone-carriage and Footway Pavements of the parish of St. Mary-le-Strand. —Mr. G. Trowhitt, Clerk. March 14.

CONTRACT for supplying her Majesty's several Dock-yards with 2,750 loads of English Elm Timber, and 119 Elm Trees for Pumps.—Secretary of the Admiralty. March 19.

CONTRACT for Building Nine fourth-rate Houses. —Mr. Single, 34, Coleman-street, City. March 11.

CONTRACT for Répairing or New Paving the Footways and Carriage-ways, as the Commissioners may appoint, of the parish of St. John the Evangelist, Westminster, for one year, from Lady-day next.—Mr. J. R. L. Walsley, Clerk. March 5.

CONTRACT for the Labour and Iron Work of Four Hundred Lineal feet of Wharfage, commencing at the North end of the present Wharf at Fleet-wood.—Mr. H. Bazett Jones, Secretary. March 1.

CONTRACT for Building an Infants' School-Room, near St. John's Church, Bury St. Edmunds.—Rev. Robert Rashdell. March 1.

BRIDLINGTON PIERS AND HARBOUR.—Erection of a new south pier, removal of present pier, and other works for enlargement of Harbour.—Plans and Specifications at the Office of Mr. Sidney Taylor, Solicitor, Bridlington. March 1, 1844.

PARISH OF ST. GEORGE, HANOVER-SQUARE.—Contract for Workmen's Tools and Hammers, Iron Lamp Posts and Gas Fittings, and for keeping in order the garden in Hanover-square, for one year from the 25th March. R. Lees, Clerk, Board Room, Mount-street. March 6.

PARISH OF ST. GEORGE, HANOVER-SQUARE.—Contract for Masons' Work, and Paviours' Work, and supply of Guernsey Granite Chippings, and Yorkshire Paving, for one year from the 25th March.—Mr. R. Lees, Clerk, Board Room, Mount-street. March 6.

CONTRACT for Removing present Wooden Turret, and erecting a Stone Turret in lieu thereof, with other works, at Preston Hospital, near Wellington, Salop.—Plans, &c., E. Haycock, Esq., Architect, Shrewsbury, or at Mr. Potter's, Bridgman-place, Walsall. March 9, 1844.

### COMPETITION.

PREMIUM of 20 guineas for the best plans and estimates for erection of a new gaol, Banbury.—All information may be obtained on application to the Town Clerk. March 1, 1844.

### TO OUR CORRESPONDENTS.

We should be happy to have any contributions from our correspondent at Gorey, whose drawings are well made out. In the present state of architectural knowledge, delineations of subjects of Pointed Architecture will be most esteemed. His drawings of the school are being engraved.

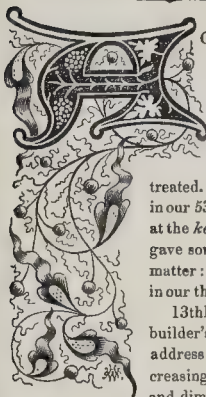
"C. K. S. X."—The design for the Clendinning Testimonial was made by a working-mason.



## The Builder.

NO. LVI.

SATURDAY, MARCH 2, 1844.



**G**AIN resuming the subject of Bridges, we come to matters no less important than those of which we have already treated. We had arrived in our 53rd Number (p. 61) at the key-stone, and there gave some rules upon the matter: we now proceed in our theories by stating—

13thly. The bridge-builder's most scientific address is shewn by increasing the abutment, and diminishing the work

hanging in jeopardy, to the utmost limits, without burthening the foundation.

14thly. Hence those who buoy up a key-stone by an increase of extraneous abutment, though they succeed, do so at great extra expense of material; the weight of which on weak foundations would cause failure through sinking, and even, though at present successful, lead to ultimate failure through any accidental derangement of the foundation.

15thly. The relative increase of abutment, and the diminution of parts in jeopardy, should therefore be effected within the arch itself, without any increase of material.

16thly. All the parts of an arch which would not fall off their beds if the remainder of the arch were removed, form abutment.

17thly. High Gothic or Pointed arches, may be so formed as to be all abutment and to have none of their own parts in jeopardy.

18thly. Circular Segmental arches, flat Catenarian arches, and flat Two-centred Pointed arches, may be so formed as to have all their parts in jeopardy, and to have none of their parts forming abutment.

19thly. Higher Catenarian arches, Elliptical arches, and Four-centred or Tudor Pointed arches, may be so made that a portion of their work may form abutment, the remainder hanging in jeopardy; they all approach excellence, as their parts in jeopardy diminish, and those forming abutment increase.

20thly. In all bridges, consisting of a series of arches, the quantity of work in jeopardy may be greatly diminished by causing some of the voussoirs which would fall over from their beds on one side of a pier to be counter-balanced by being tied by metal (as iron or copper) to those of the arch on the other side of such pier; so that if the active force of the parts of an

amounting to only a hundred tons, the structure would be ready to fall; but if fifty tons of the work in jeopardy were added to the pier, the work to be sustained would be only fifty tons, and the sustaining abutment would become one hundred and fifty tons, without one ounce-weight being added to the work except from the gravity of the ties. But in such case a great diminution of the sustaining parts of the structure might be with safety made, thence rendering the work at once cheaper, lighter, and more secure.



## ROYAL POLYTECHNIC INSTITUTION.

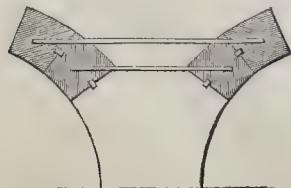
DR. KEENAN'S LECTURES.

ON Saturday, Feb. 17, Dr. Keenan delivered his fourth lecture at the above institution. The subject of this lecture was "the adaptation of the constitution to particular climates and occupations." The lecturer began by observing that when rain was coming on, particularly after long droughts, many persons felt a great reduction of strength and spirits, and at the same time it might be observed that the fire upon the hearth burned less briskly; the latter fact was clearly attributable to the less rapid combination of air with the fuel; and since it was previously proved that the movements of the animal machine resulted from the combination of air with respiratory food, such as butter, wine, &c., the diminished strength of body would be expected *a priori* to be contemporaneous with diminished combustion, as in this state of the weather the air had a diminished affinity with the elements of food. These, consequently, accumulated in the system, and assumed the form of fat; so that the act of growing fat is the act of storing up in the body what, in a favourable condition of the atmosphere, would be oxidized for the production of strength; and here the lecturer called the attention of the audience to the fact, that the force which actuated the electro-magnetic machine on the table before him resulted from vital air combining with zinc, that whatever increased combination increased the force of that machine, and whatever diminished the one diminished the other also; accordingly, if a person in Lincolnshire, where the situation is low, damp, swampy, and which therefore tends to induce a permanent state of the air, analogous to that which in Paris precedes rain, finds himself getting fat, and at the same time languid and spiritless, if he knew the true function of the lungs he would say to himself, "I am not to eat my food to be accumulated in my body for the sake of bulk.—I am not to carry about with me a portable pantry. I shall seek an air that by chemically combining with my butter and beer, shall result in electro-energy;" and, accordingly, he would betake himself to the Welsh mountains, or to Paris, or still better, to some of the mountains of Switzerland. Here that which in a stagnant and damp air accumulated in the form of fat, would be used as material actuating both body and mind. Effects similar to those of Paris and the Switzerland mountains may be felt at Brighton, or, in a word, any where where the air is dry and in brisk motion.

LAST Saturday Dr. Keenan resumed his course of lectures at this institution. He commenced by observing that the object of the present lecture was to trace the influence of physical causes on the moral and intellectual faculties, as well as on taste. From what had been said in the preceding lectures, he trusted he might assume as proved, that the strength or energy of the human body was to be measured by the quantity of air that the act of breathing could force into chemical combination with digested food (in the form of venous blood). To illustrate this he referred to the galvanic pile upon the table, which he said was proportionate to the metal of the battery. That that energy might be used for any given

purpose, but then it could not, at the same time, be used for any other. In like manner, the electro-energy generated in the breathing, which confers strength or vital cohesion on the textures of the body, energy on the muscles for the purpose of locomotion, and on the brain the power to sustain thought and feeling, if predominantly expended on one of these departments of the animal machine, shall necessarily be defective in others. Hence it was that an athletic youth, coming from the country, with great muscular power, to commence his collegiate studies, often exhibited, before the end of his course, as great a reduction in the firmness of his bodily textures and of his strength in enduring fatigue, as he exhibited an increase of the vigour and perfection of the cerebral actions involved in the development of thought. If by literary ambition, or the stimulus of parents or teachers, such a youth should long sustain the disturbance of his nervous energy, by keeping it constantly on the brain, the declining vigour of his other organs will warn him, though often too late, of his fatal mistake; and in this way scrofula, whether in the form of consumption, king's evil, white swelling of the knee-joint, inflamed eyes, or by other developments, is often produced. The lecturer then remarked, that among those who approached so near the truth as to know that the human body is actuated by electricity, almost all considered the brain as the organ of its production; this, however, was a grave mistake, and quite unsupported by the facts of science; for the production of electricity for the purposes of motion implied the expenditure of materials, and while these materials were to be found exactly of the kind required in food and air, they were not to be found in cerebral matter. The mistake is dangerous, if carried out, in its consequences; for if a weak boy, of a flaxy fibre, that is, of too little energy, were to be treated upon this principle, we ought to exercise the brain, and as far as possible sustain it in action, in order that it might manufacture strength for the enfeebled body; but the facts of the case would shew such procedure a good way of *weakening* further, instead of *conferring* strength. On the contrary, let but the exact way in which strength is generated be understood, viz., by the action of air on digested food—that the quantity of strength is proportioned to the available quantity of breathing—that the brain, instead of generating, receives its energy from the lungs, and we shall be in the sure track for finding improvement. For this purpose, by proper exercise, we should enlarge the thorax, select a food easy of digestion, that is, easily disposed to combine with air, and an air which from its dryness and brisk motion is disposed to combine with all the motor food instead of leaving a residue in the blood assuming the form of bilious accumulation.

Dr. Keenan then proceeded to shew the effects of different climates on the moral and intellectual faculties. He appealed to the audience whether they had never felt when the digestion was going on badly, when rain was coming on, &c., less intensity in their kindly affections? What was thus transiently felt under such circumstances in good air was more or less induced permanently where the air is always bad; in this case though there is experienced a reduction of sentiment, there is not a proportionate reduction of thought, on the contrary, there is a greater disposition to think in a certain manner when the emotional part of the brain is sluggish and inactive. In this case there is a tendency to a continuity of feeble, timid, and apprehensive thought, just in the same proportion that the function of the spinal marrow is reduced; so that the effect of watery, stagnant air, is to induce a balance in favour of the thinking part of the brain, while it acts against our emotional or sentimental nature. Hence the cautious thoughtfulness that characterizes the inhabitants of humid atmospheres, and the rash and precipitous character that characterizes those who live in atmospheres where, from the dryness of the air, there is more electrical excitement. The difference of the sparks drawn from the electrifying machine in France and Flanders points out the real cause of the inhabitants of the former being agile and emotional, and the latter being sedative and thoughtful. The effects of wine compared with those of tea and coffee were exactly analogous to those of a dry and



arch in jeopardy, amounting to a hundred tons, were sustained by a strength in the pier



moist climate. Wine, and a dry, brisk, sunny air, inducing a balance in favour of the back of the head—while tea and coffee, and a damp air, determined a balance in favour of the forehead. Was this the reason why so much coffee was used in France and so much spirits in the Low Countries?

Dr. Keenan here concluded his discourse, and is this evening to give his last lecture, to which we look forward with great interest, as he is to give his opinion on the causes of consumption (a malady unfortunately so prevalent in this country), and its most rational remedies and preventives.

#### ROYAL STATISTICAL SOCIETY.

On Monday evening, 19th February, the Right Hon. Lord Ashley, the president, took the chair at the meeting of the members, supported by the Hon. P. Bouverie, Mr. Charles Hindley, M.P., Mr. R. A. Slaney, M.P., Rev. J. Milman, Professor Pryme, Dr. Gay, Dr. King, Mr. T. Tooke, F.R.S., Mr. B. B. Cabbell, F.R.S., and other members of the society. Mr. Fletcher read an interesting paper, prepared at the request of the society, on the statistics of the metropolis and its suburbs, descriptive of its present boundaries, its population, its limits of local government, geographical position, and statistical peculiarities, with the view of gathering useful information, for the purpose of aiding the sanitary and other inquiries which are now being instituted into the present state of the metropolis. The paper, after stating that the City within the walls contained 70 parishes, and the City without the walls 11, occupying an area of 600 acres, proceeded to shew that, although it was the grand arena of commerce, upwards of one-twentieth of its population were resident without its walls, and that, as far as house occupation goes, its mansions at night time are half deserted. Southwark, although occupying 600 acres, containing nearly 100,000 inhabitants, was without the privilege of citizenship. After describing the geographical position and statistical peculiarities of Westminster, Marylebone, and the suburban districts, the remaining portion of the paper was devoted to an analysis of the present state of the endowed, voluntary, and assessed charities of London, from which it appeared that the funds of the corporation charities alone amount annually to 220,870*l.*, the general assessed charities to 77,000*l.*, and the endowed parochial charities of the City and the rest of the metropolis to 97,000*l.* per annum, the total annual revenue of the metropolitan endowed charities being 400,000*l.* The assessed charities by poor-rates were 551,202*l.* per annum. A discussion ensued upon the facts contained in the latter portion of the paper; and it was suggested with applause that a committee of the members of the society should be formed to enter upon an investigation of this subject, with the view of furnishing authentic information as to the agency which is employed and the use which is made of these enormous revenues.

#### INSTITUTE OF THE FINE ARTS.

A general meeting of this body was held at Osborne's Hotel, Adelphi, on Saturday evening last—Thomas Wyse, Esq., M.P., in the chair. The main objects of the formation of this institute are to unite, by intellectual and social means, the interests of artists, and to attempt to establish a free and liberal intercourse between the patrons and lovers of art and its professors. The meeting on Saturday was numerously attended. The minutes of the last general meeting, held 27th January last, having been read and confirmed, Mr. Fahey, the secretary, read the draft of a petition proposed to be presented to parliament by the institute, praying for the establishment in London, at the public expense, of a "Hall of Sculpture," which should comprise the finest casts procurable of all the most beautiful pieces of sculpture in the world. It is proposed that this hall should be open during the day to the public, and in the evening to artists for the purposes of study. The meeting, having approved of and adopted this petition, was addressed by Mr. Wyse, in an eloquent speech, on the importance of the cultivation of the fine arts, and the influence they exercise on the best interests of society. Mr. Charles Mackay

then read a paper complimentary to the genius of Theodore Von Holst, an English artist of great ability, who died a few years ago. A paper, drawn up by Mr. Heaphy, on the practicability of keeping frescoes damp for several days, was also read, after which the meeting separated. The secretary announced that the next meeting would be held in March, at the rooms of the Institute, No. 7, Newman-street, for the election of a new council and other officers.

#### INSTITUTE OF BRITISH ARCHITECTS.

FEB. 19.—T. L. Donaldson, V.P., in the chair.

Drawings by F. Catherwood, Esq., of the architectural antiquities discovered in the ruined cities of Central America, were exhibited and described. The drawings exhibited tend to prove that a higher degree of civilization existed anciently on the American continent than historians have been willing to concede. One of the most singular facts necessary to be kept in mind, when considering the arts of this people, is, that they had no knowledge of the use of iron tools, but used copper instruments hardened by the admixture of tin or some other available metal, and with such tools their buildings of stone and sculptures in granite were worked. The Indians, besides a perfect knowledge of stone-cutting and laying stone, were well acquainted with various kinds of mortar, stuccoes, and cements; and large masses of excellent concrete are found in many of their buildings. They were, in fact, so far as the mechanical part went, accomplished masons. Their painting is superior both to their architecture and sculpture, and in nowise inferior to that of the Egyptians, and they went even a step beyond them in the blending of colours; approaching more nearly to the paintings found at Pompeii and Herculaneum. In one of the rooms of a large building are paintings covering the entire walls, from the floor to the ceiling. The figures are not more than from 6 to 8 inches in height, but most interesting subjects are represented, abounding with life, animation, and nature. Mr. Catherwood noticed the peculiar style of the buildings of Central America and Yucatan. The pervading type of the architecture consists in first constructing mounds or terraces (called by the Indians *teocalli*), and on these placing the sacred edifices and palaces. These *teocalli* are found in great numbers; they are frequently of large dimensions, of a pyramidal form, but do not terminate in a point like the Egyptian structures. They have on their summits platforms of sufficient extent for the temples, which contained the statues of the deities, and in front was conspicuously seen the sacrificial stone or altar, convex on its upper surface, so as to raise the chest of the human victim. The buildings are generally long, low, arched, and of a single story, a mode of construction frequently adopted by the Spaniards, on account of the shocks of earthquake to which many parts of the country are exposed. Another, and not less distinguishing feature, is the arched rooms found in almost all these buildings. These arches invariably consist of stones overlaying each other from opposite walls, until the last meet over the centre of the room; or, what is still more commonly the case, when the last stones approach within about 12 inches of each other, a flat stone is laid on the top, covered either with solid masonry or concrete; the joints of these stones are all horizontal. The roofs have a slight inclination, to throw off the rain, and are cemented. This form of arch appears at first slight original, and is so as regards the Indians, but the same principle was adopted in the earliest times in the Old World, and would probably suggest itself to any people requiring stone roofs over spaces too wide to be covered by flat stones. As regards analogies in architectural ornaments, the same argument may apply. That most frequently met with, and perfectly alike in Greece and in Yucatan, is one likely to be found wherever rope-making is understood—and what people so barbarous as to be unacquainted with this simple and primitive process? Other ornaments, offering remarkable coincidences of form, might be adduced, but the same reasoning will apply to them all.

#### INSTITUTION OF CIVIL ENGINEERS.

FEB. 27.—The President in the Chair.

The discussion on the subject of screw propellers was continued; the main dimensions of the Princeton United States steam frigate were given: she is 164 feet long, 30 feet beam, 22 feet 6 inches deep in the hold, draws 17 feet 6 inches water, and the propeller makes 32 revolutions per minute. The engines have two semicylindrical steam cylinders or chests containing vibrating pistons or flaps, with cranks upon the ends of their suspending pivots, both these are coupled by connecting rods to a main crank on the driving-shaft: the lengths of these cranks are so proportioned, that their alternate vibrations produce a rotary motion of the main crank, and thus act directly upon the propeller without the intervention of band or gearing. This principle was some years since tried successfully by Captain Ericson in a tug-boat on the Thames, named the Robert Stockton, after the projector, who has been the means of introducing the system into the American Navy, and now commands the Princeton. It was mentioned that recently, on being examined at Marseilles, the cast-iron propeller of the Napoleon, French steamer, was found to be much affected by the galvanic action of the copper sheathing in the salt water, and was fast turning into a substance resembling plumbago, which was so soft as to be cut easily with a knife.

Some very interesting remarks were also made on the state of the metal guns recovered from the Royal George by General Pasley; but it appeared from very careful examination of the effect of salt water alone upon cast-iron, without the contact of other metals to produce galvanic action, that good hard grey cast-iron might be used for piles or other hydraulic works with great advantage; and instances were given of cast-iron, which exhibited no appearance of change after sixteen years' immersion in salt water and silt.

A further discussion also occurred on the subject of valves for pumps; and then a paper was read giving a description by Mr. Rhodes, M. Inst. C.E., of a bridge built of cast-iron girders upon timber piles, having a swivel bridge at one extremity, with an opening of 40 feet span, through which the navigation of the river was carried on. The total length of the bridge, exclusive of the width of Hayes Island, was stated to be 558 feet 6 inches: it stretches across the river Shannon at Portumna by thirteen openings of 20 feet each, from the Tipperary shore to Hayes Island, which is in the centre of the river, and thence by twelve openings of a similar span, and a swivel bridge of 40 feet span, to the Galway shore. The construction, which was executed from the designs of Mr. Rhodes, under the direction of the Commissioners of the Public Works for Ireland, was minutely described, and was illustrated by some elaborate drawings, shewing every detail of the works, which were stated to have cost 24,131*l.*

The following papers were announced to be read at the meeting of March 5th, when the monthly ballot for members would take place:—

No. 658, "Description of the Bridge over the river Whitadder, at Allanton," by J. T. Syme.

No. 625, "Description of a cast and wrought iron trussed girder for Bridges, with a series of experiments on their strength," by F. Nash.

No. 666, "Account of the building of the Wellington Bridge over the river Ouse at Leeds," by J. Timperley.

The Bank of England has just published an engraving of peculiar interest to the city, from a picture presented to them by the late respected Jeremiah Harman. The painting is by Marlow, and represents the Bank of England, Royal Exchange, and adjacent buildings, as they existed in 1790. The proceeds from the sale of the engraving, which is by Mr. Kernot, are to be given to the Widows' Fund of the Bank of England. A value as an historical record is given to it by the circumstance that in a short time not one of the buildings represented, excepting a small portion of Cornhill, shewn in the back-ground, will be in existence.



# DESCRIPTION OF A CAST AND WROUGHT IRON TRUSSED-GIRDER BRIDGE ON THE LINE OF THE BISHOP AUCKLAND AND WEARDALE RAILWAY.

BY JOHN STOREY.

(Read before the Institution of Civil Engineers, January 9.)

THE author states, that his attention has been long directed to the expensive construction of the brick and stone bridges, usually erected over and on the line of railways, and the apparent want of durability in the timber bridges, which have in some instances been substituted; as well as to the cast-iron bridges, which have generally been constructed in situations where the height between the top of the rails and the level of the roads which they span was so limited, as not to admit of a stone or a brick arch. In the latter cases, cast-iron girders have been employed, but their great weight has rendered them expensive, and has obliged the abutment piers for supporting them to be very substantial.

In order to obviate these objections, the author has introduced combinations of cast and wrought-iron in forms, which he contends may be advantageously adopted for occupation-bridges, or even for carrying the railway, and that they may be constructed at a less cost than stone, brick, or even timber bridges.

These bridges consist of longitudinal and segmental girders of cast-iron abutting against each other at the ends, secured together by bolts and nuts through the flanges, and resting on masonry-abutments: a system of wrought-iron tie-trussing is then applied, and struts are placed at certain distances where they are requisite. As many of these principal trusses are used as the strength of the bridge demands, and they are connected by transverse braces and distance pieces of cast-iron, thus preventing undue outward pressure; sockets are cast upon the girders to receive the timber-joists, and the platform is covered with Dantzie deal planking spiked to the joists. The wrought-iron struts at the top clasp the girders, to which they are also firmly bolted, and their lower extremities pass through the truss, so that on the nuts being screwed up, the truss is brought to its proper degree of tension, and being made sufficiently strong to bear the weight calculated for the bridge, independent of the segmental girders, the weight and strain are brought upon the abutments in the most favourable manner.

Bridges thus constructed do not require any centering for their erection, as each side may be put together near the spot, and by means of purchases, may be lifted entire on to the abutments, or the whole bridge may be put together before the earth is excavated from between the abutments, excepting only as much as is necessary for receiving the trussing.

The dimensions are given of occupation bridges, calculated to bear 8 tons, which is stated to be a greater weight than is required by the landowners. The total weight of cast and wrought iron in an oblique bridge of a span of 86 feet 3 inches and 11 feet wide, is 11 tons 7 cwt., and that of a square bridge of 106 feet 6 inches span and 11 feet wide, is 14½ tons: their total cost, including excavating the ground, the masonry, stone penning on the sides of the excavations beneath the bridge, the timber-work, and the painting, was, for the former 280£, and for the latter 342£. These sums are stated to be much less than the expense of similar bridges of stone or even of timber.

A design is given of a stronger kind of bridge of similar construction for carrying two lines of railway. The span is 90 feet and the width 22 feet, between the side railings: the weight is 43 tons, and the total cost, including the masonry, is estimated not to exceed 1,200£. It is calculated to bear about 50 tons, which is as much as could be brought upon it by any passing train.

The author proposes to adapt this system of construction to bridges for crossing rivers, &c., in order that by the lightness of the piers, and their having to bear only a vertical thrust, the water-way may be less impeded than it is at present by the usual heavy stone structures.

A design is also submitted for a bridge, to consist of parallel cast-iron girders, trussed with wrought-iron bars, in such a manner as to convert the depth of the girder into a strut, the weight of the passing load being entirely resisted by the tensile strain of the bars.

The author does not claim the introduction of wrought-iron trussing for cast-iron girders, as he is well aware of its being constantly practised, but he believes that it has not been commonly done to the extent which he proposes; and being satisfied of the practical utility of the system, he was desirous of bringing it more prominently under the notice of engineers through the medium of the Institution, and also of inviting discussion upon the plan, one great merit of which is, that it uses a material produced in this country, better and cheaper than elsewhere, and assists one of its staple manufactures, which is at this moment much depressed.

The communication was accompanied by five drawings of bridges, fully illustrating in detail the various modes of construction treated of.

## THE NEW METHOD OF CLOSING THE PNEUMATIC TUBE OF ATMOSPHERIC RAILWAYS.

BY M. HALLETTE.

(Communicated to the French Academy.)

In the system adopted by MM. Glegg and Samuda, this closing, as every one knows, is accomplished by means of a long band of leather, furnished with short iron tongues, which is free on one side and fixed by the other to the edge of the longitudinal opening that allows the passage of the rod by which the piston is united to the first waggon of the train. Being raised for a moment by a lever in the interior, so as to allow the passage of this rod, the band immediately falls again; a lever, the motion of which is connected with that of the piston, immediately afterwards presses it against the opening, and an unctuous substance further contributes towards rendering the adhesion more complete. But, independently of the unctuous body's appearing readily to undergo alteration by contact with the air, the leather band must gradually lose its suppleness, and tend, in places, to rise a little, after the passage of the compressing lever; it is therefore desirable that the closing of the longitudinal fissure, instead of being due to the action of a transient effort, should result from a constant action exercised in each point of the fissure. M. Hallette appears to have accomplished this, by availing himself of the elasticity of air.

For this purpose, he has arranged on the upper surface of the pneumatic tube, and bodily connected with it, two longitudinal semi-cylinders, or rather two gutters placed lengthwise, with their concave parts facing. Each of these gutters contains a gullet of elastic material, perfectly impervious both to air and to water. When the two gutters are sufficiently inflated with air, they touch each other by one part of their surface; they act as do the lips of the human mouth, and thus entirely intercept communication between the interior of the pneumatic tube and the exterior air. When the piston moves, the rod, which connects it with the train, slides between the two tubes, which unite again immediately after its passage. This rod, the horizontal section of which is a meniscus, and which hence penetrates, like a wedge, between the two gutters, acts upon them with scarcely any friction. However, in order to ensure their durability, M. Hallette has thought it advisable to protect them with leather at the parts by which they come in contact.

M. Hallette points out all the advantages for internal navigation, which may be derived from atmospheric propulsion, as perfected by himself. While developing M. Hallette's ideas, M. Arago remarked that a system of pneumatic tubes, fixed along the walls of the quay of the Seine, would cost much less in construction than a tow-path, and that the employment of steam for moving the boats would, in many respects, possess special advantages over the employment of horses.

This communication was illustrated by a small model.

CAMBRIDGE PHILOSOPHICAL SOCIETY.—At a meeting of this society, on Monday week, the Master of Trinity, President, in the chair, a paper was read by Professor De Morgan, on diverging series, and a paper by Professor Miller, on the restoration of the standard of weight.

MR. DAWSON, Royal Engineering department, has received the appointment of clerk to the works in Van Diemen's Land.

## LIVERPOOL DOCK COMMITTEE PROCEEDINGS.

THE usual weekly meeting of the Dock Committee was held at the Revenue-buildings, on Thursday, Mr. Alderman Bramley-Moore in the chair. The following members were present: Messrs. Nicol, Barclay, Holt, Holmes, Middleton, Smith, Molyneux, Trotman, Aikin, Tobin, Sandbach, Bold, Royden, Kendall, and Ripley.

A letter was read from Mr. William Brown, signed on behalf of several commercial gentlemen, in which the Dock Committee were called upon to complete the shed, covering over the whole space from Victoriato Waterloo Docks, with the view of rendering additional accommodation to the New York packet ships. Upon the motion of Mr. Nicol, it was resolved to increase the shed covering as it had been originally intended between the docks in question.

Messrs. Furnis and Hilton were declared the contractors for the completion of the shed at the King's Dock for the use of the Custom-house.

The sub-committee recommended the erection of a building for the tide-waiters at the north-western corner of the Prince's Dock, the situation of their present house, beyond the graving docks, being exceedingly inconvenient. The cost of the new building was estimated at 700£; and the tide-waiters had intimated their willingness to pay a rent which would amply cover the original outlay for the construction. The sub-committee were authorized to carry out the plan.

The sub-committee reported that, after mature consideration, they could not recommend the board to accept of the proposal of the Steam Tug Company to tow out the life-boats for the sum of 1,000£ a year, and that they would prefer the procuring of a steam-boat for the dock trust. Some discussion ensued, at the close of which the subject was referred back, with liberty to the sub-committee to negotiate with the Steam Tug Company, and to bring the result before the general meeting.

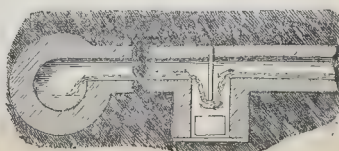
Upon the motion of Mr. Bold, seconded by Mr. Ripley, it was ordered that a new bridge, the cost of which was estimated at 2,000£, be erected at the north end of the George's Dock. Mr. Aikin wished it to be distinctly borne in mind that this bridge was about to be erected in order to afford accommodation to the public, and that its erection would not add anything to the revenues of the dock trust. A document was then read, by which it appeared that the probable net income from the warehouses round the Albert Dock would amount to 38,000£, and from the warehouses and dock 51,400£. This document was ordered to be inserted in the proceedings; and after the transaction of some financial business, the committee adjourned.

## EFFLUVIA-TRAP FOR DRAINS.

TO THE EDITOR OF "THE BUILDER."

SIR,—I forward a section or diagram of an effluvia-trap for drains and sewers, which I acknowledge I have often seen executed. If any of your numerous correspondents would have the kindness to forward a sketch of one or more through the medium of your journal, upon a better principle, effectually to prevent the escape of stench, I shall feel greatly obliged.

I am, Sir, your most obedient servant,  
Brecon, 1844.





## CHURCH-BUILDING INTELLIGENCE, &amp;c.

**Chester Diocesan Church Building Society.**—The annual meeting of the Chester Diocesan Church-Building Society was held on Monday week at the Blue Coat Hospital, and was attended by a large number of the clergy of the Church of England. Amongst those present were the Rev. Chancellor Raikes, the Rev. Rector Brooks, the Rev. Rector Campbell, the Rev. Dr. Tattershall, the Rev. Dr. Byrth, the Hon. and Rev. Horace Powys, the Rev. Messrs. Nolan, Parry, Ewbank, May, Gunning, Bold, North, Higgins, Stewart, Jones, Hesketh, Marshall, &c. &c. About half-past ten o'clock the chair was taken by the Right Rev. the Lord Bishop of Chester. His lordship briefly opened the proceedings, and the Rev. C. Lawrence, one of the secretaries, then read the report, from which it appeared that the sum of 1,640l. had been granted to two localities during the year. The incumbent of Oldham had, a second time, brought the necessities of his cure under consideration, by stating that there existed a population of 60,000 souls, with church accommodation only for 7,500, and accordingly grants of 500l. had been made to each of the three prospective churches that were to be erected in Oldham. The committee had also acceded to an application made by the incumbent of Bleakley, to enlarge and refit an old church upon an extensive plan, and so as to render it capable of affording a large number of free sittings. These formed the grants of the year. The committee, after pressing upon all the friends of the Church the duty of co-operating in a duty so obvious and excellent, stated that they intended to hold their quarterly meetings in Liverpool in future, and that at those meetings applications for aid would be received. The appeal which the Bishop had made to the clergy during the past year, had resulted in the collection of a sum of 2,000l. and upwards, which would recruit the resources of the society. The report concluded by stating that a benevolent individual had tendered a sum of 500l. to the society, provided a further sum of 5,000l. should be raised from the public; but that as only 1,000l. of the 5,000l. had been collected, the offer could not, as yet, be accepted. The treasurer then read a statement of the accounts, from which it appeared that the receipts for the year, including a balance from the previous one, had been 8,949l.; that there was a balance of 7,741l.; that the outstanding accounts were 5,100l., and that there was an available surplus of 2,659l. for the liabilities of the society. The report was adopted upon the motion of the Rev. Rector Brooks. The officers for the ensuing year were then appointed, after which the Rev. Chancellor Raikes proposed a resolution (which was adopted *nem. con.*) to the effect, that the meeting considered that it would be a reasonable enlargement of the society's sphere of usefulness if it were permitted to make grants or the restoration of old churches, where the additional accommodation gained should be equivalent to the building of a new church, but that the sum granted should never exceed the one-fourth of the total expense. Upon the motion of the venerable Archdeacon Rushton, the meeting passed a vote of thanks to the Bishop, which his lordship acknowledged, and the meeting then formed itself into a committee for educational purposes.—*Liverpool Journal.*

**Church Extension.**—A meeting of the Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels, was held at their chambers in St. Martin's-place, on Monday week, the Lord Bishop of London in the chair. There were also present the Bishops of Bangor, Llandaff, Norwich, Hereford, and Lichfield; the Revs. the Dean of Chichester, Dr. Spry, Dr. Shepherd, J. Jennings, H. H. Norris, B. Harrison; Messrs. F. H. Dickinson, M.P., Edward Badley, William Davis, Newell, Connop, J. S. Salt, William Cotton. The reports of the sub-committee having been read by the Rev. Mr. Bowdler, the secretary, the meeting proceeded to examine the cases referred to their consideration, and finally voted various grants of money towards building additional churches or chapels. The population of the parishes now assisted is 273,994 souls, and the accommodation provided for them in 40 churches and chapels is 40,824 sittings, of which 9,334

are free; by the erection of seven additional churches, the rebuilding of one existing church, and the enlargement, &c., of seven others, it is intended to add 4,333 seats to this insufficient provision of church-room, including free-sittings for 4,195 persons. Certificates of the completion of new churches, and the enlargement, &c., of existing churches in several parishes were examined and approved, and orders were issued to the treasurer to pay the amount of the grant awarded in each case. The population of these parishes is 46,595 persons, for whom church accommodation to the extent of 4,684 sittings only were provided previously to the execution of the works towards which the society's grants were voted, and including only 1,374 free-sittings; 2,537 seats are now added to that number, 2,157 of which are free. Since the last meeting, forms of application for aid from this society have been issued to eighteen applicants, to enable them to submit their cases to the consideration of the board, and five of these applications are for assistance towards building additional churches in populous places. The treasurer reported that a legacy of 300l., free of duty, has been bequeathed to this society by the late Mr. James Hurst, of Stamford-baron, Northamptonshire.

**New Stained Glass Window, Bishopstowe Church.**—A very beautiful stained glass window, by Mr. Warrington, of London, has just been erected in Bishopstowe church, at the cost of the rector of the parish. The window is of the style called decorated. In the upper part, containing the tracery, are the emblems of the four Evangelists, as described in Revelations, chap. iv. v. 6, viz., the angel, lion, calf, and eagle, bearing scrolls inscribed "Holy, Holy, Lord God Almighty, which was, and is, and is to come;" and in the centre the Holy Lamb and banner, inscribed "Ecce Agnus Dei." The principal openings consist of intersections of colours, interlaced and intermixed with quaint foliage, after the practice and style of the fourteenth century. In the midst are medallion subjects of the principal events of the life of our Lord, formed by the various shapes caused by the general pattern and designs. The subjects in the centre opening are the Baptism, Crucifixion, and Resurrection; those of the side openings, the Agony in the Garden, the Adoration of the Magi, the Rebuke of Peter for drawing his sword, and the Last Supper. There is a calm and subdued tone of colouring through the whole of this window, assimilating it as nearly as is possible to the best specimens of the ancients, in whose finest works we shall observe that however deep and rich in hue, the ruby is the only colour allowed to show itself in unclouded brilliancy. This observation has been carefully attended to in the present instance, and the effect is chaste and solemn, gaining more and more upon the eye as we become accustomed to it, instead of being tawdry and flaunting, first dazzling, then distressing the beholder by its glitter.—*Hereford Times.*

**Chichester Cathedral.**—A new window has just been put up in the cathedral church of the diocese of Chichester, the expense of which has been defrayed by subscription. The three ancient quatrefoils in the central light are occupied by designs representing the appearance of the burning bush to Moses, the Baptism of Christ, and the Descent of the Holy Spirit on the day of Pentecost. The Resurrection occupies the northern side light, and the Ascension the southern. Emblems of the four evangelists are placed in the upper and in the lower parts of the side lights.

**Opening of Tickton Church.**—This neat structure was opened on Tuesday last, when, the day being fine, a considerable number of persons from Beverley and the neighbourhood were present. The prayers were read in a very impressive manner by the Rev. C. Gerrard, M.A., after which the Rev. J. King, M.A., of Hull, preached an appropriate sermon, which was listened to with marked attention. The choir of singers belonging to the minister were in attendance and sung with great effect.—*Hull Packet.*

His Royal Highness Prince Albert has sent a donation of 10l., the Earl of Ripon 10l., the Earl of Eldon 20l., to the committee for the restoration of the Round Church at Cambridge.

## RAILWAY INTELLIGENCE.

**The South-Eastern Railway.**—The following is the official report from Major-General Pasley, Inspector-General of Railways, to the Board of Trade, as to the safety and stability of the South-Eastern Railway:—

Board of Trade, Whitehall, Feb. 1.

MY LORDS,—On Tuesday, the 30th, and yesterday the 31st ult., I inspected with great attention the extension of the South-Eastern Railway from Folkestone to Dover, which, combined with my previous inspections of the tunnels, viaducts, and sea-walls of this portion of railway whilst in progress, enables me to make a most favourable report of the whole of the great works comprising it, which are highly creditable to Mr. Cubitt, the engineer-in-chief, and to his assistants.

The extraordinary and novel character of this portion of railway, which has been partly conducted along the bottom of a lofty range of chalk cliffs, with the sea either near to or bordering upon part of the line, whilst the rest of it has been led through tunnels cut in the same high ground, induced many persons to believe that it would be either impossible to complete this portion of railway according to Mr. Cubitt's original plan, or that, if finished, it would be liable to be overwhelmed by the fall of the cliffs above it, or to be destroyed by the irruptions of the sea.

Having examined the whole of the ground above the railway with the greatest attention, in order to discover the unsound parts of the chalk cliff, if any, which may be known by cracks at the surface, I am of opinion that there is not the smallest ground for apprehension in respect to the first alleged source of danger, because the two tunnels cut through the chalk have been formed in the soundest parts of it, with a considerable height or thickness of solid chalk, not only above, but between them and the sea, so that few and very small portions of unsound chalk which I observed at the extreme summit of the cliffs, 300 or 400 feet above those tunnels, can do no possible harm in falling, as the fragments will slide along the surface of the solid chalk below them, and then roll over into the sea, which has in fact occurred on two or three occasions, since these tunnels were formed, without doing the slightest injury. But opposite to the open parts of the railway all the unsound portions of the chalk have been removed with the greatest care, and the surface cut to slopes more or less regular, according to circumstances, having a base nowhere less than three-fourths of their height, and in many parts much flatter; whilst the earth, which in some few places may be as much as ten feet in thickness over the chalk, has been cut to a slope of two to one, and is every where of sound quality. In this essential process immense masses of chalk were thrown down, partly by the skilful use of gunpowder, by which the company was supposed to have saved about 7,000l., and partly by the labour of workmen continually employed; so that there is not a single crack now to be seen at or near the summit; and the stability of sound chalk, even when standing perpendicularly, or nearly so, is well known, of which a considerable part of the town of Dover itself, lying immediately under part of the same range of high chalk cliffs, from which no slips have taken place or been apprehended, is a striking example.

In respect to the second alleged cause of danger, the two short portions of railway formed along the beach, each bounded by projecting head-lands of chalk, have been protected, one by a masonry concrete sea-wall, similar to that of Brighton, with foundations of brick and cement, and substantial counterforts, and the other by a strong timber viaduct on piles driven into the solid chalk below, both of which are of a sufficient height above high water to prevent them from being injured by the sea, at the same time that the tides have no tendency to wash away the beach in those small portions of the coast.

Upon the whole I have great pleasure in assuring your lordships, not only that the railway itself is in a perfectly safe and efficient state, but that no part of the works are exposed to the smallest danger, either from the irruptions of the sea or from the fall of the cliffs; though it was natural for the public to



have their doubts, in the first instance, as to the success of so very arduous an undertaking.

As every thing necessary for the public safety has already been done, for I repeatedly passed over both lines of railway at full speed on a special engine, or in the carriage attached to it, I beg leave to recommend that your lordships will be pleased to authorize the directors of the South-Eastern Railway Company to open their line to Dover as soon as they shall have erected a temporary station for the accommodation of passengers, as they propose, at that place, and which will probably be finished in a few days.

I have, &c.,

C. W. PASLEY, Major-General,  
Inspector-General of Railways.

The Lords of the Committee of Privy  
Council for Trade, &c.

**Whitehaven and Maryport Railway.**—Companies for making branch lines of communication between towns, or from populous districts in connection with some leading railways, are forming to an astonishing extent in all parts of the kingdom; and few of them but what hold out the most promising prospects to the investor, and the certainty of becoming of great public utility. Among these is a proposed line, twelve miles in length, commencing at a most eligible spot between Tangier-street and the North Pier at Whitehaven, near the harbour, proceeding through Harrington, Workington, and the much-frequented watering-place of Flimby, and terminating by joining the Maryport and Carlisle Railway at the Maryport station. The importance of Whitehaven as a seaport is generally known, and its harbour, upon which upwards of 150,000t, have been expended within the last twenty years, is, undoubtedly, the finest on the western coast. The formation of this line will place this populous and improving town in immediate connection with all the great lines of railway in the north, and place it within a seventeen hours' journey from London, causing increased commerce to flow into it from Scotland, Liverpool, and Ireland. The line selected is highly favourable, and can be completed for 8,000t. per mile, requiring a capital of 100,000t, to be divided into shares of 20t. each; and, from a moderate calculation of the expected traffic, a clear annual revenue is expected of 11,815t., or certainly full 10 per cent. on the capital invested. An important meeting took place at the Savings' Bank, Whitehaven, on Monday last, for taking the necessary steps for the formation of this line, at which the two members for that division of the county, Lord Lowther, and most of the influential gentry of the neighbourhood attended. The proceedings were carried on in the most unanimous spirit, all present agreeing in the necessity of the proposed line, to place the town and harbour of Whitehaven in a position to compete with other large towns in the north of England.—Lord Lowther stated that their representative, Mr. Attwood, who had intended to be present, but was prevented from urgent business in London, had authorized him to state, that in case the resolutions were adopted, and the undertaking commenced, he would take shares to the amount of 5,000t. for himself, and 5,000t. for his son. The resolutions for forming the provisional committee, and giving the necessary authority to apply to Parliament, were agreed to unanimously, after which a book was opened for receiving the names of subscribers, and in a very short time shares to the amount of 45,000t. were agreed to be taken.

**Railway Passenger Duty.**—The Brandling Junction Railway has petitioned the House of Commons in substance as follows:—"That the railway of your petitioners connects the populous towns of Newcastle-upon-Tyne and Gateshead with South Shields, and the extensive port of Sunderland, and has afforded great accommodation to the inhabitants of those places, and particularly to the trading and working classes. That a large proportion of the passengers, conveyed upon the said railway, are carried for considerably less than 1d. a mile, and that the profits of the said railway yield a very inadequate return upon the capital your petitioners have invested therein. Your petitioners, therefore, pray that your honourable House will be pleased to repeal the duty upon all fares not exceeding 1d. a mile, and thereby give some encouragement to railway companies that afford accommodation to the public at so low a rate of charge."

**Rival Railways from Gravesend to Rochester and Chatham.**—In addition to the two rival railways to Rochester, the one starting from Gravesend and the other from Rosherville, a third line was introduced to public attention on Feb. 16th, at the meeting of the Thames and Medway Canal. This is proposed to consist of one line of rails, to be laid on the banks of the canal; and as the 170,000t. expenditure on the canal was for works available to a railway, only 65,000t. are estimated as necessary for the proposed line, as well as for the required carriages, engines, stock, &c. The capital is to be raised in shares, to be offered, in the first instance, to the shareholders in the canal, and if not all taken by them, the residue are to be allotted amongst the public generally. The navigation of the canal will not be affected; and it is stated that their act of incorporation will enable the company to construct the railway, but that an Act must be applied for in the session of 1845, for obtaining the necessary funds. As it is scarcely probable that Parliament will authorize the formation of more than one line of railway between Gravesend and Chatham, a warm contest between the several parties may be expected.

**Railway Property.**—The increased amount of capital invested in the railway companies, is now estimated to be nearly 80,000,000t. sterling; a return, computed by a competent authority, gives the following facts, as exhibiting the enormous increase since 1842 in the value of this species of national property. In October of that year, on the shares of seventy-three lines, the loss, by their being at a discount, was computed at 2,052,696t.; in April, 1843, the profits in premium on eighty-one lines was 3,050,770t.; but in October, 1843, the profits in premiums exceeded the discounts by 13,748,139t., and adding the recovery of the discounts of 1842 to the latter sum, an increase in the value of railway share property of not less than 15,796,183t. is shown to have occurred, and in so short a time too. Never in the history of securities of an equal amount has such a rise as this been known, although mines, at one time, had a tolerable, but, unfortunately, a very illusive hold on the public mind.

**Scotch Mineral Railways.**—The shares of these railways are extremely dull of sale. A strong feeling prevails among many of the shareholders in favour of an amalgamation, and it was hoped that an amicable adjustment of the differences existing between the different companies would have been obtained; instead of this, however, there is a prospect of a keen Parliamentary contest, which will, of course, be attended with a large expenditure of money. The only sales have been a few Wishaw and Coltness at 25t., and Garnkirk at 28t.; the Ballochney Company have declared a half-yearly dividend of 30s.; and the Monkland and Kirkintilloch, of 15s. per share; the Wishaw and Coltness have declared 12s. 6d. for the year; the Garnkirk Railway directors propose to divide 5 per cent.

**Extraordinary Speed by Railway.**—The special train which left Southampton on Thursday week, with the mail-bags brought by the Avon, started from thence at eight minutes past two, and arrived at Nine Elms at forty-eight minutes past three. Thus, deducting eight minutes for stoppage, the distance was run in one hour and forty-eight minutes! The engine, the Lark, is a new one, constructed by Mr. J. V. Gooch, of Nine Elms, and it was driven on this occasion by Mr. W. Waylor, superintendent of the locomotive department at the Southampton station.

**Nottingham, Newark, and Lincoln Railway.**—We are given to understand, that the directors of the Midland Counties Railway have ordered a survey, under the superintendence of Mr. R. Stephenson, of a line of railway from Nottingham to Newark and Lincoln, joining the Midland Counties line at Nottingham. A prospectus, detailing the result of the survey, with the estimate and expected traffic, will shortly be published. The shares are to be 25t. each.—*Derby Mercury.*

**Salisbury Junction Railway.**—A petition is about to be presented to the House of Commons, signed by the residents in this city and its vicinity, praying that the Bill just brought in for making a railroad from Bishopstoke to Salisbury may be passed in that House.

**Lincoln and Wakefield Railway.**—The above line, fifty-four miles in length, is another of the numerous proposals for uniting important and populous districts, and placing within their power all the benefits of cheap and rapid communication; it is intended to connect the great agricultural districts of Lincolnshire and the towns of Gainsborough, Lincoln, and Doncaster, with Wakefield, the great market for the manufacturing districts of Yorkshire and Lancashire, and with all the towns bordering on the Manchester and Leeds Railway. This line of country has never possessed the advantages of railway communication, and the present undertaking is intended to remove many of the difficulties with which home-grown corn has had to contend, in maintaining its ground against the introduction of foreign grain, while the districts through which it will pass offer a cheap and rapid means of carriage for salt, stone, lime, coal, &c.—to a very large extent to the agricultural districts, hitherto only obtained by a long, circuitous, and tedious route—and, more than probable, effecting a reduction of 50 per cent. in their cost, with a corresponding increase in consumption. The passenger traffic at present existing between the towns of Lincoln and Wakefield is extensive, in proportion to the large and increasing population, and it is only likely that the same results will follow in this case as in every other where a railway has been established. From a careful survey of the line, the engineer has reported favourably of the undertaking, and which is estimated to be completed for 750,000t., or about 14,000t. per mile; and the gradients being of an easy character, offers important facilities for the economical working of the large goods' traffic, which it is confidently anticipated will flow upon the line; and for the furtherance of this object, arrangements will be entered into with the Manchester and Leeds Company for working the Lincoln line in conjunction with their own.

**Wooden Railways.**—A bill is at present before Parliament, which has for its object the laying down of a wooden railway, upon Prosser's principle, from Guildford to Woking. In the opinion of many engineers, wood, besides being very much cheaper than iron, is, in the way it is here intended to use it, more durable.

**Thetford.**—On Monday last a petition was forwarded to Parliament, signed by a great number of the inhabitants of Thetford, requesting that the intended railroad between London and Norwich may pass through that place.

**Share Jobbing in Germany.**—It is stated that a law will shortly be promulgated at Berlin, to prevent the extensive gambling transactions in railroad shares, at present carried on to an incredible extent in that city. The Exchange of Berlin is the greatest mart of all Germany for these sort of transactions, and some wealthy speculators there have formed a joint-stock company, and by their capital and quantities of shares generally at their disposal, influence the prices just as suit their views and interests, by either buying or selling largely; these operations have ruined numbers of those who could not withstand these large fluctuations. Shopkeepers, artisans, military men, and even ladies, have imbibed the railroad shares mania speculation.

The railway between Cologne and Bonne has just been opened to the public.

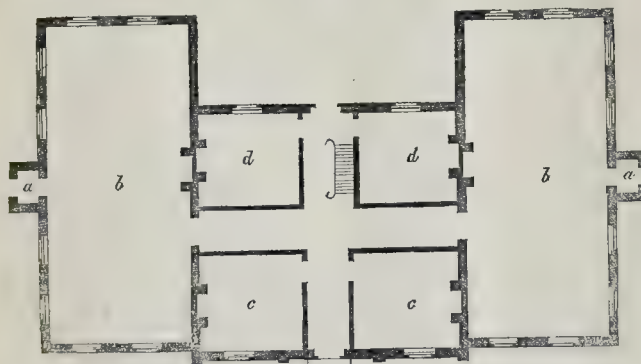
**HEREFORD AND GLOUCESTER CANAL.**—We heartily congratulate the inhabitants of the city and county, on the steady and satisfactory progress which this important undertaking is making under the skillful engineering of Mr. Stephen Ballard. On Monday last the Canal was opened to Westhide, and on Monday week (the 26th inst.), it will be opened to the Wharf, at Withington, about three and a half miles from this city. On the occasion, the Canal Committee will move along the line from Ashperton to Withington, when many boats laden with coal, timber, salt, &c. &c., will arrive at Withington. On referring to our advertising columns it will be seen that the event will be celebrated by a dinner, to which the engineer, Mr. Stephen Ballard, has been specially invited. We have no doubt there will be a large party to meet the respected guest and to do honour to the event.—*Hereford Times.*



## DESIGN FOR SCHOOLS.



ELEVATION.



GROUND-PLAN.

## REFERENCES.

- a a. Lobbies.  
 b b. School-rooms.  
 c c. Sitting-rooms.  
 d d. Kitchens, (with cellars beneath them). Four, five, or six chambers and a closet-room may be formed in the upper story.

(Scale 10 feet per inch.)

## TO THE EDITOR OF THE BUILDER.

SIR,—I herewith forward a design for schools, with a residence in the centre for the master and governess, hoping you may deem it worthy of a place in your paper. The proposed fabric is so arranged that it can be occupied by separate families if so required; it can be built with brickwork, having its exterior walls faced with Suffolk bricks, and the cornice and other mouldings run in cement; or it may be of ordinary brickwork, all stuccoed externally.

I repeat, what I stated in a former communication, that I feel deeply interested in the success of your valuable publication, and confident that if your numerous and respectable correspondents, (many of whom possess talent

and genius) unite hand and heart, their contributions will enhance its value.

I am, Sir, your most obedient servant,  
 Brecon, Jan. 21, 1844.

[We should have so placed the wings of the building containing the school-rooms as that the chimneys, if only one to each room, should fall exactly in the centres of the walls against which they would be built. The domestic arrangement we should have so contrived that the master and mistress if of different families might live separately. In each of the ends of the school-room we should have placed three windows, or one window consisting of one or three bays, lights, or days. The principal external cornice we should have made lighter.—Ed.]

## NEW METHODS OF GILDING AND SILVERING BY IMMERSION.

BY M. A. LEVOL.

At the present time, when great attention is being directed to the processes of gilding by the moist method, it seemed to me not without interest to publish an account of some new methods for gilding or silvering by immersion, more especially on account of the facility of their execution.

**Gilding on Silver.**—Silver is very easily gilt by means of the neutral protochloride of gold, to which an aqueous solution of sulphocyanide of potassium has been added until the disappearance of the precipitate which at first formed. The liquor thus obtained should possess a slightly acid reaction, and if it has lost it, by too considerable an addition of sulphocyanide, it should be again restored by a few drops of hydrochloric acid. In order to gild, the well-cleaned silver is immersed in this liquor nearly boiling and moderately concentrated, in which state it is kept, adding from time to time hot water to replace that which evaporates. In this manner the inconveniences which would result from too great an accumu-

lation of the hydrochloric acid, the presence of which is nevertheless useful in preventing the formation of an auriferous precipitate, which would otherwise take place at the high temperature employed, were the alkali predominant, are obviated.

**Gilding and Silvering on Copper, Brass, and Bronze.**—A solution of cyanide of gold, and that of cyanide of silver in cyanide of potassium, has been recommended for gilding and silvering under the influence of electric forces. I have found that the same solutions, when at a temperature near their boiling point, may also be employed for gilding and silvering by immersion. Their preparation would be somewhat expensive were it necessary to obtain them chemically pure; but this would not offer the least advantage, and the operation may be simplified and rendered much less expensive by treating either the chloride of gold or the nitrate of silver (both should be neutral) with an excess of cyanide of potassium so as to obtain the soluble double cyanides.

Silver cannot be gilt by this process, but it will be seen above that the sulphocyanide of gold and of potassium gilds this metal extremely well.

\* The solution of cyanide of copper in cyanide of potassium does not copper silver even in contact with zinc; but it coppers this last metal perfectly, and in a very solid manner.

I may observe in conclusion, that these processes, so advantageous from their always succeeding, and requiring but a few minutes for every preparation, unfortunately do not allow but of the application of a very thin layer of the precipitated metal. This inconvenience is common to all the processes by immersion.—*Polytechnic Review.*

## THE DRAINAGE OF THE LAKE OF HAARLEM.

THE determined industry, the phlegmatic perseverance, of the inhabitants of the United States of Holland have been exhibited to Europe on every side of Holland, present themselves. Nearly a seventh part of this land has been rescued from the sea; and wherever the traveller is placed he recognizes the marvellous barriers that have been formed to prevent its encroachments: he sees an artificial coast, formed from the granite rocks of Norway, dykes, buttresses, constructed with a solidity which seems to promise to resist even time itself. Amongst the objects which have long occupied the attention of the Hollander has been the drainage of the lake of Haarlem, and the conversion of its bed into cultivated land; various projects have at various times been conceived, have been discussed, and, from various reasons, abandoned. A plan, which was considered feasible, was laid before the States General in April, 1835, and great hopes were entertained that the idea which was suggested was one which might easily be carried into execution. After, however, due and careful deliberation, it was abandoned, in consequence of the rejection of a bill brought before the second chamber. At length the government has undertaken the great work, and every prospect is entertained of the successful issue of the enterprise. A vote has been obtained from the chamber of 4,533,333 dollars, but this sum will be by no means adequate to the expenditure that must necessarily be made. It has been ascertained by calculations founded upon the profit obtained by other drainages in Holland, that so large an interest will be returned that a loan of much greater extent may very safely be advanced. The lake of Haarlem is calculated to be about fourteen English miles in its greatest length, and as many in breadth. About 70,000 acres are covered by it, and it has been asserted that every year nearly 250 acres are encroached upon. The depth of the water has been variously estimated, but is supposed to be upon an average twelve feet and three-quarters, and the mass about thirteen and three-quarter millions of cubic rods of water. The manner in which it has been decided to carry out the drainage is as follows:—

A channel is to be formed one hundred and forty-three feet and a half in width, supported on each side by an enormous dyke; into this is to be poured, by means of six steam-engines, each of two hundred horse power, the whole of the water contained in the Haarlem Meer, and three sluices are to conduct it into the German and the Zuyder sea. It is expected that this undertaking, commenced in May, 1840, will be completed in the course of the present year. It is understood that it will be requisite that every spring the power either of steam-engines or water-mills should be called into action, to preserve the rescued land from fresh inundation. Of what Holland is capable an idea may be formed from the recollection that large tracts of land are below the level of the sea, and that not only the safety, but absolutely the existence of the country is dependent upon the dykes, which have been at various times raised up. Near the great dyke of the Helder is the Beemster Polder, a tract of land of upwards of 8,000 acres, over which water rolled uninterruptedly, and where now there exists a healthy, industrious population of 3,000 souls.—*Polytechnic Review.*

Mr. Burgess, the partner of James Walker Esq., engineer, has been at Dover, preparing the plans and specifications for the intended improvements to the outer harbour, and it is reported that tenders for the execution of the work will be advertised for immediately.



## DOVER HARBOUR.

Copy of a letter to the Editor of the Dover Chronicle.

SIR,—Although I consider it an almost hopeless task further to endeavour to convince Mr. H. Humphreys, and the disciples of the detached breakwater system, of the error of their often-refuted theories (having unanswerably proved that the only safe method of preventing the travelling shingle from obstructing the harbour's mouth, was effectually arresting its passage by an extensive pier projected from the Stone-head,—see my printed Dover Refuge Harbour Report), yet I must not permit Mr. Humphreys' letter in your journal of Saturday last to remain wholly unnoticed, lest it should be supposed that the new data of the South-Eastern Railway "dike" here, which he affects to argue from, really afforded some accidental support to his notions. Before, however, observing upon the substance of Mr. Humphreys' letter, I must remind him, and other detached breakwater speculators, of the great presumption of their theories, after a Government Commission has decided that even the eminent Mr. Cubitt's breakwater plan for our proposed Harbour of Refuge was defective, so far as it was designed to be a detached work; and it will be seen, by reference to the Commissioners' report on that plan, that Mr. Cubitt afterwards subscribed to the propriety of their view, in favour of a work united to the shore. But Mr. Humphreys, and men of his school,—men who,

"—Convinced against their will,  
Are of the same opinion still,"

are not easily satisfied of their errors; though the most eminent engineers decide against them, they will still be found dogmatically propagating their fallacies, and endeavouring to mislead superficial inquirers. As to Mr. Humphreys' letter, I find it full of absolute absurdities. First, he speaks of the South-Eastern Railway "dike" and works, as tending in their construction to aid the passage of the travelling shingle towards the harbour's mouth! and advises other alterations to a similar end!! But I believe Mr. Humphreys would find, if he were to ask Mr. Cubitt, that the very opposite effect to that supposed by Mr. Humphreys to be designed by those works, was intended by Mr. Cubitt; for assuredly that gentleman knows that the existence of his "dike," even for the few years it may be supposed, from the perishable nature of its ties and other materials of its construction, to be intended to stand, mainly depends upon its *not* aiding the passage of the travelling shingle, but *detaining* it in front to prevent the sapping by the sea of its insecure foundation; an expectation, however, doomed to be disappointed, since groins and shingle traps of any description can only be effective where shingle travels, which, it having nearly ceased to do at this port, (there being but little more shingle to come from between the Shakespeare Cliff and the South-Eastern Railway "dike," the supply being wholly cut off by the falls of the Rounddown and other cliffs), the effect will be the continued deepening of the shore from the Shakespeare Cliff to the mouth of the harbour, and consequent incursions of the sea wherever the shore is not protected by wharfs, as at the South-Eastern Railway's eastern mouth of the Shakespeare tunnel, and along the entire line of viaduct adjoining it. I venture to predict that the consequence of the omission of a proper wharf at this part of the South-Eastern Railway works will be, that, in less than twenty years, the line of old Folkstone road, immediately behind the viaduct, will not be in existence from incursions of the sea; leaving it to be conjectured what will hence be the fate of the eastern mouth of the Shakespeare tunnel and of the viaduct, the foundation of which will soon be laid bare, and its timbers be continually worn by the fretting, through the operations of the waves, of the portions of falling cliff behind it, to say nothing of the ravages of the worm. But to return to Mr. Humphreys' letter. I find next to the part I have observed upon, various prescriptions to benefit the present incurable harbour. (The great duke calls Mr. Humphreys, and men of his grade, "harbour-doctors," quacks, of course; but able, duly-qualified physicians at the same time have given it over.) On these prescriptions I shall offer no comment; the

day is past for the least attention to be paid to them, wiser heads having advised (in the Government report on Mr. Cubitt's detached breakwater plan for a harbour of refuge at Dover) a course somewhat at variance with Mr. Humphreys' assertion, "that as easily may you prevent the tide from setting up the channel, as to stay the beach from coming from the westward to the harbour's mouth." *Nous verrons.* Let Mr. Humphreys survey the shore from the harbour to the falls at the Rounddown, &c., and inquire what has been their effect in "staying the beach," before he again hazards such absurd assertions.

I am, Sir, yours, very faithfully,  
JAMES STEWARD.

East Cliff, Feb. 14, 1844.

## DOVER LANDING-JETTY.

WE are authentically informed that the Postmaster-General intends to send a mail from this port to Calais daily, and to limit the time within which it shall be transmitted, to three hours, instead of, as at present, six hours and a half; and that it is the opinion of the authorities connected with the Packets here, that the required service cannot be performed regularly and certainly, unless by means of a Jetty, from which the mails can be shipped at all times of the tide, and in any weather. We have no doubt that the Jetty Committee, with their usual vigilance and tact, have already directed application to be made to the Government for aid towards the formation of the Jetty, should it be found impracticable to raise all the required capital in shares, and at all events an additional large source of revenue (not noticed in the prospectus) is thus opened; for we have no doubt that the greater facility of shipping the mails from the Jetty, rather than from boats, independent of the practicability of the former when the latter is impossible, will induce the Government to pay a considerable annual sum for the use of it. At present, the cost of the boats performing the service is between 200*l.* and 300*l.*, and when the duty by the intended new arrangement is made more frequent as well as more difficult, we may well expect the Government will adequately remunerate it. The certainty of a daily opportunity of transit to the Continent by the fast Government Packets, at a regular fixed hour, will, no doubt, make passengers give a preference to this as their port of departure; and thus again the prospect of revenue held out in the prospectus of the Jetty Committee, is improved and confirmed.—*Dover Chronicle.*

## MONUMENT TO BISHOP FARRAR.

TO THE EDITOR OF THE BUILDER.

SIR,—Perhaps you may find space in THE BUILDER for a short notice of this beautiful and appropriate work of art, executed by J. E. Thomas, Esq., F.S.A., lately erected to the memory of our martyred prelate in St. Peter's Church, Carmarthen, bearing the following inscription:

SACRED  
to the memory of  
ROBERT FARRAR, D.D.  
Bishop of St. David's,  
Burnt in the market-place of Carmarthen,  
30th March, 1555,  
for adhering to the Protestant religion.  
"The righteous shall be in  
everlasting remembrance."  
This monument  
was erected A.D. 1843,  
as a tribute of pious respect to the  
memory of the martyred Bishop  
of this Diocese.

At a time like the present, when the beautiful simplicity which regulated our holy religion at the reformation is so powerfully assailed, this, and other public testimonials of similar nature, commemorating the worth of the suffering supporters of the truth, seem to be induced by a providential influence, and will doubtless be beneficial in their effects.

I am, Sir, your very humble servant,  
Brecon, 27th Feb. 1844. J. T. L.

[We should like to publish, in a two-column block, a view of this work of art, to form one of a series of Bishops' monuments.—Ed.]

## FIFIELD CHURCH, WILTS.



TO THE EDITOR OF THE BUILDER.

DEAR SIR,—I beg to forward you two sketches, which perhaps you may feel disposed to give in THE BUILDER, viz., an ornamental stone cross from the east gable of Fifield Church, Wiltshire, and a small view of the whole church, copied from a sketch taken on the spot by myself. Fifield, or Fyfield, is a very small village, situated on a slight ascent about twelve miles from Salisbury, on the edge of a valley of pasture-land, which extends for two or three miles in a western direction. The village itself does not consist of more than about half-a-dozen houses, including the parsonage; the church, therefore, is the only object of any interest which it contains; and even this, without either tower or belfry to remind us of its sacred purpose, is so simply constructed, that scarcely it is distinguished from one of the neighbouring barns by any external features except a cock on the western gable, and on the eastern one the cross which I send you, The



church is, indeed, built of stone, with a pointed arch over the principal and only door-way of the fabric, in which respect it does not differ from many barns in Wiltshire. Indeed, I think I saw last month some barns more elegant in construction than this, and from the durability of the stone which abounds there, as complete as when they were first erected, some of them probably not constructed later than the middle of the 15th century. It is, perhaps, remarkable that the cross should be so neatly and elegantly sculptured when the rest of the church is rude and bare of ornament; but we can appreciate the feeling which told them that in this case they were working on peculiarly holy ground, and that the symbol raised to assemble masters and labourers from the adjoining hills for purposes of devotion, should claim the touch of an artistic chisel, if even the roof were left without a spire, and the mouldings void of decoration."

I am, dear Sir, yours most respectfully,



Great Newport-street, Feb. 19, 1844.

\*[This idea is excellent; often may twenty shillings bestowed with taste give a small building a superior aspect; in the same way that something of no greater price may indelicately mark the gentleman amid disguise, while the utmost profusion of dizenng, whether on the person or on an edifice, violating taste, only removes either object from approving estimation. This kind of abridgement according to necessity is well expressed in the German novel of "The Family of Halden," where Hennig



(with his master) being hotly pressed by the Croats, at the moment of action, cried "Amen!" there not being time, as he relates, to repeat the whole petition. Often, from the expenditure of a million sterling in modern buildings, the artist is not furnished with one example for his pencil, while in old fabrics, though there may be nothing else, some chimney-piece, some doorway, some font, or other object of art which never cost five pounds, may furnish him with a beautiful subject. Money is powerful, but science and taste are enchanters.—Ed.]

#### THE CAMPHINE LIGHT.

AMONGST the many improved lamps, the Camphine, which has been just introduced, is beyond all comparison the principal. The Argand, by which a stream of air was directed upon the interior, as well as the exterior, of the wick, was a stride in advance of its predecessors; the recent contrivance, by which in the Solar lamp the stream of external air is poured immediately on the ignited portion of the wick, instead of being supplied from below, was an improvement of the Argand; but superior as is the Solar to the common forms of lamps, it has its defects. The capillary attraction, from the glutinousness of the oil, is comparatively feeble; and, unless the reservoir is kept well filled, the light will become dim. The combustion of the oil is imperfect, and carbonaceous matter accumulates on the wick, which renders snuffing now and then imperative. Above all, the Solar requires, as all other lamps do, a nicety of attention, that domestics can rarely be persuaded to give. There is another evil attendant on burning oil, that by no contrivance can be got rid of—the disagreeable nature of the oil itself. Let the utmost care be employed, accidents will happen in using it, and clothes and carpets, to say nothing of hands, will suffer from the contact. From all these drawbacks the Camphine lamp is free. From the manner in which the burner is contrived, and from the extreme liquidity of the fluid employed, the combustion is so perfect, that the wick, after ten or twelve hours' consecutive burning, is scarcely if at all charred. Then, by reason of the same liquidity, the capillary attraction is so active, that a flame of undiminished brightness will remain until the wick itself is actually dry! The reservoir once filled, there is no necessity in the course of sixteen hours for any additional supply. The flame of the Solar is much more intense than that of the Argand; but the flame of the Camphine is absolutely dazzling—whiter than the best gas, while it has not that disagreeable flickering that all lights are liable to; by the light of the Camphine, colours may be distinguished as readily as by daylight. English's Patent Camphine (for which her Majesty's Letters Patent have been granted) is in itself so far from being injurious, that, if accidentally spilt on the most delicate tissue, instead of soiling, should there be any spot of grease on the garment, it will effectually remove it. The trimming is a task in which the most delicate fingers may be employed; it is unaccompanied by the slightest smell in lighting, which is instantaneously effected; and as little is any smell perceptible on its being extinguished, which also is the work of a moment. The Camphine lamp requires but one act of attention—that is, to cut the edge of the wick even with the edge of the tube, and leave it so. With this one care the lamp never goes wrong, never intermits, but shines on, from sunset to morning, with an even, steady, pure, and beautiful light.—Hull Packet.

**ELECTRICITY AT BREAKFAST.**—In fact, startling as it may seem, it is beyond contradiction certain, that the largest charge of the largest Leyden battery does not equal in quantity the electricity which passes between the tongue and a silver spoon, during the simple act of eating an egg. Indeed, if the quantity developed in the latter case were free to assume the form of the electricity obtained from friction, the result would be a lightning-flash of no small power. The chemical action of a grain of water upon four grains of zinc can evolve electricity equal in quantity to that of a powerful thunder-storm.—*Electricity, by Dr. Lardner and C. V. Walker.*

#### IMPROVEMENTS IN BLOCKS, SHEAVES, &c.

The immense destruction of hempen rope, tackle falls, &c., in the naval and mercantile marine, together with the numerous accidents, in consequence of the splitting of wooden blocks, from "choaking," and other causes, induced Mr. A. Smith (inventor of the improved revolving iron shutters, door springs, and a number of other things for builders, &c.) to turn his attention to, and thoroughly investigate, the causes, with a view to remedying the evils.

The improvements made and suggested by him to the Admiralty Board, are partly explained in the following letter, addressed to the Hon. Sidney Herbert, M.P., Secretary to the Admiralty, &c., &c.:

"Iron-Works, Princes-street, Leicester-square.

"SIR,—I have to request that you will be pleased to lay before the Lords Commissioners of the Admiralty the accompanying improvements in the construction of sheaves for ships' blocks, and stoppings for same, as also thimbles for ropes. The sectional sketches annexed, figs. 1, 2, 3, with the accompanying specimens, from No. 1 to 6, will make the improvements apparent. The two pieces of hempen rope having been working the same length of time and with the same quantity of weight suspended, the one over the ordinary wooden flat grooved sheave, figs. 1 and 2, and the other on the improved semicircular grooved iron sheave, fig. 3, fully demonstrate that a tackle fall, rove into a set of blocks with the improved sheaves, will ensure the rope's lasting considerably longer, and retaining its natural round form, instead of being compelled to take the flat distorted form of the groove in the ordinary wooden sheave, which is the case when a rope gets wet, and is under a strain tending not only to weaken the rope, but to choke and split the block. The improved iron sheaves are not heavier than the ordinary wooden ones of equal strength, are cheaper in the first cost, will last much longer, and are not liable to warp. The improved thimbles are stamped out to the form of the rope, and allow of it retaining its natural strength. The patent wire rope stoppings for blocks are stronger, lighter, and cheaper than hempen. I shall be much gratified if their Lordships will be pleased to allow a deposit in their Lordships' model room, in Somerset House, of the accompanying specimens of my patent wire rope stoppings for blocks of from five to fifteen inches (such as I am about to supply for the use of her Majesty's ship *Penelope*, pursuant to their Lordships' demand to fit that ship), and which are numbered from 5 to 15; also a block, two sheaves, and two thimbles of my improved construction, together with fitted specimens of my patent wire-rope.

"I am, &c.,

"ANDREW SMITH.

"September 28, 1842."

Their Lordships examined, and highly approved of, the several improvements, and have most extensively adopted them.

Subsequently, Mr. Smith proposed an important improvement in blocks, substituting metal for wood, and introducing the improved semicircular grooved metal sheave, &c., models of which were laid before their Lordships, who were pleased to order the same for her Majesty's yacht, *Victoria* and *Albert*, which vessel was entirely fitted with the patent wire-rope, screw lanyards, thimbles, &c. The improved metal blocks, being formed without joining, and in one piece, will not split. The hook or eye is fastened, or made to swivel, in the shoulder of the block, requiring neither strap nor iron binding, which are so objectionable, yet absolutely necessary, in common wooden blocks; the straps are objectionable, as they become destroyed, in a short time, from exposure to the atmosphere, absorbing and retaining moisture, particularly in the splice at the lower part of the block, which becomes imperceptibly, but quickly, destroyed, while the other parts are comparatively sound and uninjured; thus it often happens, when tackle, after lying past some time unused, is again applied to raising heavy weights, though far below the weight they should bear with safety, the strap suddenly breaks (generally at or in the splice—sometimes in the throat of seizing), and the extent of accident depends upon the circumstances under which it took place. The improved metal blocks, being rounded off (having no sharp edges), do not injure the spars or gear, which is a great objection in iron-bound wood blocks, and cannot be obviated. The shell of the improved block, being hollow, as it were, with ribs, or strengthening pieces, placed vertically, and across them on each side, to support the pin upon which the sheave rotates, gives the greatest quantity of strength with the least weight—in fact, these blocks are, for the same size, not heavier than iron-bound wood blocks, while they possess about four times the strength, and will, doubtless, last more than four times as long, and, when worn out, they are worth near two-thirds of their first value. Under these circumstances, the expense, which at first is little more, will be very considerably less, than common blocks; besides the advantages, &c., already named, there are others of minor importance, too numerous to cite.

Fig. 1

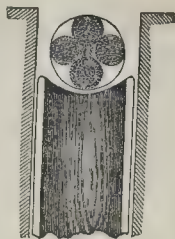


Fig. 2

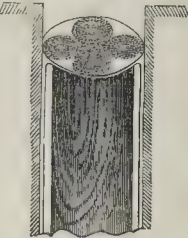


Fig. 3

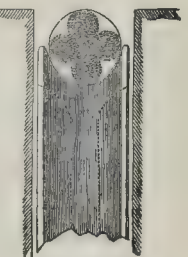


Fig. 4

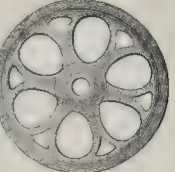


Fig. 5



Fig. 6 & 7



**INFIRMARY FOR CHILDREN OF FOREIGNERS.**—A committee is about to be formed, with a view to the foundation of an infirmary for the children of distressed foreigners. In aid of this laudable purpose, large sums have already been contributed both by the English and the resident foreigners. Contributions have also been received from foreigners of the highest rank residing on the Continent. A

house will be taken and fitted up, with a view to the immediate relief of some of these unfortunate children, until sufficient funds have been collected to build a hospital.

**ARTESIAN WELLS.**—A question is mooted whether the boring of Artesian wells in the neighbourhood of Charing-cross will have the effect of draining the supply of water from the upper level springs of the metropolis.



## Law Intelligence.

## HABITABLE REPAIR.

COURT OF EXCHEQUER.—SATURDAY, FEB. 17.  
(Sittings in Banco.)

HART v. WINDSOR.—The question for the Court was, whether a rule for a new trial should be made absolute or discharged.

The action was brought to recover the amount of one quarter's rent for a house and premises in the Wandsworth-road. The defence was, that the house was so infested with noxious and disgusting insects, called bugs, as to render it altogether uninhabitable. The case was tried before Mr. Baron Rolfe at the Nisi Prius sittings in the last term, when the jury returned a verdict in favour of the defendant on that plea. In the course of the trial it was proved that the house in question was situated in Spring-gardens, Wandsworth-road, and had been let for the term of three years to the defendant, at an annual rent of 50*l.* A few days prior to the family entering upon its occupation, they discovered that there were bugs in two of the rooms, whereupon they caused such means to be applied as they conceived to be of a nature calculated to get rid of them. In this attempt, however, they were not successful; for on the first night of the family endeavouring to sleep in the house, not a single person was able to obtain the slightest rest, in consequence of the numberless visitations of these insects. On the following morning it was found that the sheets between which the defendant and his wife had tried to repose, presented a mass of "bug carcasses and bug's blood." In the course of the succeeding day the "army" increased, and as day followed upon day, for several days the "force of occupation" had become so alarmingly extensive as to render it a matter of absolute impossibility that human beings could continue to remain in the house. The defendant therefore sent an intimation as to the state of the dwelling. A series of communications ensued between the parties, the landlord offering to endeavour to rid the house of its "insectorial" inhabitants. To this proposition the defendant, it appeared, was willing to accede, provided he was also allowed a quarter's rent, to cover the expenses he would necessarily be put to in procuring another residence for his family, whilst the proposed "siege" was being laid and carried on. The landlord, however, declined to make the required allowance, and, upon the quarter having expired, the defendant refused to pay the rent, in consequence of having been compelled to quit, upon the ground that the house was not in an habitable condition. The matter subsequently came before the full Court, on a motion to set aside that verdict for a new trial, and on the ground that the terms of the contract set out in the lease did not necessarily imply that the house was to be put in an habitable condition by the landlord. There was another ground. The lease set forth that some garden ground was let to the defendant, as well as the house, and the question was raised whether, even though there had been an implied contract as to the reasonably habitable condition of the house, the tenant had the power or authority to abandon or give up the possession of both.

On behalf of the defendants it was contended, principally upon the authority of Smith and Marrahe, that the landlord was bound to put his house in a reasonably tenantable and habitable condition.

The Court now decided that, according to all the old authorities, a landlord was not bound to put his house in such a state of habitable repair as was contemplated in the present case. Their lordships, therefore, were of opinion that the rule should be made absolute. It would, however, be well that in all future leases this condition should be expressed.

Rule for a new trial absolute.

GOVERNMENT CONTRACT FOR NEW STEAM-VESSELS.—A circular has been issued by the Lords of the Admiralty to the chief of our engineers, to send in, on or before the 5th of this month, tenders for four new steamers, two of the first and two of the second class. The weight of the machinery, inclusive of the boilers filled with water, is to be 350 tons for the first class, and 300 tons for the second. The first class coal-chambers are to be capable of holding 400 tons, and for the second 350, taking each ton at 48 cubic feet.

## Correspondence.

## ARCHITECTURAL VOLUTES.

SIR,—In your last number, "An Architectural Pupil" desires to be informed of the best methods of striking out the Ionic volute, and in what works they are laid down, complaining of being "excessively bothered" with those he has tried. He says it would not only be a great benefit to himself, but thinks it would be conferring one on the architectural world in general, and on pupils in particular, if his request were complied with. Now, Sir, I think it would be conferring a greater benefit upon him, and upon architectural students in general, to advise him not to be bothered with any; to commit them in fact to the winds, and confine himself to those means with which nature has gifted him. I mean his eye and hand; at the same time exerting his best endeavours to educate that eye for this and other purposes of design to the perception, and his mental eye to the conception and combination of the beautiful in nature and art. The means to which I allude of course include the study of the best ancient and modern examples.

I am aware, Sir, that I shall startle many, but I speak from some years' experience of architectural designing and drawing, and am persuaded that my advice is well founded, for that which I recommend will not only be a quicker and less embarrassing way of working, but be in itself a training of the eye, both bodily and mental, to the quick discernment and appreciation of the qualities of those forms presented to it, and also of his hand to an accurate and ready delineation: and if he possesses any talent (which I think he does from his expressed anxiety for information), he will be astonished at the facility of handling, and quickness of eye, which a little practice will give him.

Let us consider, for a moment, the nature of geometrical rule in relation to the design of a volute. The rules usually given render the delineation mechanical, without giving any guarantee for its pleasing the eye; but the object of the volute, and of other ornaments in architecture, is to give pleasure to the sense of sight. It is, therefore, the eye that should guide in their formation; and the eye and hand are found capable of giving to them all that beauty of effect of which they are susceptible.

The eye revels in the beauty of a volute, without inquiring if the square of one radius is equal to the product of the two adjoining ones, as one of the rules requires. The rules, as I observed before, are mechanical; whereas there can be no mechanical rule binding in the case. The rules usually laid down may be very useful to the mason or the carver when not guided by the architect, but the architect has but little to do with them; his profession is one of the arts of design, and his province is to design according to the principles of beauty recognized by his eye. He is not only a superintendent of builders, but an artist; and this constitutes the main difference between him and the practical builder.

The preceding remarks I have intended should apply to the detail or full-size working-drawings for the mason and carver; and until I read the letter of "An Architectural Pupil," I had no idea that any were so preposterous as to attempt to apply rules in the drawing of volutes of the usually small scale of elevations and sections. When I first commenced the study of architecture I followed the rules (and many of them I tried) in the study of the volute at large; but I soon discarded them all, and in the delineation of the largest Ionic capitals, modillions, or trusses, I should now use only those means which I above recommend.

It should, however, be observed, that when a volute exceeds a certain size, say, for a column beyond 18 inches diameter, the eye cannot so well operate upon it, or guide the hand in its formation. To meet this difficulty

\* [We are sorry to find our clever correspondent say any thing which might lead some to imagine an architect is not required to be thoroughly practical: no man can take a first station as an architect without possessing artistic fancy, and more science in the various arts applied to architecture than any workman.—Ed.]

I should draw one, by the eye and hand, of a convenient size, and at the same time an aliquot part of the intended one; suppose I had to draw a volute for a column of 3 feet diameter, I should design one for a shaft of 9 inches, or one-fourth part of the other. I would draw out this volute with great exactness, with very fine and distinct lines, and then by ordinates, trace it four times enlarged each way, to another sheet; but as volutes of the larger size are seldom required, the use of the best rules in their formation needs not to be much opposed.

The chief advantage of what I have proposed, consists not so much in the escape from the "excessive bother" of the rules, as in the exercise which it gives to the eye and hand, so requisite, so essential, indeed, to the draughtsman, and which will tell so advantageously in the whole of his study and practice of architectural design. The man that can only produce a beautiful curve line by means of the compass and a given rule, may be a very clever mechanic, but he is no architect. Again, when he takes up a rule laid down by another, and knows nothing of its principles (which is too often the case), what guarantee is there for the production of that which he should always seek—a curve of the greatest possible grace and beauty?

Whilst tolerably confident of the truth of what I have advanced, I should still recommend the architectural student not to be ignorant of the various methods, or at least of the best methods, laid down for striking out the volute; for, as much importance is often attached to such things by workmen, he might suffer in their estimation if found ignorant of them; and as there are many that (notwithstanding the advantages attendant on the contrary mode of procedure) will, from natural timidity and nervousness of hand, still prefer and adhere to the practice of drawing by rules, and with the compass, I trust that the remarks I have made will not prevent any of your able correspondents from complying with the wish of "An Architectural Pupil."

For myself I shall only observe, in reference to the rules, that a volute being a geometrical spiral, cannot be correctly struck with the compass from any series or arrangement of centres whatever: no portion, however small, of such a curve will coincide with the circle, it being generated by a constantly decreasing radius round a fixed centre. The Archimedean spiral is generated by a radius decreasing with an equal motion; the logarithmic spiral by a radius decreasing in geometrical ratio. It is evident, however, that there are infinite varieties of species, differing from each other according to the ratio in which the radius decreases. A spiral might be struck out with a string for a radius, and that radius made to diminish by coiling round a small cylindrical centre, or (for a decreasing diminution) round a conical one, properly proportioned to the intended volute.

Were I asked which of the methods I have seen I considered the best for practice, I should give the preference to that laid down for the logarithmic spiral in Nicholson's Dictionary, and another for the versed sinic spiral (I forget where it is found). The former is the one I alluded to above, and has the radii decreasing towards the centre in geometrical proportion; and their lengths are easily found from a table of logarithms: the latter has the various points of the curve, obtained from versed sines. In most other methods we are furnished only with the centres of the different quadrants or segments of which the volute is composed; but in the two I have mentioned, we have points in the circumference or spiral itself, and can of course more speedily judge of the result.

Many volutes that I have seen, drawn from given centres, have an appearance perceptibly faulty; often I have seen the capital wear a drooping appearance, owing to the commencement of the spiral falling too suddenly from the horizontal line. To appear well, the horizontal part of the list ought to be, if I may use the expression, a tangential continuation from the curve.

I mentioned, as a means of training the eye for the delineation of volutes by hand, the study of the best ancient and modern examples. I would here take the opportunity also



of recommending to the student the keeping by him, for constant reference, a *pattern volume*, by the most approved rules accurately drawn to a large scale. With this he may constantly compare his drawings made by hand, and be enabled to judge of the improvement he is making.

I have extended this letter far beyond what I at first intended, but the interesting nature of the subject must be my apology.

I remain, Sir, yours very respectfully,  
S. HUGGINS.  
Liverpool, February 20, 1844.

SIR,—As I have no doubt you are a votary to the opinions (which, indeed, are but the record of facts) inserted in No. 51 of your publication, upon "Modern Arches," taken from the "Essay on the Decline of Excellence in the Structure and in the Science of Modern English Buildings," otherwise I doubt if you would have inserted them in THE BUILDER. I wish you would just take an *arch* look at the "flaw-walls," which in spite of prudence and decency are being formed in the new houses which are now in course of erection in the intended street between Holborn-bridge and Chick-lane. I myself have attempted to reason with the Paddies who were setting them up, but the only reply I could obtain was, "Faith, we can never go, being joined for ever, and purgatory through and through, with cement, carted from Broken Wharf be me own self."

I am, Sir, with the most profound respect, your sincere friend,

FRANCIS FRANGIBLE.  
Farringdon-street, 26th February, 1844.

[Francis Frangible, of Farringdon-street, is a funny fellow. According to his request, we have looked at the fabrics in question; and had we not conceived from his letter too high an idea of his honesty and solidity of judgment, we might have imagined the "FLAW-WALLS" in question to be Mr. Frangible's own workmanship.—Ed.]

#### DELAYS IN FORMING PUBLIC IMPROVEMENTS.

SIR,—Observing in your last Saturday's number some very proper remarks relative to the ruinous consequences of leaving in a state of abeyance public improvements when partly done, I send for insertion in your next number a copy of the petition of thirty-eight inhabitants of the parishes of St. Giles's-in-the-Fields and St. George's, Bloomsbury, lately presented to the House of Commons on the same subject, which was in the following words, viz.:

"That your petitioners view with the greatest concern the delay made in carrying into effect the several improvements contemplated under the provisions of an Act passed in the fourth and fifth years of the reign of her present Majesty, intituled, 'An Act to empower the Commissioners of her Majesty's Woods to raise money for certain improvements in the metropolis, on the security of the land revenues of the Crown, within the county of Middlesex and city of London.'

"That a Bill is now in progress before your honourable House to enlarge the powers granted by the above-named Act of Parliament, which is to empower the governor and company of the Bank of England to advance and lend moneys to her Majesty's Commissioners of Woods, Forests, Land Revenues, Works and Buildings, on the security of the land revenues of the Crown.

"That your petitioners are tradesmen, depending upon the custom of the surrounding neighbourhood—that they have expended considerable sums in the purchase of leases, and bestowed much time and industry in promoting and improving their several establishments.

"That the Commissioners of Woods and Forests, in carrying out the provisions of the Act already named, have, as it appears to your petitioners, shown greater alacrity in removing houses than in providing for the erection of new buildings; a vast number of houses having been pulled down without one spot being absolutely cleared for rebuilding; nor, as far as your petitioners perceive, have any preparations been made for restoring the neighbourhood; on the contrary, the commissioners continue to pull down a few houses here and there over a large district. The result is that your petitioners' customers are driven away, and trade nearly annihilated.

"That the number of houses that have

been settled for, and which have been vacated, is very considerable, and that the amount of rates paid by your petitioners is thereby greatly increased.

"Your petitioners therefore humbly pray that such relief may be granted as to the wisdom of your honourable House may seem meet, in order that the improvements above to be effected may be carried out with due celerity, and also that those who live in and by the locality may not incur ruin.

"And your petitioners further humbly pray that your honourable House will be pleased to direct that the said Commissioners of Woods and Forests will immediately select any part of their extensive plan for the improvement of the parishes of St. Giles's-in-the-Fields, and St. George's, Bloomsbury, and finish the portion so selected before they proceed to disturb what yet remains of the population of those districts.

"And your petitioners shall ever pray."

The following account will afford a just idea of the great delay which has occurred in carrying forward the improvements in our neighbourhood, and will shew how ruinous that delay must be to the remaining inhabitants.

Order of Pulling Down.	SITUATION.	No. of Houses.	Rebt.	£.	Date when Settled.	Date when Pulled Down.
1	Plumtree-street (Plan 1) 134	14	45	630	August and Nov., 1842.	February and March, 1843.
2	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000	165	60	2750	Oct., 1842 and April, 1843.	June, 1843 January, 1844.
3	Charlotte-street (Plan 2) 134	23	35	1150	One June, 1842 June, 1843.	February, 1844.
4	Hyde-street (Plan 3) 134	25	35	1150	One June, 1842 June, 1843.	February, 1844.
5	Long-street (Plan 4) 134	25	35	1150	One June, 1842 June, 1843.	February, 1844.
6	Broad-street, north side (2) 134	4	90	330	One June, 1842 June, 1843.	February, 1844.
7	Broad-street, south side (2) 134	4	90	330	One June, 1842 June, 1843.	February, 1844.
8	Lyons-street (3) 134	2	90	330	One June, 1842 June, 1843.	February, 1844.
9	Museum-street, part 3 and 6 134	9	21	840	Dec., 1842 and April, 1843.	April and June, 1843.
10	Museum-street, part 3 and 6 134	9	21	840	Dec., 1842 and April, 1843.	April and June, 1843.
11	Duke-street and east side 134	25	35	1150	One June, 1842 June, 1843.	February, 1844.
12	Charlotte-street (Plan 5) 134	7	80	280	One June, 1842 June, 1843.	February, 1844.
13	Broad-street, north side, and 134	7	80	280	One June, 1842 June, 1843.	February, 1844.
14	King-street, Broad-street, and 134	8	90	330	One June, 1842 June, 1843.	February, 1844.
15	Middle-row, Broad-street, and 134	15	45	1500	One June, 1842 June, 1843.	February, 1844.
16	Salutation-court (2) 134	15	45	1500	One June, 1842 June, 1843.	February, 1844.
17	West side of Charlotte-street 134	165	60	2750	Oct., 1842 and April, 1843.	June, 1843 January, 1844.
18	No. Houses Settled 169	169	460	£5800		

The metropolitan improvements in St. Giles's and St. George's, Bloomsbury, could have been commenced and finished in six different places, each separately, and that in accordance with the plan and Act.

1. The widening of Plumtree-street.
2. Forming a street from Broad-street to Longacre, viz., the widening of Bowl-yard, Belton-street, and Hanover-street.
3. Museum-street, from the corner of Hart-street to Holborn.
4. High-street to Charlotte-street.
5. Charlotte-street to Museum-street.
6. Widening of King-street.

Feeling obliged to you for having broached the subject, I beg to subscribe myself, Sir,

Your very devoted humble servant,

A PLUMBER OF PLUMTREE-STREET.  
Bloomsbury, 27th February, 1844.

[We should be most particularly obliged by receiving from our correspondents accounts of cases, whether settled by private contract, arbitration, or verdict, of compensation for property taken for forming public improvements, railways, docks, &c.—Ed.]

#### PLUMBERS' AND JOINERS' WAGES.

SIR,—In your last, "A Surveyor, and Constant Reader" of your useful work, wishes to know why a plumber has more wages, and

works less time than a joiner. Let him answer these questions:—Which is the more healthy? Does not a plumber lose more time than a joiner, by his repeated attacks of rheumatism and asthma, brought on by damp, and his exposure to the vapours of the metals, which his business subjects him to? How many journey-men plumbers have you seen above 50 years of age capable of work? When answering these simple questions, you will find the custom (as you term it) by no means a bad one.

Yours truly,  
A MASTER PLUMBER.

#### ONE-HORSE SAW-MILL.

SIR,—Would you or any of your correspondents oblige a constant subscriber by informing me whether or not it is practicable to construct a saw-mill to work with one horse, and if it is, on what principle. The greatest power I should want to obtain would be to saw 11 inch deal planks.

I am, Sir, your humble servant,  
H. P. W.  
London.

#### Miscellaneous.

WELLINGTON CITY STATUE.—A meeting of the committee for the erection of this tribute from the city to the Duke of Wellington, in grateful acknowledgment of his grace's civic services, took place at the Mansion-house last week. A letter from Mr. Trevilian, of the Treasury, was read, in which their lordships sanctioned the appropriation of the surplus metal of guns placed at the disposal of Sir Francis Chantrey, to execute his statue, one moiety to the Nelson column in Trafalgar-square, and the other to the great Wellington statue now casting by Mr. Wyatt, for the west end of the metropolis. The quantity is above eight tons. It was moved by Sir Peter Laurie, and seconded by Sir James Duke, that the committee had much pleasure in complying with the Treasury minute, which, after considerable discussion, was unanimously agreed to. It was then moved by Mr. Jerdan, and seconded by Mr. Francis, that a letter should be written to the executors of Sir F. Chantrey, requesting them to have the statue ready for inauguration on the 18th of June next, the anniversary of Waterloo, which was also carried unanimously.

THE NEW ROYAL EXCHANGE.—On Monday, Mr. Pullen commenced the sale by auction of the second portion of Bank-buildings, which will comprise the Sun Fire-office, the secretary's residence, and two other houses. The disposal of the materials took place in the large room of the Sun Fire-office, and it was crowded throughout the entire proceedings. The competition was very animated, the lots put up being principally purchased by private individuals, and not by the trade, as many of the articles consisted of excellent mahogany counters, desks, &c. The day's sale produced about 300l., making 1,600l. for what has already been disposed of. The sale was concluded on Wednesday, and the attendance of buyers was as numerous as at the commencement. The bricks of the Sun Fire-office produced nearly 400l.; and the entire sale realized 2,820l.

IMPROVEMENTS IN HUNGERFORD MARKET.—Extensive alterations are now in course of execution beneath the covered portion of this market. The market-sheds which ran from north to south on each side the middle colonnade, have in part been pulled down, and in their place has been erected framework for a double row of shops with fronts east and west, and occupying the space hitherto taken up by the sheds and stalls just referred to. Some of the new shops, it is said, will vie in appearance with those of Covent-garden Market, and besides being appropriated for the sale of choice fruits and vegetables, there will be some of them fitted for what is termed the "fancy" portion of butchers' and cheesemongers' trades.

THE WILKIE STATUE.—The following inscription, proposed by Lord Mahon, is to be placed upon the statue to Sir David Wilkie, in the vestibule of the National Gallery:—"Sir David Wilkie, R.A., born 1785, died 1st June, 1841—a life too short for friendship, not for fame."

The Admiralty intend that Portsmouth dock-yard shall in future be lighted with gas, and the sum of 240l is this year inserted in the Navy Estimates to cover the expense.



**SILBURY HILL.**—Silbury Hill is the largest artificial mound in Europe. It is not so large as the mound of Alyattes in Asia Minor, which Herodotus has described, and a modern traveller has ridden round. It is of greater dimensions than the second pyramid of Egypt. Stukeley is too ardent in the contemplation of this wonder of his own land, when he says, "I have no scruple to affirm it is the most magnificent mausoleum in the world, without excepting the Egyptian pyramids." But an artificial hill which covers 5 acres and 34 perches; which at the circumference of the base measures 2,027 feet; whose diameter at top is 120 feet; its sloping height 316 feet, and its perpendicular height 107 feet, is indeed a stupendous monument of human labour, of which the world can shew very few such examples. There can be no doubt whatever that the hill is entirely artificial. The great earthworks of a modern railway are the results of labour, assisted by science and stimulated by capital, employing itself for profit; but Silbury Hill in all likelihood was a gigantic effort of what has been called hero-worship, a labour for no direct or immediate utility, but to preserve the memory of some ruler, or lawgiver, or warrior, or priest. Multitudes lent their aid in the formation, and shouted or wept around it, when it had settled down into solidity under the dews and winds, and its slopes were covered with ever-springing grass. If it were a component part of the temple at Abury, it is still to be regarded, even more than the gathering together of the stone circles and avenues of that temple, as the work of great masses of the people labouring for some elevating and heart-stirring purpose. Their worship might be blind, cruel, guided by crafty men who governed them by terror or by delusion. But these enduring monuments shew the existence of some great and powerful impulses which led the people to achieve mighty things. There was a higher principle at work amongst them, however abused and perverted, than that of individual selfishness. The social principle was built upon some sort of reverence, whether of man, or of beings held to preside over the destinies of man.—*Old England.*

**IMPORTANT MEETING AT BIRKENHEAD.**—On Saturday evening last, a meeting of the rate-payers of Birkenhead and Cloughton-cum-Grange, was held, in pursuance of public notice, at the Town-hall, in the former place, for the purpose of the bill for authorizing the purchase of the Monks' Ferry, and the bill for the construction of the Birkenhead docks, being submitted for consideration. The attendance was numerous, including most of the influential gentlemen of the township and neighbourhood. On the motion of J. S. Jackson, Esq., John Deane Case, Esq., was called to the chair. The following resolutions, proposed by Mr. Wm. Jackson, were carried, without a dissentient voice:—"That this meeting fully concur in the view taken respecting the purchase of the Monks' Ferry property, and approve of the commissioners purchasing the same, and sanction their application to parliament for the necessary power, and to raise the money to pay for it; and that the act now presented be approved of."—"That this meeting approve of the steps taken by the projectors of the Birkenhead docks, and approve of the plans as prepared by Mr. Rendall; and that the commissioners be authorized to petition parliament on behalf of the township in favour of the same, and that the bill now presented be approved of." Thanks were then voted to the chairman, and the meeting separated.—*Liverpool Journal.*

**TURNPIKE TRUSTS.**—In the House of Commons, February 12th, Lord Ebrington, pursuant to notice, asked the Home Secretary, whether it was the intention of her Majesty's government to introduce any measure, or the same measure which had been already proposed.—Sir J. Graham (Dorchester) said that a commission had been appointed to inquire into and report upon the subject of the administration of turnpike trusts in England. The commissioners had fully investigated the matter, and he expected that their report would be ready in a very short time; but before introducing any measure of the kind, he wished to have the advantage of receiving their report.

**NEW MARKET.**—The subject of a New Corn Market at Colchester is to be taken into consideration at a public meeting this day.

**THE DRUID'S STONE.**—While toiling along these wild wastes (in Portugal), I observed a little way to my left a pile of stones of rather a singular appearance, and rode up to it. It was a Druidical altar, and the most perfect and beautiful one of the kind which I had ever seen. It was circular, and consisted of stones immensely large and heavy at the bottom, which towards the top became thinner and thinner, having been fashioned by the hand of art to something of the shape of scollop shells. These were surmounted by a very large flat stone, which slanted down towards the south, where was a door. Three or four individuals might have taken shelter within the interior, in which was growing a small thorn tree. I gazed with reverence and awe upon the pile where the first colonies of Europe offered their worship to the Unknown God. The temples of the mighty and skilful Roman, comparatively of modern date, have crumbled to dust in its neighbourhood. The churches of the Arian Goth, his successor in power, have sunk beneath the earth, and are not to be found; and the mosques of the Moor, the conqueror of the Goth, where and what are they? Upon the rock, masses of hoary and vanishing ruin. Not so the Druid's stone; there it stands on the hill of winds, as strong and as freshly new as the day, perhaps 30 centuries back, when it was first raised by means which are a mystery. Earthquakes have heaved it, but its copstone has not fallen; rain floods have deluged it, but failed to sweep it from its station; the burning sun has flashed upon it, but neither split nor crumbled it; and Time, stern old Time, has rubbed it with his iron tooth, and with what effect, let those who view it declare. There it stands, and he who wishes to study the literature, the learning, and the history of the ancient Celt and Cymbrian, may gaze on its broad covering, and glean from that blank stone the whole known amount. The Roman has left behind him his deathless writings, his history, and his songs; the Goth his liturgy, his traditions, and the germs of noble institutions; the Moor his chivalry, his discoveries in medicine, and the foundations of modern commerce; and where is the memorial of the Druidic races? Yonder, that pile of eternal stone!—*Borrow's Bible in Spain.*

**OPENING OF THE TAME VALLEY CANAL.**—Wednesday week being the day fixed for opening the Tame Valley Canal, the committee, accompanied by some of the proprietors, the company's engineer, their treasurer, solicitor, clerk, and other officers, proceeded from this town in two boats along the improved line of canal to the point of junction with the Tame Valley Canal at Tipton, where they found the contractors, and many boats laden with coal, iron, and ironstone. The Tame Valley Canal unites at this point with the Walsall Canal, and passes from thence through Tipton, West Bromwich, Perry Barr, Witton, and Aston, to Salford Bridge, into another canal of the company, called the Fazeley Canal. The committee then proceeded to open the Tame Valley Canal, passing into it from the Walsall Canal, followed by the contractors and their friends, and the trading boats, with flags, banners, and a band of music, amidst the shouts and loud greetings of a large assemblage of the neighbouring population. By means of this very valuable and important communication, coal, iron, and merchandize of all kinds will be conveyed at a reduced cost both in tonnage and haulage from the South Staffordshire mineral district to the lower part of the town of Birmingham, and the large and populous agricultural district on the line and in the neighbourhood of the Tame Valley Canal; also, by the route of the Fazeley, Coventry, Oxford, and Grand Junction Canals, to Fazeley, Tamworth, Coventry, Northampton, Banbury, Oxford, and other markets in the midland counties, as likewise to the metropolis. The works of the Tame Valley Canal have been executed in the most substantial manner, under the superintendence of the company's talented engineers.—*Birmingham Gazette.*

At a meeting of a Board of Directors of the Dock Company on Monday week, it was resolved to carry into execution the wishes of the Great Britain Steam Ship Company, in the removal of obstacles preventing her floating into Cumberland Basin; the latter company giving an indemnity for loss. Repairs to be completed by the 19th of March.—*Bristol Paper.*

**WAGES IN PARIS.**—The wages of the workmen in Paris are much lower than in London. The class of labourers to whom my observations hitherto have chiefly referred, namely—stone-masons, paviours, hodmen, &c. do not earn, even in the finest weather and longest days, more than from two francs and a half to three francs and a half; or from two shillings and a penny to two shillings and elevenpence per day. The wages of mechanics and artisans are a little better, though, in different trades, the amount of earnings varies considerably. Carpenters average four francs a day; upholsterers, from three to four francs; hatters, from four to five francs; tailors, from three to five francs, according to the nature of the work and the abilities of the workmen; watchmakers earn from three to four francs, or from half-a-crown to four and twopence; and jewellers do the same. Those workmen who receive the best wages are marble-cutters and stone-cutters, their daily earnings averaging from five to six francs, or from four and twopence to five shillings. Next to them are the printers, whose wages average from four to five francs. The worst-paid workmen in Paris are the shoemakers. Their wages vary from two francs to two and a half francs per day, or from ten shillings to twelve and sixpence per week. They are, in fact, no better paid for their labour than the hodmen who work at new buildings, or the paviours who toil in the streets. The exceeding lowness of the wages which the shoemakers receive in Paris, and, indeed, in all parts of France, accounts for the very great cheapness of French boots and shoes as compared with those which are made in England. Boots, as good as those which cost twenty-eight or thirty shillings here, can be procured in Paris for fourteen or fifteen shillings. And yet, low as is the rate of wages in Paris, compared with what our operatives receive in London, the working classes in that city may live more comfortably on their earnings, provided they are economical, than the same classes can on their wages in London.—*Paris and its People.*

**PHOTOGENIC LITHOGRAPHY.**—From Rome we learn that a copper-plate engraver, Signor Lanzaruolo, has discovered a method of fixing on the lithographic stone the images obtained by the daguerreotype; so that a large number of impressions can be taken on the instant. The artist has presented to the Pope proofs of several of the monuments of the eternal city, rendered by this process, which are said to be excellent. Letters from the same city mention a report, that though full of strangers, including many of our own sight-loving public, there would be no carnival this year in the papal city.—*Athenæum.*

Sir W. Ross, painter to her Majesty the Queen of England, has arrived at Brussels. The artist went, on the 17th, to the Palace of Lacken, where he obtained the honour of a first sitting of the Queen, whose portrait in miniature, and that of the young Princess Charlotte, he is to paint for the Queen of England.

The celebrated historical painter and director of the Academy of Arts at Florence, Professor Pietro Benvenuti, died in that city the week before last, after a long and painful illness, at the age of 75.

A lecture on the principles and practice of sculpture, with illustrations, was delivered by Mr. Keyworth, sculptor, before the Literary and Philosophical Society of Hull, on Tuesday night week, and was greatly applauded.

During the last few days, Mr. Francis, the sculptor, has been at Windsor, taking Prince Albert's directions for a statue of the late Duke of Saxe Gotha.

**SUNDERLAND PIERS.**—Excavating operations have commenced near to the head of the south pier at this port, which we understand are intended for the formation of a slip wash for the surge of the tide, in order to prevent the heavy swell to which the harbour is now subject.—*Sunderland Herald.*

Northumberland House is undergoing a course of re-embellishment, preparatory to the arrival of the Duke and Duchess from Alnwick Castle for the season.

The President of the Royal Society appointed the 2nd, 16th, and 30th of the present month, for his *soirées* to the Fellows of that learned body.



**THE USES OF A TOWN CROSS.**—Towns are places where travellers rest,—all men are travellers, or may be, or should be. It would add much to general accommodation, if in the centre of our provincial towns were to be a pedestal or monument, whereon should appear various local information; on each of four faces the distances to other towns, as is done at Dereham, in Norfolk; also the means of travelling, whether by coach or railway; the time of arrival and departure, and the fares.—*Bury and Suffolk Herald.*

The new Royal Academician, elected in place of Mr. Thomson, is Mr. J. P. Knight.

### Current Prices of Metals.

London, February 16, 1844.

	£.	s.	d.	£.	s.	d.
SPELTER—Foreign, ton	0	0	0	22	10	0
" For delivery	0	0	0	21	0	0
ZINC—English sheet	0	0	0	30	0	0
QUICKSILVER.....	per lb.	0	4	6		
IRON—English bar, &c.	per ton	5	0	0		
" Nail rods.....	0	0	0	6	0	0
" Hoops.....	7	5	0	7	10	0
" Sheets.....	0	0	0	8	0	0
" Cargo in Wales	0	0	0	4	5	0
" Pig, No. 1, Wales	0	0	0	3	5	0
" No. 1, Clyde	0	0	0	2	2	0
" For, Swedish	10	0	0	10	5	0
" Russian, COND.....	16	10	0			
" " PSI.....						
" " Gourieff.....						
" " Archangel.....						
STEEL—Swedish keg.....	p. ton	18	5	0		
" Faggot	0	0	0	19	0	0
COPPER—English sheathing..lb.	0	0	9	1		
" Old.....	per lb.	0	8	1		
" Cake, per ton	0	0	0	88	0	0
" Tile.....	0	0	0	86	0	0
" S. American	0	0	0	77	0	0
TIN—English blocks, &c. cwt.	3	10	0			
" bars.....	0	0	0	3	12	0
" Foreign, Banca.....	0	0	0	3	6	0
" Straits.....	0	0	0	3	5	0
" Peruvian	0	0	0	3	0	0
Tin plates, No. 1, C. p. box 1	4	0	1	8	0	
" No. 1X.....	1	10	0	1	14	0
" wasters 3s. p. box less						
LEAD—Sheet milled.....	p. ton	17	15	0		
" Shot, patent.....	0	0	0	19	15	0
" Red.....	21	10	0			
" White.....	23	10	0			
Pig-LEAD—English.....	0	0	0	16	15	0
" Spanish.....	0	0	0	16	10	0
" American.....	0	0	0			

**THE IRON TRADE.**—To gratify our readers, we give them the particulars of the expenses incurred in producing one ton of No. 2 bar-iron (say merchant bars) from the ore, which, we trust, will be found to approximate as near to truth as is necessary to form an idea:—

Coal, the price of which varies according to circumstances from 3s. 6d. to 4s. per ton—Quantity required to make one ton of bar-iron through all its processes, is about six tons—at, say 3s. 9d. per ton..	£1 2 6
Quantity of ironstone required to produce one ton of bar-iron is about three and a half tons, which, ready for being put into the blast-furnace, cannot cost less than 11s. per ton.....	1 18 6
Limestone—at least.....	0 2 6
The amount paid in wages to the firemen, together with the expenses for oils, tallows, and all other necessities, cannot be rated at less than.....	1 15 0
Expenses incurred in transit to the nearest seaport varies according to distance, but, with agents' salaries, poor-rate, rents, and other incidental expenses, cannot be rated at less, per ton, than.....	0 5 0

Making a total of.....£5 3 6  
Present price of bar-iron at Cardiff or Newport—say.....4 0 0

Leaving the manufacturer at a loss, on every ton made, of.....£1 3 6  
—*Swansea Journal.*

The market for metals has at length improved to some degree, but the great article of

British iron does not yet participate in the advance, although an attempt has been made to obtain 4l. 5s. per ton for bars in Wales. British copper is in greater demand; and a public sale of eighty-four slabs of Banca tin produced 66s. per cwt. The price of spelter is 21l. 10s. for delivery, and Spanish lead is in small supply, and readily saleable at 16l. 10s. per ton.—*Midland Counties Herald.*

February 23.

	£.	s.	d.	£.	s.	d.
SPELTER—Foreign, ton	22	5	0	22	10	0
" For delivery	0	0	0	21	0	0
ZINC—English sheet	0	0	0	30	0	0
QUICKSILVER.....	per lb.	0	4	6		
IRON—English bar, &c.	per ton	5	0	0		
" Nail rods.....	0	0	0	6	0	0
" Hoops.....	7	5	0	7	10	0
" Sheets.....	0	0	0	8	0	0
" Cargo in Wales	0	0	0	4	5	0
" Pig, No. 1, Wales	0	0	0	3	5	0
" No. 1, Clyde	0	0	0	2	5	0
" For Swedish	10	5	0	10	10	0
" Russian, COND.....	16	10	0			
" " PSI.....						
" " Gourieff.....						
" " Archangel.....						
STEEL—Swedish keg.....	p. ton	18	5	0		
" Faggot	0	0	0	19	0	0
COPPER—English sheathing..lb.	0	0	9	1		
" Old.....	per lb.	0	8	1		
" Cake p. ton..	0	0	0	88	0	0
" Tile.....	0	0	0	86	0	0
" S. American	0	0	0	77	0	0
TIN—English blocks, &c. cwt.	3	10	0			
" bars.....	0	0	0	3	12	0
" Foreign, Banca.....	3	6	0	3	7	0
" Straits.....	0	0	0	3	4	0
" Peruvian	0	0	0	3	0	0
Tin plates, No. 1, C. p. box 1	4	3	1	8	0	
" No. 1X.....	1	10	0	1	14	0
" wasters 3s. p. box less						
LEAD—Sheet milled.....	p. ton	17	15	0		
" Shot, patent.....	0	0	0	19	15	0
" Red.....	21	10	0			
" White.....	23	10	0			
Pig-LEAD—English.....	16	15	0	16	15	0
" Spanish.....	0	0	0	16	10	0
" American	16	0	0	6	15	0

### Tenders.

TENDERS delivered for building Coach-house and Stables, for Thomas Allen, Esq., of Blackheath.—A. Trimmer, Esq., of Adam-street, Architect:—

Whitewood (of Greenwich)....	£454	0	0
Clemence (Villiers-street).....	453	10	0
Sugden (Bermondsey).....	449	12	0

Opened in the presence of the parties.

### NOTICES OF CONTRACTS.

For Erecting a new Workhouse at Arctid, near Sandbach, Congleton Union.—Plans, &c., at the Offices of the Clerks of the Union at Congleton, and Mr. Henry Bowman, Architect, 47, Princess-street, Manchester; W. and J. Latham, Clerks. March 9.

For Excavating, Puddling, and Building a Gas Pit, at No. 5, Gas Station, near Gaythorne, Hulme. Plans, &c., at Mr. Shorland's Office, Town-hall, Manchester; T. Wroe, Gas Office. March 4.

For Erecting a Master's House, Boundary-walls, &c., in connection with St. Peter's National and Sunday Schools, Union-street, Oldham.—Plans, &c., at Messrs. Butterworth and Whitaker, Architects, Cross-street, Manchester. March 7.

For Sewering, Paving, &c., several streets in Chorlton-upon-Medlock.—Plans, &c., at Langtry's, Surveyor, Town-hall, Chorlton-upon-Medlock; J. Heron, Town Clerk, 21, Princess-street, Manchester. March 4.

For Erecting and completing Buildings and other Works for Station at Halifax, Manchester, Leeds, and Hull Railway.—Plans, &c., at Engineer's Offices, Palatine-buildings, Manchester. March 11.

CONTRACT for the Erection of a Town House and Outbuildings on the Charity Farm at Thrigby, near Great Yarmouth.—Mr. A. J. Tillett, Architect, King-street, Great Yarmouth. March 11.

CONTRACT for Erecting a School-house at Holloway, Bath.—Mr. G. P. Manners, Bath. March 2.

CONTRACT for Building a Lock-up-House at Tonbridge, Kent.—Mr. H. A. Wildes, Maidstone. March 11.

CONTRACT for the Erection of a Chapel, and also additional Buildings for female patients, and other alterations to the Kent County Lunatic Asylum.—Mr. G. Poynder, Clerk, Asylum, Maidstone. March 18.

CONTRACT for Building Sewers in Curator-street, Graystock-place, Dean-street, Cook-lane, Seacoal-lane, and other places contiguous.—Mr. Jos. Daw, Sewers Office, Guildhall. March 12.

CONTRACT for the Execution of the several Works necessary to be done in the Re-building of Brent Bridge, and repairing Finchley Bridge, Hendon.—Clerk of the Peace, Sessions House, Clerkenwell-green. March 26.

CONTRACT for Building new Sewers in Portpool-lane, Leather-lane, Woburn-place, and Great Coram-street.—Messrs. Stable and Lush, Hattogarden. March 8.

CONTRACT for better Paving, Repairing, and keeping in order the Stone-carriage and Footway Pavements of the parish of St. Mary-le-Strand.—Mr. G. Truwhitt, Clerk. March 14.

CONTRACT for supplying her Majesty's several Dock-yards with 2,750 loads of English Elm Timber, and 119 Elm Trees for Pumps.—Secretary of the Admiralty. March 19.

CONTRACT for Building Nine fourth-rate Houses.—Mr. Single, 34, Coleman-street, City. March 11.

CONTRACT for Repairing or New Paving the Footways and Carriage-ways, as the Commissioners may appoint, of the parish of St. John the Evangelist, Westminster, for one year, from Lady-day next.—Mr. J. R. L. Walsley, Clerk. March 5.

PARISH OF ST. GEORGE, HANOVER-SQUARE.—Contract for Workmen's Tools and Hammers, Iron Lamp Posts and Gas Fittings, and for keeping in order the garden in Hanover-square, for one year from the 25th March. R. Lees, Clerk, Board Room, Mount-street. March 6.

PARISH OF ST. GEORGE, HANOVER-SQUARE.—Contract for Masons' and Pavementers' Work, and supply of Guernsey Granite Chippings, and York-stone Paving, for one year from the 25th March.—Mr. R. Lees, Clerk, Board Room, Mount-street. March 6.

CONTRACT for Removing present Wooden Turret, and erecting a Stone Turret in lieu thereof, with other works, at Preston Hospital, near Wellington, Salop.—Plans, &c., E. Haycock, Esq., Architect, Shrewsbury, or at Mr. Potter's, Bridgman-place, Walsall. March 9, 1844.

### TO OUR CORRESPONDENTS.

We have received the communications of "C. S.," "Alpha," "L. O. G.," "Censorius," [who assumes a Latin signature to an English letter swarming with grammatical errors, though on a good subject,] and of "One of the London Beavers."

We have received "A History of British Fossil Mammalia and Birds," by Richard Owen, F.R.S., part I.

"Geology: Introductory, Descriptive, and Practical," by David Thomas Ansted, M.A., F.R.S., part I.

"Illustrations of Baptismal Fonts," Van Voort. Parts II., III., IV.

"Ion."—The work, we are informed, is at present out of print. The price was 1l. 1s.

"T. M. C."—The present price of the work is 8l. 8s., and is to be obtained at No. 106, Great Russell-street, Bloomsbury.

The fresh communication of "G. R. F." upon "Annulets" we have received, and have put in hand its requisite illustrations.

The article "Echinus," from "G. R. F.," will appear in our next Number, if our engraver complete his work in time.

"J. L. T."—The beautiful example of a Welsh font has been received. With the other details of it, we should like to have a plan or horizontal section of its basin.

We have received "SPECIMENS OF DECORATIONS IN THE ITALIAN STYLE. SELECTED FROM THE DESIGNS OF RAFFAELLO IN THE VATICAN PALACE AT ROME."

We have received the drawings of the ARBROATH INFIRMARY, but cannot insert them till we have a description of the building, and the names and purposes of the different wards.

We have received the drawings of the proposed Hythe Pier, and those for Scrolls and Cartail-steps, and intend to have them engraved.

ERRATA.—No. LV., page 95, first column, line 22, for "Censor" read Censer.

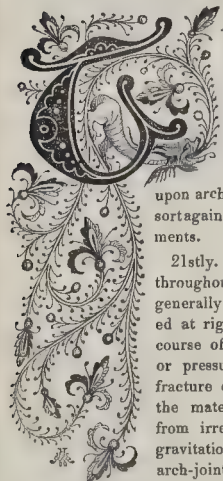
In page 23, first column, line 31, for *frustrum* read *frustum*.



## The Builder.

NO. LVII.

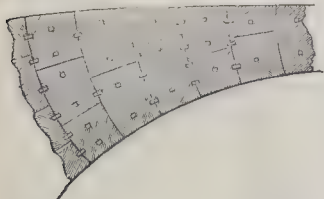
SATURDAY, MARCH 9, 1844.



**T**AKING up for the fifth time the important subject of Bridge-building, we must conclude what we have to say at present upon arches before we resort again to piers and abutments.

21stly. Every bed-joint throughout bridge-work generally should be formed at right-angles to the course of the active drift or pressure, so that no fracture or displacing of the materials may occur from irregular or askew gravitation; thence the arch-joints, instead of

being straight inclined planes, will assume a curved form, which will not only effectuate correct gravitation of the materials,



but will also prevent the slipping out of any voussoir from the work, which indeed may be utterly prevented by each stone in the work being plugged with copper, or other proper metal, to all the other stones which adjoin such stone. In the present state of architectural taste, we might not admire the appearance of arch-joints being so curved, but this may be only first prejudice, since if, by the nature of science, they should be so required for perfect operation, we should soon, becoming accustomed to such form, cease to dislike them, and even admire their prominent display, in the same manner as we do the flowing curvatures of nature. The pinning up tightly the key-stone, and plugging it to the adjoining stones, will in this, as in all other cases, be a matter of some difficulty, but may be partly effected by the key being horizontally somewhat wedge-shaped, so as to drive forward till tight, and by being then run with lead.

22ndly. The spandrels of the arch should form part of the Catenarian construction, the extrados itself being the immediate bed of the roadway.

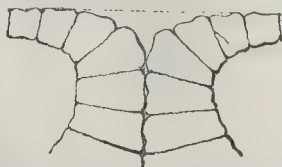
23rdly. The mere paving or other roadway, and its traffic, should be the only burthen upon the arches and piers of a bridge, except the unavoidable weight of the parapets and their adjuncts.

24thly. In order to distend upwardly the spandrels of the arch, so that the extrados may form the bed of the roadway without any more burthen, they should be made of lighter materials, so as to afford the requisite quantity of

resistance to fracture, without any increase of weight.

25thly. Solid arch-spandrels, formed of materials graduated in lightness in proportion to the excess of length required in order to occasion the extrados of the voussoirs to reach up to the under side of the roadway without more burthen, will be more economical and more certain in operation than open spandrels formed of harder and heavier materials, on account of the difficulty and perhaps impossibility of forming tunneled or other open spandrels, without casting weight irregularly upon some parts of the work, instead of diffusing it uniformly over the whole of every skewed surface and bed-joint of the work; so that although it is necessary that all the external work of a bridge should be of such materials as will resist the effects of moisture, air, and time, there may be cases in which the arches or their spandrels, or some other parts of them, may be better formed of light topus, or even chalk, than of the hardest granite.

26thly. Having now arrived at the piers of the work, our chief theory thereon is, that they should commence in bulk of the utmost united substance of the spandrels of the two arches to be supported.



27thly. If any reduction of this bulk occur, harder materials must be chosen, as, for instance, if the inclined bed-line of each spandril be 10 feet long, the head of the pier should be 20 feet wide, if the pier be of the same kind of materials as the arches; but if it be desirable (as it may) to reduce the piers to only 10 feet wide, the material of the piers should be twice as capable of resisting fracture as that of the arches.

28thly. It may be taken as a general rule that for reducing bridge-piers to the smallest practicable bulk, and thence leave the greatest amount of water-way, they should be built of the hardest, most compact, and least bulky materials; but that from the use of light materials for arches result the advantages of greater depth of key-stone and spandril, whereby the voussoirs at the vertex of the work are less likely to slip through, and mere lumber is rendered unnecessary for filling out the haunches of the work for supporting the roadway.

29thly. The piers, instead of being perpendicular, should increase downwardly, so that there may be the same amount of pressure on every foot of the work down to near the foundation; but in order to prevent obstruction to the water-way under the arches, the piers may be made with small increase of width till near the foundation, but with greater increase of length the way of the stream, so as to make up for restriction of width.

30thly. Unless the foundation of a bridge be solid sure rock, there should be a sudden increase or spread of the work according to circumstances, so that every foot of the bed or foundation of the work (instead of being only as capable of resisting pressure as well as any course of the masonry of the pier) may be even three or four times as capable of resisting

pressure; so that notwithstanding the accident and vicissitude to which a foundation under water are liable, there may be if possible a certain assurance of the work standing.

In our next we shall go into the theory of the Land-abutments.



## METROPOLITAN BUILDING-ACT.

**HOUSE OF LORDS.**—The Earl of Lincoln said he rose for the purpose of bringing in a bill for regulating the construction and the use of buildings in the metropolis and its neighbourhood. It would not be necessary for him to enter at length into the subject, as the contents of the voluminous reports which had been laid on the table of the house in reference to it must be fresh in the recollection of the House, and it would be, therefore, useless on that occasion to go into any recapitulation of them. He should merely state that the report of the committee which sat in 1840 recommended a measure for the regulation of buildings in large towns, which was not only essential, but of primary importance. The first bill on that subject was brought forward in 1841 by a noble lord a member of the other House, who was then Secretary of State for the Home Department, but it did not pass in consequence of the dissolution of Parliament in that year. In 1842 it was again introduced in the House of Lords, but before the second reading in the House of Commons it was referred, by the unanimous assent of all parties, to a committee up-stairs, which sat during the session without coming to any practical result, and at the end of the session the committee reported the evidence without any decision upon it. At the desire of his right honourable friend the Secretary of State for the Home Department, he (the Earl of Lincoln) looked through that evidence, with a view to the preparation of a measure on the subject for the session of 1843. He consulted several architects and surveyors on the subject, and he found that a general measure on the subject would embrace very complicated details, from the circumstances connected with the various towns that should be included, some of them, such as Liverpool, having local acts for regulating those matters, and others, such as Manchester, having no regulation upon that subject. Seeing this, it was evident that if the difficulties were overcome, that branch of the subject would afford an ample basis for a legislative measure in itself, and consequently the bill of last session was brought forward with respect to the metropolis alone; but in consequence of the great number of other measures which were also before the house, it was found impossible to proceed with it. He did not regret that it had been so, for he had frequent opportunities during the recess of introducing alterations and improvements into that measure, and he hoped that they were such as would make the measure efficient and useful to the public. Without trespassing further on the attention of the House, he would state the leading provisions of the bill which he was going to bring in. The house was aware that the present Act for regulating buildings was introduced in the reign of George the Third, about seventy years ago, and many of its details were of course inapplicable to the present condition of the metropolis. He, therefore, proposed to repeal that Act [hear]. The existing act contained provisions for the prevention of fire, and he (Lord Lincoln) intended, in the course of the present session, to bring in a separate measure on the subject of the prevention of fire in the metropolis, rather than to mix up provisions for the prevention of fires with his present bill. It was unnecessary for him to trouble the house with technical details, which would be disagreeable and unintelligible to the House; such details, for instance, as affected party-walls, and the various classes of buildings. All he felt necessary to state was that the bill had been framed with the greatest care, and after consulting men the best qualified to give information on the subject, and he hoped it was one which would be palatable to all



concerned, as far as it was possible in a bill which, to a certain extent, placed restrictions on the free will of individuals. In the bill of last year provisions were introduced for the purpose of regulating and improving drainage. He proposed to omit those clauses from this bill, as the subject of drainage and a proper supply of water to large towns and populous places was under the consideration of a commission which, he hoped, would before long, lay a report on the table of the house that would enable him to deal with the subject separately. All he proposed, therefore, in this measure was, such a provision on the subject of drainage as was indispensable for the purposes of the bill. There were also provisions for the purpose of preventing, as far as possible, the crowded and confined character of streets and lanes, which had heretofore, in numerous instances, produced so much disease amongst the poorer classes of the community in crowded districts; in fact, to so great an extent had the evil gone, that in some crowded streets fever continued without intermission from one end of the year to the other. He proposed that in future there should be certain widths as regarded streets and alleys, and as far as was practicable be proposed to regulate the use of buildings for habitations, prohibiting the use of cellars for that purpose where it was possible. There was also a clause in the bill to prohibit the carrying on of any dangerous trade or business in crowded neighbourhoods, and another provision to prevent the practice of any business which might be noxious to the public health in close and crowded districts. The House was aware that under the present Building-Act there was a power to appoint district-surveyors, and it was not proposed to interfere with that power, or to interfere with the power of magistrates to appoint them. He should remark that in some cases great abuses had arisen from the appointment of incompetent persons to that office. He proposed to have district-surveyors appointed by the magistrates, such surveyors not to be under thirty years of age, and not to be magistrates; and he also proposed that the appointment of surveyors should be confirmed by the Secretary of State, so as to secure the services of a superior class of officers. Although he objected to making new officers, yet he felt that it was absolutely necessary, to prevent excessive litigation, that official referees should be appointed to determine disputes, and he, therefore, proposed to appoint them by this measure. There was a provision for extending the operation of the Act round the metropolis; but not further than twelve miles from Charing-cross. There was also another provision, new to this bill, and which was not in the bill of last year; it was one for vesting the power of deciding on the report of the official referee in the Commissioners of Woods and Forests, in cases where any exceptions were taken to his reports. He earnestly hoped, though the bill was of a technical nature, and therefore not of a nature to command the attention of the House, that it would receive its best consideration.

Leave was then given to bring in the bill.

#### THE NEW ROYAL EXCHANGE.

A very splendid entertainment was given on Wednesday week, at Mercers' Hall, by the Mercers' Company to the Gresham Committee, in congratulation of the approaching period to their labours by the completion of the civic edifice, which is to be opened in the course of the next three months.

Mr. Watney, the Master of the Mercers' Company, was in the chair. Amongst the company were Alderman Humphrey, Sir Chapman Marshall, Mr. R. L. Jones, the Chairman of the Gresham Committee; Mr. Tite, the architect of the New Royal Exchange; Mr. Palmer, Mr. Westmacott, the sculptor, &c.

In the course of the evening, Mr. Tite mentioned that he felt the highest gratification in stating that the works would be completely finished within the specified time. He expressed his gratitude for the great liberality they had exercised in giving additional beauty to the portico by employing Mr. Westmacott to make the ornamental sculpture for the pediment—a task which had been performed by that gentleman with remarkable classical taste. He trusted that the building which was so near

completion would fully answer all the purposes for which it was raised, and that the prosperity of the great city for which such exertions were made, and such an expenditure was incurred, would increase in proportion to the magnificent improvements now so rapidly advancing.

Mr. Westmacott, in returning thanks for the warm manner in which he was received by the company, said he felt much pride in informing them that the sculpture of the pediment had been seen by some of the highest personages in the realm, and that he had been honoured by their approbation of the mode in which it had been executed. Prince Albert had come upon him unawares while he was at work in his apron, and emphatically pointed out the figures and decorations which His Royal Highness considered to deserve more especial notice. The Duke of Cambridge had also honoured him with a visit, and added to the gratification which he felt by an approval expressed in terms which nobody could mistake; and the greatest man in England, the Duke of Wellington, did not withhold his tribute of unfeigned congratulation.

Mr. R. L. Jones took occasion to congratulate the city of London upon the splendid manner in which the Royal Exchange had arisen out of its ashes to claim comparison with the most famous buildings in the metropolis. In a few days the unsightly obstruction which the public had so long desired to see levelled to the ground would wholly disappear, and the figure of the hero of a hundred battles would appear before the edifice which might be considered as the type of the commercial greatness attributable in no small degree to his military skill and wisdom.

#### INSTITUTE OF BRITISH ARCHITECTS.

JAN. 8. C. Barry, Esq., R.A. V.P. in the chair.

A communication was read from W. M. Higgins, Esq., "On the recent restoration of the spire of St. Stephen, at Vienna." It proceeded to state, that the ancient church of St. Stephen is supposed to have been founded, in the year 1144, by Heinrich Jasomirgott, afterwards the first Duke of Austria, one of the twenty-three children of Agnes, to whom the Klosterneuburg owes its foundation. The church seems to have been several times injured by fire, and in 1519 by severe earthquakes, which did great injury to the buildings in Vienna and the vicinity, and on these occasions to have been partly rebuilt, and much enlarged. The tower, as built or restored in 1519, in process of time, deviated out of the perpendicular to a considerable extent. An iron bar was carried through it as an axis for the support of the spire, which, having a considerable tendency to vibrate, might be considered as an element of destruction, rather than of strength; consequently the thin wall of the lower portion of the spire was reduced almost to a ruin, and at length became in such a dangerous condition as to require rebuilding. The removal of the old spire was commenced in August, 1839, and in the following spring all the condemned part had been removed. The mode of construction adopted in the restoration was novel and ingenious; the slight masonry of the spire being supported by means of a framing of vertical iron ribs, fastened, at their lower extremities, to a cast-iron plate or base, and united to each other at intervals by horizontal rings of rolled iron. These rings are made to project from the inner surface, so as to admit of a person ascending, with the assistance of ladders, to the top of the spire. All the wrought and rolled iron employed in the construction of this iron skeleton, the weight of which was only 123 cwt., was prepared in the government works at Neuberg, in Styria. The cast-iron plates or rings were furnished from the government iron works at Maritzell. In the autumn of 1842, when the whole of the masonry of the spire had been completed, the upper portion, consisting entirely of iron-work, was fixed. This also was attached to a strong cast-iron circular plate, similar in construction to that below. This portion of the framing, with the other iron-work employed in the spire, weighed about 80 cwt., so that the entire weight of iron was about 203 cwt. The new portion of the spire was connected to the old by means of an arrangement of iron-work, very appropriately called "anchor-fastenings." The portion of the spire restored (viz. from the gallery

of the tower to the top of the cross) is about 182 feet, the cost thereof being about 130,000 gulden, of which sum 15,500 gulden were expended in taking down the old spire, and in the construction of the necessary scaffolding. Objections have been raised at Vienna to the extensive use of wrought iron in the reconstruction, from an apprehension of injury arising from the dilatation of the metal under changes of temperature; it appears, however, from careful experiments made, that the expansion of a bar of wrought-iron 40 feet in length, under an alteration of 40° Reaumur, is not more than three lines, even in a vertical position, in consequence of the pressure of the upper parts on the lower; and the opposite effect would increase with the diminution of temperature, the effect being still less when a number of pieces are united, forming a system (as in the iron work of the spire), than when the same length is in a single piece. It further appears that Bolinger, the mechanical engineer, found the dilatation of one of the iron ribs, between the temperature of summer and winter, to be only one line, and that of the iron framework, when completed and exposed to the direct rays of the sun before it was covered by the masonry, to be imperceptible.

JAN. 22. T. L. Donaldson, Esq., in the chair.

Mr. Poynter made some remarks on a plan and section of the transept of Minchinhampton Church, in Gloucestershire, presented by Messrs. Foster and Son, of Bristol. The transept, he said, a very curious one of the fourteenth century, and it was most remarkable that the roof, although supported by stone joists, was built as if it were of timber. The transept was not large, being 29 ft. long and 15 ft. wide, and the roof was carried by six stone ribs; the height to the crown of the arch being 32 ft. The appearance was very irregular, the windows also being narrow. The roof was originally covered with slabs of stone, but is now tiled.

FEB. 5. W. Tite, V.P., in the chair.

A paper was read by Mr. J. J. Scoles, on the pyramids at Abou-Koash, and those to the southward, including those in the Faiyoun, and on an arched tomb existing in the vicinity of Gizeh, shewn in the third volume of Col. Vyse's work. There appeared to be thirty-nine pyramids in Middle and Lower Egypt, all of which have been explored by Mr. Ferring, at the expense of Col. Vyse. They are situated on the western side of the Nile, chiefly on the Desert Hills, occupying a space, measuring from north to south, of fifty-three English miles. The principal pyramids alluded to are distinguished by the names of Gizeh, Saccara, Dushoor, and Meydoon, and have a remarkable correspondence in their general arrangements, their sides being placed true to the cardinal points, with one exception, the entrances being on the north side, and having inclined passages leading to various apartments; which passages, to a considerable way down, have been filled up with solid blocks of stone or granite to the exact size of the apertures. Four of these pyramids are constructed of crude or unburned bricks, formed of loam, Nile earth, and chopped straw. In making the excavations necessary to elucidate their construction, Mr. Ferring discovered that the foundation of some of the pyramids was formed by levelling the stony surface of the desert with fine sand, and on the sand was built the pyramid. Wood, forming the ceiling of one of the sepulchral chambers, and consisting of oak, larch, and cedar, was found in the interior of a pyramid at Saccara in a wonderful state of preservation. The walls of some of these sepulchral chambers were lined with a bluish green porcelain; and remains of colouring, gilding, and other embellishments, shewed the magnificence of the builders of these mausolea. The arched tomb near Gizeh was constructed of stone beautifully worked, and the joints were scarcely perceptible. From hieroglyphics inscribed on this monument, it appears to have been constructed in the reign of Psammeticus II., about 600 years before Christ, and is probably one of the oldest stone arches known; but Mr. Scoles seemed to have some doubt as to the high antiquity of this and other similar arches from the circumstance that the arch was not used by the Greeks, and also that it was little used by the Egyptians at a later period.



## OXFORD ARCHITECTURAL SOCIETY.

FEB. 14.—The Rev. the Rector of Exeter College in the chair.

A volume entitled, "Remarks on Wayside Chapels," by J. C. Buckler and C. Buckler, Esqs., was received from the authors; and the following books were reported as added to the library: *Gotische Rosetten aus der Kirche zu Doberan*, 4to. Rostock, 1838. *L'Architecture Gothique sur les bords du Rhin, de la Lahn et du Mein*, par L. Lange, folio, Francfort, 1833. *Stained Glass of the new Church of Notre Dame at Munich*, large coloured plates, by F. H. Eggert, royal folio. Munich, 1843.

A paper was read by Henry Addington, Esq., of Lincoln College, on the church of St. Peter-in-the-East, Oxford. This church is well known to have been currently attributed to Grimbald, in the time of Alfred; but Mr. A. shewed, by comparison with other buildings, that the oldest parts of the present structure, comprising the crypt and the chancel, are late Norman or transition work, of about the same age as the choir of Canterbury, the erection of which, in 1175-84, is recorded by Gervase. The Lady-Chapel, on the north side, was built by St. Edmund of Abingdon, the founder of St. Edmund Hall, about A.D. 1240, and is in the early English style; the arches on the north side of the nave appear to be of the same age. The windows of the north aisle are good Decorated work, with flowing tracery approaching to Flamboyant. The tower is also of the fourteenth century, with an added parapet of the fifteenth. A fine perpendicular window at the north end of the Lady-Chapel was inserted by Vincent Wyking, Vicar, in 1433; another fine window of the same style, and the porch, are probably of the same period; the room over the porch has a stone vaulted roof of not very common construction. The present state of the church and churchyard is worthy of praise and imitation.

FEB. 28.—The Rev. the Rector of Exeter College in the chair.

G. A. K. Howman, Esq., Balliol College; the Rev. W. Fletcher, M.A., Brasenose College; W. Feetham, Esq., St. John's College; the Rev. E. R. Dukes, M.A., Christ Church; W. H. Milman, Esq., Christ Church; W. E. Bucklev, Esq., M.A., Brasenose College; the Rev. J. H. Brooks, M.A., Brasenose College; Alexander King, Esq., Oriel College, were admitted members.

Drawings of a Letter in Blythburgh Church, Norfolk; a Poors' Box in Cawston Church, Norfolk; and a singular early English Piscina across an angle in Blyford Church, Norfolk, were presented by the Rev. R. M. White, D.D., Magdalene College.

Engravings on wood of the Church and School of Garsington, Oxfordshire (the wood blocks), were presented by the Rev. the President of Trinity College.

A letter was read by the chairman from the Rev. G. Costar, Archdeacon of New Brunswick, acknowledging a present of the publications of the Society, and expressing a warm interest in its proceedings. The chairman took this opportunity again to call the attention of the society to the subject of designs for wooden churches for the colonies.

A communication from C. Winston, Esq., was read by Mr. Parker on the subject of the chapel at Rozel, in the island of Jersey, a small and interesting early structure, which had long been desecrated, and has lately been restored with much care and skill by the proprietor, Mr. Lempriere, under the direction of Mr. Winston; a number of drawings illustrating the chapel in various stages of the work were handed round the room.

Mr. Parker also read a description of Beselsleigh Church, Berks, a small oblong structure, mostly of Decorated work, with a good east window, having a cinque-foiled inner arch; and a bell-gable for two bells at the west end. This paper was also illustrated by drawings.

A drawing of a rood-screen in Swardston Church, near Norwich, was presented by W. H. Stanton, Esq., Exeter College, and a short account of it read. This rood loft is connected with the roof by a boarded partition, which appears to be contemporary with it; other instances of the same arrangement were mentioned.

The chairman called the attention of the meeting to "The British Archaeological Association," lately established in London, and recommended it to the notice of the members as likely to be an useful central means of communication for all the local societies.

## INSTITUTION OF CIVIL ENGINEERS.

MARCH 5.—The President in the Chair.

The first paper read was a description by Mr. J. T. Syme, of the bridge over the river Whitadder, at Allanton. This bridge, which was executed at the expense of Miss Boswall, of Blackadder, from the designs of Messrs. Stevenson and Sons of Edinburgh, consists of two arches of 75 feet span each, with a versed sine of 11 feet 6 inches, the centre pier being 32 feet 1 inch long, and 10 feet in breadth, making the distance between the faces of the abutments 160 feet; it was constructed of soft red sandstone, and the abutments were built up solid, the greater part of the masonry being ashlar; the total cost of the bridge was stated to be 6,058*l*.

An account of the building of Wellington-bridge, over the river Aire, at Leeds, by Mr. J. Timperley, was also read. This bridge was executed from the designs of the late Mr. Rennie, about twenty years since; it crosses the river where it is 100 feet wide and 6 feet deep; it consists of a segmental arch of 100 feet span, with a versed sine of 15 feet, constructed of stone from the quarries of Bramley Fall, which are about 4 miles from the bridge: the abutments are built in radiating courses, except the external faces, which are horizontal, the whole being well bonded together; the total quantity of masonry is 80,000 cubic feet. The method of forming the foundations, as well as of the coffer-dams and centre, was given in detail, and it was stated that the total cost of the bridge was only 7,250*l*.

Mr. G. Rennie made some clear and concise remarks on the ancient arches, of which traces have been discovered by the recent researches of travellers; alluding to Perring's account of ancient arches discovered at Thebes, the bricks of which bore the name of Sesostrius, which would carry back the knowledge of the arch to a period of upwards of three thousand years. He noticed also the size of the stone lintel among the Greeks; the Etruscan arches, found in Italy; and also the more modern but very bold arches still remaining in Italy, Portugal, and Spain.

A paper by Mr. F. Nash was then read, describing a new kind of girder, composed of a number of diagonal bars of wrought iron abutting against each other, with cast-iron transoms; these latter supporting the pressure, and the former the tension. This mode of construction has been recently introduced in France for bridges; and the paper, after describing a number of preliminary experiments on small girders, gave the details of the proofs to which four girders placed side by side, with a bearing of 74 feet 8 inches, had been subjected by order of Monsieur Teste, the Minister of Public Works, Paris. From this it appeared that with a load of 62 tons, the deflexion in the centre was  $1\frac{1}{2}$  inch, and that the girders resumed their original position on the weight being removed, after bearing it for a month. In order to test the effect of a sudden shock, a cart, loaded with 44 tons of iron, was caused to break down suddenly in the centre of the bridge without producing any prejudicial effect beyond crushing the flooring planks. The weight of these four girders was stated to be 204 tons.

The following papers were announced to be read at the next meeting, when the discussion on arches will be resumed:—

No. 663. "Account of Pulteney Town and Harbour (Wick, Caithness), from their foundation in 1803 to the year 1844," by J. Bremner, M. Inst.

No. 662. "Description of casks used in floating large stones to sea," by J. Bremner, M. Inst., C.E.

No. 631. "Description of the formation of the town lands of Musselburgh," by James Hay.

The monthly ballot for members took place, when the following candidates were elected:—Messrs. J. O. Buller, C. M. Herbert, O. Dadian, J. Abernethy, A. Slate, G. K. Pollock, J. H. Pepper, J. S. Atkinson, and W. Langdon, as Associates.

## LINCOLN TOPOGRAPHICAL SOCIETY.

On Tuesday evening, the monthly meeting was held in the Freemasons' Hall, Richard Mason, Esq., V.P., in the chair. Mr. W. A. Nicholson read an interesting paper, describing a subterranean passage in the bail of Lincoln, which is about fourteen feet beneath the present surface; the height is about four feet, and the walls are of rough stone, filled in around with concrete; the appearances were such as to forbid the notion that it had been built for a passage of communication, according to common tradition; nor did he think it was a sewer; the work was evidently of the Roman period, and it was probably a subterranean aqueduct, resembling that at Tusculum. An interesting discussion followed; Mr. E. J. Wilson inclined to the opinion that it was the Roman sewer. The direction of the southern branch, as far as it had been traced, leads towards the north-western tower of the cathedral, but it goes neither in the direction of the hypocaust which was found near the Chancery House, nor the tessellated pavement now in the cloisters.

## WORKMAN'S HOUSE.

In the last number of the *Westminster Review* are the following remarks:—

"Self-taught architects appear to have retrograded, and lost the little taste they once possessed, for it is rare that we find one of them able to build, without instruction, a chimney in the old English style, which prevailed in country places, and especially in Kent, a century ago.

"But we despair of nothing; and we have been much gratified at observing the encouragement given to a very meritorious weekly publication addressed to this class, called *THE BUILDER*, and eminently calculated to promote the interests of working-men, as connected with the improvement of their habitations. In a late number of this publication we noticed the following communication, to which we give insertion here, from, probably, the same motives which influenced the editor."

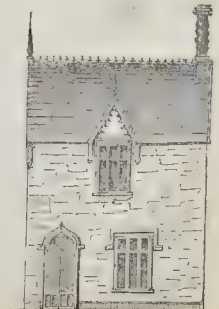
(Here is inserted a copy of our correspondent's letter and sketch.)

"We may smile at this sketch, but a majority of the houses in the United Kingdom are fourth-rate tenements, somewhat like the above, and in Ireland often worse,—the room up-stairs, and the staircase itself, being generally wanting in an Irish cabin. It will be well for British architecture and for the British people when every working-man begins to think, like the correspondent of *THE BUILDER*, of the means of improving his little cot, and to put by something of his earnings towards the object. We earnestly hope that if the Committee of Council for Education cannot be made to perceive the importance of architectural manuals for schools, filled with suitable designs for habitations of farmers, tradesmen, and working men, the subject will be taken up by the existing Commission for promoting taste in the Fine Arts."

We have ourselves just received the subjoined sketch and remarks upon the same subject:—

Sir,—One of your correspondents applied for a design for the improvement of his little cottage. I inclose one, which I hope will meet with his approbation. C. S.

[We do not perceive that our correspondent has furnished any hints for the double door or portico requested by "A Working-man." We shall abstain from all critical remarks till we receive the plan of the house.—Ed.]





## SOCIETY OF ARTS.

MARCH 6.—Benjamin Rotch, Esq., V.P., in the chair.

The Chairman described Ellis's improved turn-table and weighing-machine.

The great objection to placing turn-tables of the ordinary construction on the main line of a railway, is that, by the nature of their construction, they are rapidly destroyed by the frequent passage of heavy trains over them, besides the injury done to the carriages, and the unpleasant motion and noise caused to the passengers.

Mr. Ellis has constructed a turn-table which, when not in use for turning engines or carriages, rests firmly on the curb, and thus allows the train to pass rapidly over them without injuring either the table itself, or engines, or carriages.

The iron pintle of the table on which it turns, being kept well oiled, works with a loose collar round it in a vertical iron case, which case is supported and kept in its central position by two cross arms of cast-iron at right-angles to each other, and attached to the curb; the lower end of the pintle passes through the bottom of the case, below which is a stirrup attached to a cross lever passing at one end through a chase in the circular masonry or brickwork supporting the table; attached to the external end of the long lever is a second lever, working in a vertical direction, and connected with a third, or handle lever, by which the table is put in motion or fixed as required. When the table is to be put in motion, the stirrup is raised by means of the system of levers, and the pintle, resting in a conical cup attached to the stirrup, causes the table to be raised from its bearing on the curb.

The table is converted into a weighing machine by attaching a steel-yard to the external end of the cross-stirrup lever.

The Secretary read an account of the result of the experiment lately made in Regent and Oxford Streets, as to daily cleansing the streets of the metropolis, from which it appears that—

The experiment was commenced on the 2nd of January, in the present year, and was continued until the 20th of the same month, inclusive, being nineteen days: 35 men, and 389 boys were, on an average, daily employed, at the rate of twelve hours a day.

The average area of surface, swept by Whitworth's machines, amounted to 1841 superficial yards, and the quantity of soil slop, &c. removed by the machines, averaged rather more than three loads per day, or at the rate of one load for 613 superficial yards swept by the machine.

The average cost per day was at the rate of 82. 13s. 9d.

The total area kept continually clean during the 19 days of experiment amounted to 27,000 superficial yards; and, taking the boys at 2 to a man, the average area kept clean continually by each man, with the occasional aid of the machines at night, was equal to 730 superficial yards.

The expense per house for effecting this desirable object was found to be at the rate of 1s. 2d. per week; but it is evident, that if a complete system of cleansing the metropolitan streets daily were carried into effect, the cost would be materially reduced, as a large proportion of the mud collected during the experiment was transferred from the adjacent macadamized roads.

The Secretary read a short paper on Robson's patent signal lights, which are of three colours, viz., white, red, and green, the composition being contained in paper cases attached to small wooden handles.

Ignition is produced by means of a small glass globule of sulphuric acid, placed in an aperture in the handle, immediately above which is placed a small cake of oxyuriate of potash, divided from the globule by means of a small tin slide. In the aperture, works a wooden screw; and when the slide has been withdrawn, the screw is turned against the glass globule so as to break it, and the acid and oxyuriate of potash being brought into contact, the fire is communicated to the top of the charge by means of a quick match caused through the centre.

The practical application of these lights to an

universal system of numerical signals proposed by Mr. Whishaw, the Secretary, was shown at the back of the Society's repository.

To give notice, a projectile light is used, from which various balls are thrown up a considerable height above the operator; and for particular signals, cases containing the three different colours are used.

## SOCIETY OF ANTIQUARIES.

FEB. 1.—Thomas Amyot, Esq., in the chair.

Albert Way, Esq., Director, exhibited some specimens of Egyptian hieroglyphics, printed from a set of moveable types (upwards of three hundred in number) by the house of Didot of Paris.

Mr. C. J. Richardson exhibited drawings of a stone rood-screen, with an hour-glass and frame still attached to the pulpit, in Compton Bassett church, Wilts. The screen is a beautiful specimen of the late Perpendicular Gothic. They were accompanied by a drawing of the font at Yatesbury church, in the same county, a curious and rich specimen of the ornamental style of the end of the twelfth century.

Mr. Way exhibited a rubbing of a fine and instrumental monumental brass from the church of Allbaldows, Barking.

Mr. C. R. Smith communicated a drawing and description of an early monumental slab of granite, found on the cliff of Carnesw, in Cornwall. It bears an inscription, slightly damaged, which is as follows, and appears to commemorate two persons:—

HIC  
GEMV  
REQVIEVIT  
CVNAIDO  
HIC  
TUMVLO  
IACIT  
VIXIT AN  
NOS  
XXXIII.

Dr. Bromet exhibited some drawings of Newark Priory, in Surrey, and a few antiquities lately discovered there; among which were an inscribed thumb-ring, the matrix of a seal, and two enamelled armorial badges, supposed to have been worn by the retainers of the personages whose arms they bear.

Sir Henry Ellis read extracts from the minutes of the privy council, from the 32nd to the 34th Henry VIII.

FEB. 15. Lord Viscount Mahon, V.P., in the chair.

Albert Way, Esq., Director, exhibited a rubbing of a commemorative engraved slab, representing St. Louis, King of France, and two of his sergeants-at-arms, formerly placed in the monastery of Sainte Catharine du Val at Paris, founded by those officers in pursuance of a vow made by them at the battle of Bovines in 1214. It was removed at the revolution, and is preserved in the royal catacombs at St. Denis. It is richly gilded and painted; its date the earlier part of the 15th century. Engraved by Lenoir, in Musée des Monuments Français, vol. i., p. 29.

Two long spoon-shaped instruments, and two thin plates, all of gold, were exhibited. They were brought from South America, and used, it is believed, for ornament in the hair.

Albin Martin, Esq., of Siltou, Dorsetshire, exhibited to the society, through the medium of Mr. Kempe, some articles of antiquity, and original drawings by his own hand of fresco paintings; the latter preserved in the Museo Borbonico at Naples. We describe them in the order as exhibited.

No. 1 of this collection is a head sculpture in Rosso Anticho, from the remains of the Temple of Apollo at Cumæ. It represents the bearded Bacchus, the mode of displaying this divinity as conqueror of the East. The countenance is youthful, the hair disposed round the forehead in curls somewhat resembling a wreath of roses, and a straight lock of hair is dependent on each side of the head. The eyes are hollowed out, probably for the reception of jewels.

No. 2 is an elegantly-formed bronze vase, brought from Pompeii; it has evidently been cracked by the action of intense heat, and is covered with crystals of blue sulphate of copper. Mr. Kempe remarked that the sulphureous exhalations which arose from the earth and pervaded the atmosphere at the time

of the tremendous eruption of Vesuvius, which destroyed Herculaneum and Pompeii, in the 79th year of the Christian era, were so powerful that they suffocated the elder Pliny on the sea-shore at Stabia, supposed to have been at Castellà Mare, about four miles from Pompeii.

No. 3 is a copy of a group of divinities from a fresco painting, taken from an apartment in Herculaneum; it represents Hercules, Flora, Tellus, and other mythological characters.

No. 4 is a copy of a fresco from Pompeii, representing a satyr dancing with a goat; a very expressive and humorous composition.

No. 5. Another fresco from Pompeii, representing Atalanta, from the well-known group of Meleager, Atalanta, and attendants.

No. 6 is from a fresco painting at Pompeii, representing Justice. The figure has all the simple grandeur of attitude which the late Mrs. Siddons could so well portray.

Nos. 7 and 8 are ornamental borders from chambers in Pompeii.

No. 8 is a careful drawing of the remains of the temple of Venus at Baia. The structure is of Roman brick; this was formerly covered with white marble.

No. 9 is a view of the Street of the Tombs at Puzzuoli. They were seated on a branch of the Appian Way, and were buried at a remote period by one of those convulsions of the earth so prevalent in this volcanic district. The tombs, which are larger than those of Pompeii, were, at subsequent times, dug out and rifled of their contents. They have now the appearance of caverns on either side a hollow way. The drawings of Mr. Albin Martin display considerable power as an artist, combined with the strictest truth.

Sir Henry Ellis communicated from the Cottonian MSS. a project for amending the sewerage of the city of London, from the waters near St. Agnes le Clere, dated 20th April, 1605.

Thomas Bateman, jun., Esq., of Bakewell, communicated a description of several barrows in Derbyshire, opened by him during the summer of 1843, accompanied with numerous drawings of the relics discovered in them. It was found that most of them had been opened before.

FEB. 22.—Mr. Hamilton in the chair.

William Staunton, Esq., of Longbridge-house, near Warwick, exhibited an original appointment by Letters Patent of the Duke of Somerset as Protector of Edward the Sixth. It is of a different date to those before known; and is signed by all the Privy Council, but appears never to have received the great seal. It is supposed to have been preserved among the muniments of the Griffin family, descended from the Attorney-general of that period.

John Gough Nichols, Esq., F.S.A., communicated a paper on the ancient Amity subsisting between the Companies of Goldsmiths and Fishmongers of London, and their consequent participation of coat-armour. This latter circumstance, which is mentioned by Stowe in connection with the former, seems scarcely to have been understood by him, inasmuch as there is no community in the arms of the Companies, and he offers no other explanation of it. Mr. Nichols points out several private coats, principally of citizens, and some certainly Fishmongers, in which fish are found as charges in combination with the leopard's head of the Goldsmiths, and he therefore concludes that the participation took place in those private coats. The circumstance occurred at an early period, probably in the reign of Edward II., and therefore long before the incorporated College of Heralds could legislate on blazon.

## SMOKELESS STEAM COAL COMPANY.—

The prospectus of a company under this title has been issued, in which it is stated that upon estimates and calculations made, the net profits to the company will yield annually upwards of 50 per cent. on the shares. We must confess we are somewhat dubious on this point, while the prospectus appears to us to require some elucidation. It is under such circumstances that we are induced to defer any observations until our next, while we shall, in the mean time, have an opportunity of satisfying ourselves on one or two points. The collieries extend over a tract of 1,300 acres, and have, it is stated, considerable advantages and facilities of shipment.



## LECTURES ON ARCHITECTURE AND ANTIQUITIES.\*

## Lecture II.

SELEUCIA, as was observed before, was built by Seleucus, one of Alexander's great captains, forty miles above Babylon, at the confluence of the Euphrates with the Tigris, by a canal. According to Pliny (Nat. Hist. B. vi. c. 26), it once contained 600,000 inhabitants, all the commerce and wealth of Babylon had flowed into it, and the soil around it was thought the most fertile in the world. Seleucia, when an independent Greek republic, had its senate of 300 nobles. It was sacked and fired by the Romans, A.D. 165, when 300,000 inhabitants were put to the sword. Of its present appearance, Captain Mignan furnishes us with an account. He says:—"Time, violence, and repeated inundations have levelled every thing. I looked in vain for monuments, pillars, aqueducts, and buildings. Bricks of every kind, mixed up with layers of straw, varnished tiles, and pottery of every colour (but chiefly blue), stones, shells, and a variety of vitreous and nitrous substances; these, and these alone, comprise what remains of the once magnificent Seleucia. There is not a single entire building, nothing but a small remnant of a wall and a few portions of decayed brickwork is left to mark the foot of the spoiler, and bid us mourn in silence and solitude over fallen and departed grandeur."

One cause of the decay of Seleucia is ascribed by Pliny to the Parthians, who, in order to destroy it, imitated the plan of the Greeks, who built Seleucia to injure Babylon; the Parthians, therefore, built the city of Ctesiphon, within a few miles of Seleucia, in order to dispeople and impoverish it. Captain Mignan describes a very magnificent ruin called "Taukkesra," or the arch of Chosroes. "The full extent of the eastern face is 300 feet; it is divided by a high semi-circular arch, supported by walls 16 feet thick, the arch itself making a span of 86 feet, and rising to the height of 103 feet. The front of the building is ornamented and surmounted by four rows of small arched recesses, resembling in form the large one. The style and execution of these are most delicate, evincing a fertile invention and great experience in the architectural art." M. de Brosse, a celebrated antiquary, supposes that Ctesiphon is the place where stood Calneh, mentioned in Genesis x. 10, as formerly part of Nimrod's kingdom. The natives of the country assert that the ruins are of the age of Nimrod. The riches contained in this venerable pile appear to have been immense: Gibbon, in his "Decline and Fall of the Roman Empire" (vol. ix. c. 51), describes the sack of Ctesiphon by the Saracens, A.D. 637, in the time of Caliph Omar, successor to Mahomet, in the following words:—"The capital was taken by assault, and the tumultuous resistance of the people gave a keener edge to the sabres of the Moslems, who shouted with religious transport, 'This is the white palace of Chosroes, this is the promise of the apostle of God.' The poor robbers of the desert were suddenly enriched beyond the measure of their hope or knowledge. Each chamber revealed new treasure, by art secreted or ostentatiously displayed. The gold and silver, the various wardrobes and costly furniture, surpassed the estimate of numbers and even of fancy itself. The sack of Ctesiphon was followed by its desertion and decay."

The last two places have been noticed out of chronological order, but as they arose from the ruin of Babylon, it appeared best to speak of them immediately after the account of that proud city.

NINEVEH, the celebrated capital of Assyria, was founded by Ninus (the husband of the famous Semiramis), who after his death received divine honours as the Jupiter of the Assyrians and the Hercules of the Chaldeans. Some writers suppose that Nimrod built Nineveh, as they read the 11th verse of Gen. x. thus, "Out of that land he" (i. e. Nimrod, mentioned in the three preceding verses) "went forth into Asshur" (or Assyria) "and built Nineveh." This city was built on the banks of

the Tigris\*, and, according to the relation of Diodorus, was 15 miles long, 9 miles broad, and 60 miles in circumference. It was surrounded by walls 100 feet high, broad enough for three chariots abreast, and defended by 1,500 towers, each 200 feet high. It rivalled Babylon in splendour and magnificence, as well as in extent, to which we may be easily reconciled by the knowledge that at the present day, within the inclosure of most of the great cities of the East, lie vacant spaces for gardens or for pasture, as was implied of Nineveh from the Scripture mention, that in it there was "also much cattle." (Jonah iv. 11.) The kings of Assyria or of Nineveh were noted for their luxury and extravagance, but little worth knowing is recorded of them from the time of Ninus (the son of Ninus) until the reign of Sardanapalus, the fortieth and last monarch. Before his time, Jonah the prophet was sent to warn the wicked city (whose inhabitants copied the evil habits of their kings) that it should be destroyed in forty days; but upon their repenting and humbling themselves in sackcloth and ashes, from "the greatest of them even unto the least of them," the city was spared. Jonah is believed to have lived between 810 and 785 B.C. This repentance appears not to have lasted long, for we find the prophets Zephaniah and Nahum foretelling the city's ultimate destruction. The former inspired writer, who flourished in the time of Josiah, about 630 B.C., thus predicts: "The Lord will stretch out his hand against the north, and destroy Assyria, and will make Nineveh a desolation, and dry like a wilderness; and flocks shall lie down in the midst of her, all the beasts of the nations; both the cormorant and the bittern shall lodge in the upper lintels of it, their voice shall sing in the windows, desolation shall be in the thresholds; for he shall uncover the cedar-work" (ch. ii. 13, 14). The whole book of the prophet Nahum is a "burden" against Nineveh, of which he says, "It shall come to pass that all they that look upon thee shall flee from thee, and say Nineveh is laid waste" (ch. iii. v. 7). Beleses, the Babylonian high priest, and Arbaces, the Median, conspired against Sardanapalus, and besieged him for two years in his capital, when, despairing of success, that monarch made an immense pile in his palace and set fire to it, consuming himself, his wives, and his treasures. Diodorus says, "there was a prophecy handed down by tradition from their ancestors, that no one should ever take Nineveh by force till the river had first become an enemy to the city; but it came to pass in the third year that the Tigris being increased by most violent showers of rain of long continuance, overflowed a part of the city, and threw down about twenty furlongs of the wall. Then the king thinking that the oracle was accomplished, and that the river was now evidently become an enemy to the city, gave up all hope of saving himself." Two verses in the prophecy of Nahum are very striking with reference to this fact: "But with an overwhelming flood He" (the Lord) "will make an utter end of the place thereof, and darkness shall pursue his enemies" (ch. i. v. 8); and again, "The gates of the rivers shall be opened, and the palace dissolved." (ch. ii. v. 6.) We learn also from Diodorus that "the Medians, under Arbaces, being informed by some deserters of the drunkenness and negligence which prevailed in the camp of the Assyrians, assaulted them unexpectedly in the night, and became masters of their camp." The prophet Nahum had foretold, "For while they be folded together as thorns, and while they are drunken as drunkards, they shall be devoured as stubble fully dry." (i. 10.) In the destruction of Nineveh vengeance was taken of the Assyrians for their captivity and cruel treatment of the ten tribes of Israel. Of the present state of that once unrivalled city, modern travellers of different ages inform us. Lucian, a native of Samosata, a town upon the Euphrates, who flourished in the second century, affirms that Nineveh was utterly perished, and that there was no footstep of it remaining. Benjamin of Tudela, who wrote his "Itinerary" in 1173, says that Nineveh is laid waste. Haïton, the Armenian, who wrote in the year 1300, says, "The city of Nineveh is at present totally in ruins. But by the remains which are still to be seen, one may be fully satisfied that

it was one of the greatest cities of the world." And Tavernier affirms that the ancient city Nineveh is now a heap of rubbish only, for a league along the river, full of vaults and caverns." (vol. ii. b. 2, s. 4.) The town of Mousoul, on the western bank of the Tigris, is supposed to be on the site of Nineveh, but its remains are literally no more than mounds of earth, extending over several miles; one of these is 178 feet high, 1,850 feet long, and 1,147 feet broad, as measured by Mr. Rich.

G. R. F.

(To be continued.)

## RAILWAY BUSINESS IN THE HOUSE OF COMMONS.

THURSDAY, FEBRUARY 29.

*Railways.*—Two petitions were presented from merchants and others interested in the conveyance of goods by railway, for securing a free competition in the carriage of goods.—To lie on the table.

On the motion of Col. Sibthorp, a return was ordered—"Of all moneys to be raised under the sanction of the acts whereby railroad companies had been incorporated, between the 1st day of January, 1826, and the 1st day of January, 1844; distinguishing the sums to be raised by loan or mortgage, and stating the several acts under which the said several sums are to be raised."

*South Devon Railway.*—A bill "for making a railway from Exeter to Plymouth, to be called 'the South Devon Railway,'" was presented, read a first time, and ordered to be read a second time.

*Manchester and Birmingham (Macclesfield and Poynton Branches).*—A bill "for enabling the Manchester and Birmingham Railway Company to vary the line of their branch-railway to Macclesfield, and to make another branch therefrom, and for amending the former acts relating to the said company," was presented, read a first time, and ordered to be read a second time.

*Bolton and Preston Railway.*—A bill "to effectuate the sale, by the Bolton and Preston Railway Company, of their railway, and other property and effects, to the North Union Railway Company, to incorporate with such last-mentioned company the proprietors of the Bolton and Preston Railway, and to consolidate shares and stock," was presented, read a first time, and ordered to be read a second time.

*Edinburgh and Glasgow Railway.*—A bill "to authorize an extension of the Edinburgh and Glasgow Railway, and to amend and enlarge the provisions of the acts relating to such railway," was presented, read a first time, and ordered to be read a second time.

*Leeds and Bradford Railway.*—A bill "for making a railway from Leeds to Bradford, with a branch to the North Midland Railway," was presented, read a first time, and ordered to be read a second time.

*Sheffield, Ashton-under-Lyne, and Manchester Railway.*—The standing orders committee reported a resolution, "That in the case of the Sheffield, Ashton-under-Lyne, and Manchester Railway petition, the standing orders ought to be dispensed with; that the parties be permitted to proceed with their bill on depositing in the Private Bill Office amended plans and sections, excluding from the limits of the deviation the particular portions of land not numbered, and rectifying the sectional error, so that the levels of two turnpike-roads and two public carriage-roads crossed by the railway between No. 130 on the plan and the termination of the railway at the collieries, be not affected; and that the committee on the bill do examine, in the first place, how far such order has been complied with, and do report the same to the house on the report of the bill." Resolution agreed to.

*Newbury, Basingstoke, London, and Southampton Railway.*—The standing orders committee reported "That in the case of the Newbury, Basingstoke, London, and Southampton Railway petition, the standing orders ought to be dispensed with; that the parties be permitted to proceed with their bill." Resolution agreed to.

\* Lord Byron, in his drama "Sardanapalus," has followed the mistake of some of the early historians, in placing Nineveh on the Euphrates.

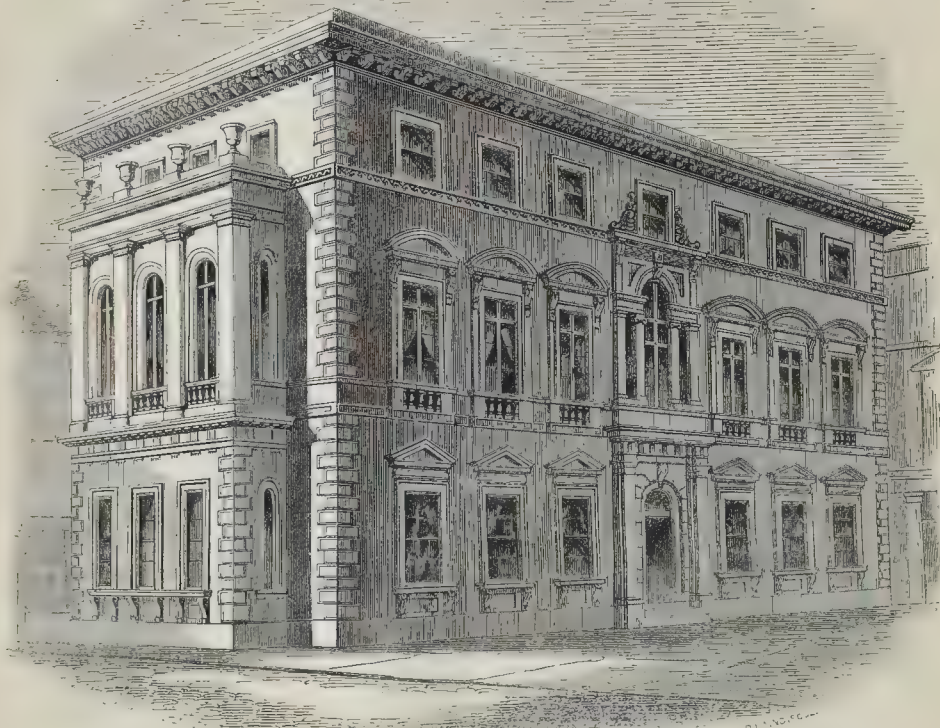
\* Resumed from page 495, Vol. I.



## GRESHAM CLUB-HOUSE.

KING WILLIAM STREET, LONDON.

HENRY FLOWER, ESQ., ARCHITECT.



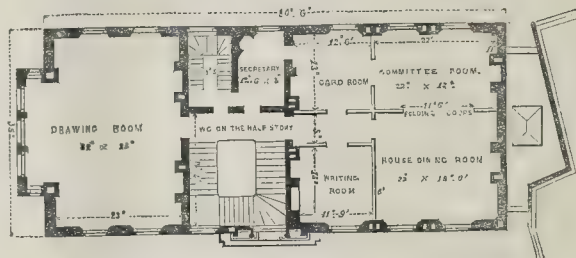
P E R S P E C T I V E V I E W .

THE idea for the elevation of the east end of this building was suggested by the recollection of the pontifical palace at Florence, although possibly, on comparing the two, little less than the "artistical feeling" would be recognized. The same innocent piracy may be seen on comparing the centre of the front elevation with a sketch, taken from the bridge of St. Marc at Venice, of a palazza in that city.

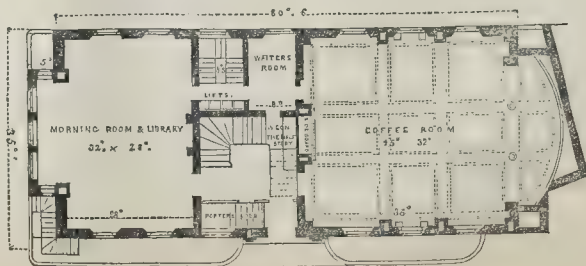
The face of the work will be composed of Roman cement.

The basement-plan shows the kitchen, which is arched over, to prevent the heat from affecting the temperature of the morning-room above, and is ventilated by means of flues peculiarly constructed for that purpose, by forming the chimney-flues of iron, 1 ft. 6 in. square, and leaving a space of about 4 inches immediately around them, so that the heat from the fire rarifies the outer space or chamber, and causes at once a rapid and perfect ventilation both of heat and smell.

The dishes are conveyed from the kitchen to the waiters' room above by means of "lifts," in which latter apartment they are examined and adjusted previous to being taken to the table. The "lift" is opposite the desk of the clerk, who is accountable for every thing that leaves the kitchen, and who is telegraphed by means of a speaking tube from the waiters' room. The soiled plates are returned down the side "lift," handed into the scullery, through the window, washed, and placed in a hot closet under the window, accessible from both sides, ready for the epicurean routine. The various receptacles for ice, vegetables, fish,

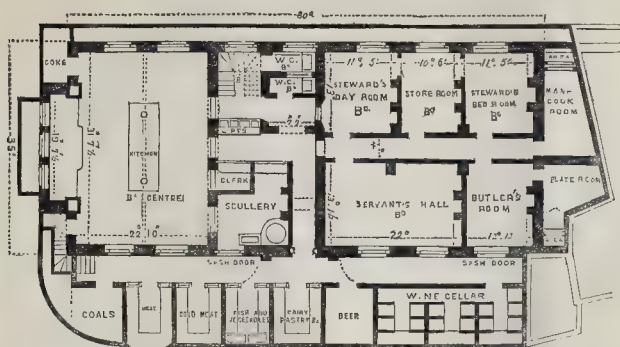


P L A N O F T H E O N E - P A I R S T O R Y .



P L A N O F T H E G R O U N D - S T O R Y .





PLAN OF THE BASEMENT-STORY.

cold meat, &c., are precisely on the principle rendered so perfect by the experience of Mons. Loyez, the ingenious "chef" of the kitchen of the Reform Club, and are far more admirable in their minutiae than can be described. Were it not for occupying too much space, particulars might be afforded from our estimable friend, that would be of great value to such of our subscribers as put faith in the minor comforts of domestic arrangement, a copious collection of which have been gathered by the architect, with illustrations and their "wherefores."

The ground-story consists of the coffee-room, morning-room, &c., as seen by the plans, reference to which may be made for the particulars of the rooms above, all of which are shewn, except those on the two-pair story, which comprise the smoking-room, the billiard-room, bath-rooms, and servants' dormitories. The washing-rooms or dressing-rooms, also the water-closets, are off the half-space of each landing, forming a mezzanine-story, to which

hot and cold water are laid on, as well as to the baths on the two-pair story, so that a bath may be obtained in a very few minutes.

The amount of the estimate, exclusive of the fittings, is 8,000*l.*; the works are being executed by Messrs. William Cubitt and Co., who have undertaken to have the roof on early in May, and the building completed in September; so that there is every prospect of its being occupied in October.

The architect has just received a number of Roman coins, found on the level of the basement, which, on being cleaned, have proved to be of silver, some bearing the inscription of Cæsar. They were all embedded in corrosion, as if they had been subjected to great heat; besides half-a-dozen which have been cleaned with vitriol, the architect has received some forty or fifty "en masse," resembling a lump of ore, except that on their surfaces the head and superscription are partially visible.

March 4, 1844.

X. X. X.

## NEW PUBLIC BUILDINGS, PRESTON.

IN consequence of the increase of the number of scholars in the grammar-school, in this town, which now exceeds a hundred, the proprietors of the building in which the school is held, at a late meeting, resolved to make an addition to it, by putting out a transept on the west side. The new room will communicate by an arch with the present school-room, and will be appropriated to the accommodation of the elder scholars, for whose use there will be a number of private studies. The building will front to Cross-street, and will be of stone, in a style of architecture harmonizing with the present school. The upper row of windows will resemble those of Heaton College, Oxford. It has been a subject of regret, that the valuable library, of upwards of 5,000 volumes, bequeathed to the Aldermen of this borough, by the late Dr. Shepherd, should remain in a room in an unsuitable part of the town. There is now a fair prospect of improvement in this respect, the proprietors of the school-buildings having agreed to erect rooms for the reception of this library; the books to remain under the control of the Aldermen, and the right of admission to be vested in them, exactly as at present. The design for the library is in a corresponding style of architecture, the principal window being of the decorated character, and resembling the beautiful example in the ancient school at Coventry. At the same meeting, the gentlemen present expressed a desire to build, along with these erections, museums, and a lecture theatre, for the Literary and Philosophical Society, and thus to fill up the whole frontage from the present grammar-school to Winckley-square. An elevation and ground plan, which were submitted to them, met with so much approbation, that no less than fifteen hundred pounds were subscribed for this purpose, at the meeting, in shares of 100*l.* each. This subscription, though begun at a meeting of the proprietors of the school only, is quite a distinct matter from the proprietorship of the school, and open to others; and since the meeting, further subscriptions have been received. From two to three thousand pounds will be required for this building,

and no doubt is entertained by the projectors that the subscription list will be filled up. The proposed lecture theatre and museums bear some resemblance to the new hall and library now building for Lincoln's-inn, but, of course, upon a smaller scale. The theatre will have two fronts, one to Winckley-square and one to Cross-street. A plan, prepared by Mr. Park, the corporation steward, for the enlargement of Avenham-walk, by the purchase of the late Mr. Starkie's field, and the formation of a street on each side, with small gardens in front, after the manner of Bushell-place, was also submitted to the meeting, and much admired. In the year 1840, parliament voted 10,000*l.* for encouraging the formation of public walks in populous towns. Only two places, Dundee and Arbroath, have, as yet, availed themselves of any part of this fund, and the remainder lies in the Exchequer, until called for. An application is intended to be made on behalf of Preston; if it should be successful, and this plan carried into execution, a great ornament will be added to the town, and one of the finest walks will have, in the new buildings, one of the finest terminations. The walk would also greatly increase the value of the adjoining lands, which belong to Goosnargh Hospital on the one side, and to Mrs. Cross on the other. Two other mansions are about to be erected on the south side of Winckley-square, which will fill the whole vacant land remaining on that side. Another projected public undertaking, worthy of support, and one which we trust soon to see accomplished, is a new building for the Institution for the Diffusion of Knowledge. Another, perhaps as much wanted, is a covered market.

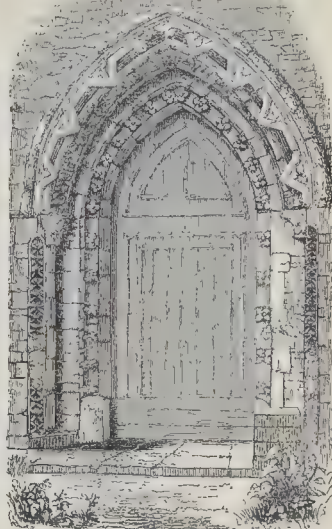
## ENGLISH DOORWAYS.—No. I.

We have for some time past turned our attention to collecting delineations of ancient doorways, and have in hand some very beautiful examples, especially of that class of them which, though rich in carving and free fancy, are fast disappearing for the effectation of "improvements." We mean the oaken portals which were principally the production of the seventeenth century. We are acquainted with

two hundred, at least, of beautiful examples, all different from each other, of this class of artistic works, of which fine specimens are to be found in Leadenhall-street, Crosby-square, Abchurch-lane, Charterhouse-square, St. John's-square, St. James's-walk and Red Lion-street, Clerkenwell, Bloomsbury-square, Carey-street, St. Martin's-lane, Queen-square Westminster; and in many other parts of the metropolis, as Bermondsey and Goodmansfields, and particularly at the Ancient Halls of the City Companies; also in the old suburban villages, as at Highgate, Hampstead, Kensington, Camberwell, Deptford, and Greenwich. The example we have here given is of masonry, and is from Stone Church, Kent, some account of which will be found in our review of Mr. Cressy's work upon that church, in No. 50, page 32, of our magazine, to which we subjoin the following particulars taken from the same excellent work:—

"The present example is almost unique in England, and it has been supposed does not occupy its original position. Between the two next buttresses eastward, the jambs of a doorway still remain worked into the wall, and which may have been the situation of an original round arch which conducted into the church mentioned in the Domesday survey."

"Some change or alteration from the original position of the stones is inferred by the imperfect mitre in the outer ring of the arch, as well as from there being eight roses on the west and only seven on the east side above the springing. The clear width is 3 feet 4 inches, and its total internal height 7 feet 3 inches, and is executed in free or Reigate stone, very much resembling the Caen. The shafts of the columns which were detached are gone. A small expenditure upon this beautiful fragment would restore it to its original perfection; and, if not taken in hand speedily, and rescued from the devouring hand of time, the amateur of all that belongs to works of the eleventh century will have to deplore the annihilation of one of the finest specimens of the Pointed arch executed in this country; an example too, which shews the application of Norman enrichments to the new style, "*Novum genus edificandi*," as it is called by William of Malmesbury, who lived in the reign of Henry the First."



DOORWAY OF STONE CHURCH, KENT.

Our next subject will be from Barber-Surgeons' Hall, Monkwell Street, in the City of London, of which we have a beautiful cut already executed; as our subjects are fast disappearing before the pitiless hand of renovation, we shall produce those earliest which are most likely to be soonest destroyed: one of our artists is now delineating the bold portals of Montague House, which will, in a few months, be no more, in order that their sites may be occupied by the intended new façade of the British Museum.

lffe.



### LAYING THE FOUNDATION STONE OF THE NEW BONDED WAREHOUSES, PRESTON.

IN the month of November last, four plots of land, on the New Quay, and about fifty yards from the river, were sold by the corporation, for the erection of warehouses for the bonding of foreign produce imported into Preston. The purchasers of these plots were Mr. Alderman German, Mr. Alderman Haydock, Mr. Turner, coal-merchant, and Mr. Bond, contractor. These warehouses will be built of brick (with stone basements, carried to a height of seven feet above the roadway); fire-proof throughout, and finished according to the regulations, required by the customs, of full privileged ports. The buildings will be each five stories high, and occupy a surface of sixty feet by thirty-six. They are likely to be completed in the course of the autumn.

Thursday week was fixed upon to lay the foundation stone of the new buildings, and about one o'clock, a pretty numerous company had assembled to witness the ceremony. Among those present were the Worshipful the Mayor, Mr. Alderman German, Mr. Alderman Haydock, John Bairstow, Esq., Mr. Smith, Mr. Cummings, Mr. James German, Mr. Park, Mr. Leach, Mr. Turner, Mr. G. Smith, Mr. Tuach, &c. &c. A number of ladies also were in attendance. Several flags fluttered from the temporary erection on the quay, among which was a very handsome one, belonging to Mr. Bond, bearing the inscription, "Success to the Ribble." Shortly before two o'clock, the stone was hoisted in the bed, when, after three cheers had been given, the mayor addressed the ladies and gentlemen assembled. He said that, having been requested by the proprietors of the warehouses to lay the first stone, he had great pleasure in complying with that request. They learnt, from history, that Preston had been a port in ancient times; and, according to tradition, the chief magistrate of the town was, in those days, called the Portreeve. In process of time, the channel of the river became filled up; the port business was much impeded, and the importance of the town, in a commercial sense, was much reduced. Owing to the efforts of the Ribble Navigation Company the impediments had been in a great measure removed, and the commerce of the port had been increased, and already gave promise of being large and of great usefulness to the town. Her Majesty's Government, considering these circumstances, had renewed the privileges formerly enjoyed by the town of being a port, and extended them. In return for this consideration upon the part of Government, it was intended to call the new buildings, the "Victoria Warehouses." Considering the means Preston now enjoyed of rapid communication with the south of England, and the probability there was of these advantages being extended to the north and east, and of their having a branch railway to the very spot upon which they were standing, he thought they would be able to see, in a short time, commodities from every part of the world brought into this port. He had been accustomed from his youth to look upon the verdant plain near them, as so eligible a spot for the recreation of his townsmen, that at first it was with feelings of regret that he looked upon a prospect of its being covered with buildings; but he hoped that the increased labour and energy which would be called into existence by such a change, would be attended with increased wealth and prosperity, and he would then have no reason to regret the change. They would have the means to form public walks, and to further improvements in other parts of the town. The company he was sure would join him in wishing every prosperity to the Ribble Navigation Company, to the Victoria Warehouses, and the spirited proprietors.

The mayor then called for three cheers for the new undertaking, which were most heartily given.

In a cavity in the stone was deposited a bottle, containing copies of the last week's Preston newspapers, and coins of the present year. A plate bearing the following inscription (which was read by Mr. Tuach) was then placed upon it:—

"The Foundation Stone of these Warehouses, to be built for Mr. Alderman German, Mr. Alderman Haydock, Mr. Councillor

Turner, and Mr. Bond, was laid on Thursday, the 29th February, 1844, by the worshipful the Mayor of the borough, John Addison, Esq.

"FRAS. W. TUACH, Architect.

"WILLIAM BOND,  
"THOMAS WHITTAKER, } Contractors."

His worship then spread the mortar, the stone was lowered, and having struck it three times with the mallet, he drank "Success to the Victoria Warehouses, and the healths of the proprietors," in a tankard of spiced wine, and the principal gentlemen present also partook of it, pledging the same toast. Mr. Alderman Haydock then proposed three cheers for the mayor, for his kindness in at once acceding to the wish of the proprietors to lay the first stone of the bonded warehouses. The proposition was responded to with the utmost enthusiasm, and the company then dispersed.

### THE TIMBER TRADE.

THE state of the timber trade, at the present time, affords an illustration of the advantages resulting from a reduced scale of the duties upon important articles of consumption especially, and the following remarks, from the circular of Messrs. Chaloner and Fleming, of Liverpool, will forcibly illustrate this:—

"In conformity with the practice usual at this period, we proceed to take a review of the timber trade for the past year, and we do so with much pleasure, as evidencing a greatly improved state of the general state of the country, and refuting in a marked degree the anticipations of evil that prevailed with those opposed to the Government measure for the reduction of the duties. This year has, in fact, been the first of the operation of the new tariff, and has proved the principle of affording to consumers, at low prices, an article so essential as timber, it has shewn by an expanded consumption the powerful stimulus that has thus been given to the trade, when taken in connection with the improved state of the manufacturing districts. With the very untoward circumstance abroad of an unusual and excessively high price of timber, what would have been the portion of consumers had they been obliged to add thereto the late existing high duties? It is only reasonable to conclude that, with an import fully averaging that of the four years previous to that ending February, 1843 (which was the year of the change, and which was scarcely more than half an import, as explained in our last annual report), we should hardly have been in the favourable position that we now hold, with a light stock to meet an expected animated spring demand. The consumption will be found, as regards the main articles of import, to have exceeded, with one exception, any previous year since 1838, and bids fair to progress in a ratio far exceeding the most sanguine expectations of the supporters of the measure, if it be not checked by too great an advance in prices previous to the new import. These remarks apply particularly to colonial timber, which, in this locality, receives the estimation it deserves, and which is gradually superseding the use of Baltic."

Why should delays arise in the reduction of the duties upon tea, tobacco, and wool, when such favourable results are here shewn?—*London Journal of Commerce.*

NEW INVENTION.—A Mr. Pauling, of Manchester (well known as an extensive and successful contractor for railway works, and who completed the Manchester and Birmingham Station, in Manchester, and who is now engaged in completing the Junction Railway to Hunt's Bank, for the Liverpool and Manchester Station), is now engaged in erecting machinery on a very extensive scale, for the purpose of executing almost every description of joiner's work; the special objects being to effect the most difficult parts, such as mortising and the making of sash-frames, &c. Report says, that this enterprising gentleman has succeeded, and that the work thus finished is incomparable; in other terms, that it is not possible for mere handicraft labour to vie with the work finished by this new invention. The works are on a very extensive scale, and, if fully employed, will of necessity revolutionize this branch of the building business.—*Preston Chronicle.*

### CHURCH-BUILDING INTELLIGENCE, &c.

*Dalton New Church.*—The new edifice intended for a place of worship for the inhabitants of the villages of Newburns, Howcat, Barrow, and the adjoining hamlets, has, at length, been completed, and was opened for Divine service, the other week, by the Rev. John Baldwin. The congregation was so great that numbers could not find space within the building. Although some might be attracted there by the novelty of the occurrence, yet we are certain that the little temple, humble though it be, will continually be filled, at times of its sacred services, with single-hearted and devout worshippers. At the present time service is performed under a licence. It is contemplated that a school should be taught therein.

*St. Stephen's and All-Martyr's Church, Leverbridge.*—This beautiful and singular new church, built of *terra cotta*, in the decorated English style of architecture, was opened for divine service on Sunday last. The chancel, where the material is left in its original colour, is highly decorated, and has a very pleasing appearance. The ends and back panels of the open seats, the mouldings, and letters in the cornice, the gallery front, and parts of the pulpit and desk, &c., are made of *terra cotta*, and shew how extensively applicable the material is for ornamental work. The stained glass in the small windows and in the chancel is by Willemant; that in the transept and west window by Wailes. Mr. Sharp, of Lancaster, is the architect.—*Bolton Chronicle.*

*Bury Parish Church.*—Richard Walker, Esq., the highly respected member for Bury, and his brother, Oliver Ormerod Walker, Esq., have, in the most liberal manner, presented two new bells to the churchwardens of the parish church, which, with the six old bells, will make a fine peal of eight. The new bells are to be cast by Messrs. Meers of White-chapel. Thomas Norris, Esq., of Redvales, who laid the first stone of the new steeple now in the course of erection, has presented a clock to the parishioners.—*Preston Chronicle.*

*St. Nicholas Church, Dublin.*—A copy of the correspondence which took place between the Ecclesiastical Commissioners for Ireland and the Dean and Chapter of St. Patrick's Cathedral, Dublin, in reference to pulling down the Church of St. Nicholas within, in that city, was moved for by Mr. Grogan, and ordered by the House of Commons to be printed, 23rd February, 1844.

His Grace the Duke of Cleveland is going to erect a suitable parsonage-house in the township of Forest and Frith, near Middleton-in-Teesdale, where his Grace maintains a resident minister for the spiritual benefit of the people in that retired district.

The Roman Catholic chapel at Lincoln is undergoing an extensive embellishment and repair, in order to be fitted for the reception of the High Sheriff of the county, who will go in state to mass on the Assize Sunday.

COST OF DRAIN TILES.—The cost in Lincolnshire of making drain-tiles 13½ inches long, 4½ inches wide, and 4 inches high, outside dimensions when burnt is, for digging, wheeling, turning, and grinding the clay, 3s.; in all 8s. 6d., exclusive of coals and leading. In 1831 one million and a half of these tiles were supplied to one landowner, who was charged 22s. 6d. per 1,000 for them by the maker. When the expense of 1s. for grinding is added to 2s. 6d., for moulding, making in all only 3s. 6d., the slight advantage of machinery now in use to effect these processes will appear. Where its application actually does reduce the cost, it can only be by reducing the 3s. 6d. paid for moulding and grinding, for the other charges remain the same. Few use a bottom or the sole. There are tile-works now constructing where it is proposed to take the clay as soon as dug, at any season of the year, pulverize it without adding water, and mould it into tiles, all by one operation by pressure; and at one quarter of an inch thick the tiles are of a sufficient strength; they have inward projections to dispense with the use of tile soles. Pipe-tiles, and those of other shapes, as well as sewer-tiles, are to be produced of equal comparative strength.—*Anonymous.*



## RAILWAY INTELLIGENCE.

**Railway to Lincoln.**—It seems now almost certain that we shall have a railway to Lincoln; the only thing that can prevent it is the squabble between the rival engineers, Messrs. Rendell and Walker, and surely the public will have sense and spirit enough to prevent these gentlemen from injuring them. Both gentlemen have numerous powerful friends. Mr. Walker is, we understand, supported by Earl Winchelsea, Earl Ripon, Mr. Christopher, Mr. Chaplin, and others in this neighbourhood; Mr. Rendell is said to have the support of the Duke of Rutland, Marquis of Exeter, Earls Fitzwilliam and Yarborough, Lord Worsley and others. Both gentlemen are sanguine of the success of the scheme. Mr. Rendell proposes to commence near Cambridge, where the railway is to connect itself with London, through the medium of the Northern and Eastern Railway, and passing northward in connection with the towns of Cambridge, Huntingdon, Peterborough, Stamford, Market Deeping, Spalding, Bourn, Sleaford, Lincoln, Gainsborough, Doncaster, and Thorne, terminate in Yorkshire, at the place most convenient to unite with the several railways formed there. —*Boston Herald*, Feb. 20.

**Oldham and Saddleworth Railway.**—Many of the principal inhabitants of Oldham, Lees, and Saddleworth have commenced proceedings to obtain an extension of the Oldham branch railway, to Greenacre's Moor, Lees, and Saddleworth. It is understood that the Manchester and Leeds Railway Company are giving every encouragement to the undertaking, and it is probable an Act of Parliament will be procured as early as possible to form that part of the line from Greenacre's Moor to Saddleworth. The remainder of the line, from the present Oldham station to Greenacre's Moor, is to be constructed in a few months. When the Bury and Middleton Railway is finished, there will be a direct railway communication from the westerly to the easterly parts of Lancashire, as well as to Saddleworth and Ashton-under-Lyne. —*Preston Chronicle*, March 2.

**Caledonian Railway and Lancaster Canal Company.**—We understand that one of the good effects to arise from the arrangement between the provisional directors of the intended Caledonian Railway and the Lancaster Canal Company, will be to save nearly all the expense of a new viaduct bridge over the Lune. The respective levels of the canal and railway are such, that by arching over the canal, on the present aqueduct, the two lines of rails may be laid upon those arches, leaving sufficient space for the passage of boats on the canal underneath, as usual. By adopting this plan, also, the large claim for compensation made by the owners of the Skerton fishery is completely avoided.

**The Projected Railway from Lincoln to Gainsborough.**—Every preparation is being made for commencing this important project. Mr. Stephenson, the eminent engineer, is engaged to superintend the work, if the projectors succeed (as there is no doubt they will) in obtaining an Act of Parliament. As a feeder to the Hull Railway, and eventually part of a direct line from London *via* Cambridge, Peterborough, and Lincoln to Hull and to York, such a line must be highly advantageous to this neighbourhood.

**York—Cambridge Railway.**—A great sensation is created in the railway-market on account of the almost certainty of this railway being established. It will give a much easier communication with the North, and will be of infinite service to the fine agricultural country through which it will pass. It will render the Blisworth and Peterborough line of very little service to the London and Birmingham Company, either as a protective line or as a source of profit.

**Birmingham and Derby Railway.**—At the Birmingham and Derby Railway meeting, Colonel Blane announced his intention of opposing in Parliament the Midland Railways Amalgamation Bill, unless better terms were granted to the Derby Company. The meeting was not remarkable for much else than the declaration of an increased dividend.

A line of railway is projected from Paris to Strasburg.

The Lancaster and Carlisle Railway Bill was read a second time in the House of Commons on Tuesday week, and ordered to be committed. The committee to whom it is referred, are Mr. Greene, Mr. Wilson Patten, Col. Lowther, and the Hon. C. W. J. Howard.

**London and Birmingham Railway.**—The present marketable value of the London and Birmingham Railway is 9,693,750*l*.

Railway reformers talk a great deal of the comparatively low rate of fares in England and in Belgium, in utter forgetfulness that the whole system of railway management in the two countries is entirely different; had we waited in England until the Belgium system was adopted by the state, we should have been as backward as France or Ireland are now in railway speculation, and there is just as much difference in the English and Belgian prices of every commodity as there is in their respective rates of railway fares.

## Law Intelligence.

## REMOVAL OF PARTY-WALL.

VICE-CHANCELLOR'S COURT, MARCH 2.

(Before Sir L. Shadwell.)

**DISDALE v. DAWSON.**—This suit has arisen out of a dispute between the proprietors of two rival hotels (the Privateer and the Rum Puncheon) in West-street, Gravesend, with regard to the right to pull down and rebuild a certain foundation wall situate between the sites of the two houses, adjoining each other, and which has already been the subject of cross-actions at law now pending. It appeared that a foundation wall raised to a level with the ground-floor, and extending about 20 feet from the front line towards the back of the two houses, formed more or less the basis of support to each house on the side of contact. The plaintiff who was the proprietor of the Privateer, alleged that this foundation wall was formed of two parallel walls, one of fourteen and the other of nine inches thick; that a partition wall was raised between the two houses which rested partly upon each foundation wall, and that as the joists of the ground flooring of each house rested entirely on the fourteen-inch foundation wall, to the full extent of its width, the defendant had no right to remove any portion of it, and, therefore, the bill was filed originally to prevent him from doing so; but as the defendant had since pulled down the whole of the partition wall, and some portion of the fourteen-inch wall, an injunction was now asked to restrain him from building on the foundation wall of fourteen inches or on the site of it, which the plaintiff wholly claimed. The defendant insisted that the fourteen-inch wall was an ancient foundation wall common to both houses; that the Privateer rested upon it in an irregular slanting direction; and that what was termed a partition wall by the plaintiff was the west wall of the Rum Puncheon, and rested on the remaining average of seven inches, and had no other foundation than the old fourteen-inch foundation wall, the nine-inch wall being a mere buttress wall, which belonged entirely to the defendant. The question was, whether an injunction should issue to restrain the building up of the wall till the actions at law had been decided?

Mr. Bethell with Mr. Shapter moved for the injunction, and Mr. Cooper and Mr. Cooke appeared for the defendant.

The Vice-Chancellor observed upon the difficulty of forming any opinion upon the conflicting evidence before him, and, as the matter was already pending before a common law tribunal, he thought it better to grant no injunction, but let the motion stand over, with liberty to the parties to proceed with the actions at law, the defendant undertaking not to rebuild the wall otherwise than by reinstating the wall he had taken down as it originally stood.

**MASTERS AND SERVANTS.**—A bill has just been introduced into the House of Commons for enlarging the powers of Justices in determining complaints between masters, servants, and artificers, and for the more effectual recovery of wages before Justices. It chiefly extends the provisions of the acts 20 George II., c. 19; 31 George II., c. 2; 6 George III., c. 25; and 4 George IV., c. 34. The bill is under the care of Mr. W. Miles, Mr. Robert Palmer, and Mr. H. Gally Knight.

## PATENTS RELATING TO ARCHITECTURE, ENGINEERING, &amp;c.

Granted between 27th January and 24th of February, 1844.

[SIX MONTHS FOR ENROLMENT.]

Robert Johnstone, of Baker-street, Middlesex, gent., for improvements in the construction of lamps for the combustion of naphtha, turpentine, and other resinous oils. Jan. 27.

Henry Vernon Physick, of Bath, civil engineer, for certain improvements applicable to machinery for driving piles. Jan. 30.

Ezra Washington Burrows, of Swinton-street, St. Pancras, civil engineer, for certain improvements in the construction of engines for producing and communicating motive power by the elastic force of steam, or by manual or animal labour. Jan. 30.

George Miller Clark, of Albany-street, Regent's-park, tallow-chandler, for improvements in night-lights, and in apparatus used therewith. Jan. 30.

William Lucas Sargent, of Birmingham, for improvements in the manufacture of barrels for fire-arms—being partly a communication. Jan. 30.

Baptiste Buret, of Leicester-square, merchant, and Francois Marius David, of the same place, manufacturers of gas apparatus, for improvements in the manufacture of gas. Jan. 30.

William Fletcher, of Moreton-house, Buckingham, clerk, for certain improvements in the construction of locks and latches applicable for doors and other purposes. Jan. 30.

James Silcock, of Birmingham, engineer, for certain improvements in planes. Jan. 31.

Robert Hodgson, of Princes-street, Clapham-road, Surrey, engineer, for improvements in propelling vessels, and in the machinery for working the same. Feb. 2.

Thomas Southall, of Kidderminster, druggist, and Charles Crudginton, of the same place, banker, for improvements in the manufacture of iron and steel. Feb. 8.

James Johnston, of Willow-park, Greenock, Esq., for improvements in steam-boilers. Feb. 8.

George Straker, of Newcastle-upon-Tyne, ship-owner, for a certain improvement, or certain improvements in ships' windlasses. Feb. 8.

Edwin Sheppard, of Manchester, foreman in the works of Messrs. G. C. Pauling and Co., contractors and builders, for certain improvements in machinery or apparatus for planing, sawing, and cutting wood and other substances. Feb. 8.

William Edward Newton, of Chancery-lane, civil-engineer, for a new or improved system or apparatus for obtaining and applying motive power for propelling on railways or water, and for raising heavy bodies, applicable also to various other purposes where power is required. —(Being a communication.) Feb. 8.

Joseph Gibson, jun., of Birmingham, japanner, for improvements in ornamenting glass. Feb. 10.

Henry Hawes Fox, of Northwoods, Gloucester, doctor of medicine, for an improved mode of constructing fire-proof floors, ceilings, and roofs. Feb. 10.

William Edward Newton, of Chancery-lane, civil-engineer, for an improvement or improvements in furnaces. (Being a communication.) Feb. 12.

Job Haines, of Tipton, Stafford, coal-master, and Richard Haines, of the same place, coal-master, for an improved method or methods of making or manufacturing links for the construction of flat chains, used for mining and other purposes. Feb. 13.

Bennet Woodcroft, of Manchester, consulting-engineer, for improvements in propelling vessels. Feb. 13.

Elijah Galloway, of Union-place, City-road, civil-engineer, for certain combinations of materials to be used as a substitute for canvas, and other surfaces employed as grounds for painting, and some of which combinations are applicable to other purposes. Feb. 14.

Samuel Dobree, of Putney, Surrey, Esq., for certain improvements in the manufacture of fuel. (Being a communication.) Feb. 17.

John Lionel Hood, of Old Broad-street, gentleman, for an improved composition, or



mixture of metals, applicable to the manufacture of sheathing for ships and other vessels, bolts, nails, or other fastenings. (Being a communication.) Feb. 17.

John Kibble, of Glasgow, gentleman, for improvements in transmitting power in working machinery where endless belts, chains, or straps, are or may be used. Feb. 17.

William Losh, of Newcastle-upon-Tyne, Esq., for improvements in the manufacture of metal chains for mining and other purposes. Feb. 17.

Alfred Jeffery, of Brunton Works, Lime-house, for improvements in treating wood, and certain other substances required to be exposed to water. Feb. 19.

Alexander Parkes, of Birmingham, artist, for improvements in the manufacture of certain alloys, or combinations of metals, and in depositing certain metals. Feb. 21.

Ezra Jenks Coates, of Bread-street, Cheap-side, merchant, for improvements in the forging of bolts, spikes, and nails. Feb. 21.

Henry Charles Howells, of Hay, gentleman, for improvements in the fastenings of parts of bedsteads and other frames. (Being a communication.) Feb. 21.

Thomas Liddell, of Newcastle, engineer, for improvements in apparatus for preventing explosion in steam-boilers. Feb. 21.

William Rouse, of Great Barton, Bury St. Edmunds, wheelwright, for certain improvements in carriages, and in parts of carriages, applicable to various purposes. Feb. 24.

Gaspare Conti, of James-street, Buckingham-gate, gentleman, for improvements in hydraulic machinery, to be used as a motive power. Feb. 24.

John Aitken, of Surrey-square, for improvements in atmospheric railways. Feb. 24.

Archibald Trail, of Great Russell-street, Bloomsbury, for an improvement in the manufacture of sails for ships and other vessels. Feb. 24.

#### SCOTCH PATENTS.

Granted between the 22nd January and the 22nd of February, 1844.

Thomas Southall, of Kidderminster, Worcestershire, druggist, and Charles Crudgington, of the same place, banker, for improvements in the manufacture of iron and steel. Jan. 25.

William Edward Newton, of Chancery-lane, civil-engineer, for a new or improved system of machinery, or apparatus for obtaining and applying motive power for propelling on railways or water, and for raising heavy bodies, applicable also to various other purposes, where power is required. (Being a communication from abroad.) Feb. 5.

Philip Walther, of Angel-court, Throgmorton-street, London, merchant, for certain improvements in the construction of steam-engines. (Being a communication from abroad.) Feb. 5.

John Kibble, of Glasgow, gent., for improvements in transmitting power in working machinery where endless belts, chains, or straps are or may be used. Feb. 12.

Hugh Inglis, of Kilmarnock, Ayr, mechanic, for improvements upon locomotive steam-engines, whereby a saving of fuel will be effected, which improvements are applicable to steam-vessels and other purposes, and to the increasing the adhesion of the wheels of railway-engines, carriages, and tenders, upon the lines of rail when the same are in a moist state. Feb. 13.

Ezra Jenks Coates, of Bread-street, Cheap-side, London, merchant, for improvements in the forging of bolts, spikes, and nails. (Being a communication from abroad.) Feb. 15.

**EXTRAORDINARY ROPE.**—We are informed by Mr. J. T. Tregellas, of Truro, the agent for Cornwall for the patent wire-rope, that Mr. Andrew Smith, the patentee at Mill-wall, near London, has just completed a galvanized wire-rope of the astonishing length of 123 miles, which is intended for electrical communication on one of the railroads. We presume this may be confidently designated the longest rope in the world.—*West Briton.*

#### Correspondence.

##### MEASURING ROUND TIMBER.

SIR,—If the subject of measuring round timber has not already measured the extent of your patience, time, and paper, I beg to offer a few remarks thereon; and, if you think they will be useful, perhaps you will give them a place in your valuable and, I hope, widely circulated journal. Although the subject has been treated at some length by two of your correspondents, and correctly so too, as far as a frustum of a cone is considered; yet, in my opinion, they have left your correspondent "L," p. 559 in your last volume, and who first proposed the question, as much in the dark as he was before. Now, it is well known to all men in any wise acquainted with measuring round timber, that the quarter-girth does not give the true content, but that it is a country custom, and has been found quite near enough for buying and selling, as it gives a little to the purchaser for loss in bad knots, sap, and other defects, to say nothing of the loss in shrinking after being cut down and lying some time exposed to the weather; in fact, I believe measuring round timber by the quarter-girth, or what is called forest-measure, is the custom in all parts of the kingdom, London excepted. It also seems nearly the mean between the true area and the inscribed square; for instance, suppose a tree 3 feet 6 inches diameter; the side of the square equal to the full area will be about 3 feet 1 inch 3 parts, the quarter-girth 2 feet 9 inches, and the inscribed square 2 feet 5 inches 8 parts. This proves the practice to be a good one; the outside cants in many, very many, cases are not worth the sawing. But true or false is not the question, it is the content quarter-girth of a supposed conical tree 8 feet long, 6 feet diameter at one end, and 6 inches at the other.

Now, were I called on to measure such a tree, I should consider it an equilateral rectangular prismoid, and proceed as follows: first, by finding the quarter-girth of both ends and the middle; then to the area of the great and less ends add four times the area of the middle section, one-sixth of which will be the mean area, multiplied by the length will be the content quarter-girth. The same rule will also give the content of the frustum.

	Ft.	Ins.	Pts.
Thus, area of great end ....	22	2	9
Do. less end ....	0	1	10
Four times the middle section	26	1	5
	1	48	6
Mean area	8	1	0
			10
	80	10	0
			8
Content quarter-girth	646	8	0
As the frustum of a cone:—			
Area of great end .....	23	3	6
Do. less end .....	0	2	4
Four times the middle section	33	2	4
	1	61	8
Mean area	10	3	4
			10
	102	9	4
			8
True content	822	2	8

Now, this same frustum, according to the London practice, which does not admit of either tapes or strings, but according to which round timber is measured the same as square timber, that is, by taking the diameter by the callipers in different places as may be agreed on by the buyer and seller, then by adding them up and taking the mean, which is the side of the square in all cases, conical or cylindrical; consequently the content of this supposed frustum of a cone would be 845 feet, *i.e.* 3 ft. 3 in.  $\times$  3 ft. 3 in.  $\times$  80 ft. = 845 ft. Now this does not seem much above the true content of the above frustum; but, suppose the

butt-end of an elm tree 3 feet 6 inches diameter at both ends, and 15 feet long,—the content, according to the London practice:

Ft.	Ins.	Pts.	Quarter-girth.	Ft.	Ins.	Pts.
3	6		2	9	0	
3	6		2	9	0	
1	9		2	0	9	
10	6		5	6	0	
12	3	area.	7	6	9	area.
5			5			
61	3		37	9	9	
3			3			
183	9		113	5	3	
True content:—			Ft.	Ins.	Pts.	
Half circumference			5	6	0	
Do. diameter ....			1	9	0	
			4	1	6	
			5	6	0	
			9	7	6	area.
			5			
			48	1	6	
			3			
			144	4	6	

Thus you have 144 feet 4 inches 6 parts = 113 feet 5 inches 3 parts, and 183 feet 9 inches. So much for custom, which no theory is able to break down, at least in buying timber.

I am, Sir, your well-wisher,  
J. H. F.

Brook-street, West-square, Lambeth.

[We insert the above letter, in order to complete the series, although we have received a letter signed "An Old Balker," deprecating the subject as "too elementary." One thing we apprehend has been proved—there are persons who either do not know how to measure the frustum of a cone, or the foundation of the custom in buying and selling timber.—Ed.]

##### METROPOLITAN IMPROVEMENTS.

SIR,—In the table which you did me the honour to insert in last week's paper, an omission occurred in one of the columns, wherein it should have been mentioned that 33, of the 169 houses which have been settled for, are not yet pulled down, although, strange to say, that some of those houses were among the first settled for. I conceive that the commissioners are bound to explain how this has happened.

The Earl of Lincoln has twice offered in Parliament an explanation of the causes of delay which have been complained of. On the third reading of the Bill for enabling the Bank of England to lend money by mortgage on the houses to be built—in answer to Mr. Hume, he said, "he could assure the hon. member and the House that every reasonable diligence was used in carrying out the contemplated improvements. It was necessary that houses which were to be removed should be so gradually, for if all the houses which were intended to be removed were to be taken down and sold at once, their materials would scarcely fetch anything; he was quite aware of the inconvenience complained of by the hon. member, but he could assure him it was not the fault of the Woods and Forests. In many parts the purchase of the land had not been completed till a short time since, and it was, therefore, impossible to take any steps. He had no doubt, however, that ultimately the constituents of the hon. member for Finsbury would be benefited; for the rating on the houses, instead of being, as it was at present £35,000, would amount to £46,000."

His Lordship surely does not mean to say that he could obtain a better price for the materials of houses pulled down in Hyde-street, Belton-street, and Leicester-square, at one and the same time, than if the houses had been pulled down all in one line.

On the first reading of the Building Bill, the subject of the delays was again mooted by Mr. Duncombe, when Lord Lincoln said that "he was quite aware of the inconvenience to which the hon. member had adverted, but it was one which it was impossible altogether to avoid, and he could assure the hon. member that it was not caused by any want of diligence in



the office over which he presided. There were many things to be done, such as the preparation of proper sewers and other improvements, before the rebuilding of the houses could be commenced, but when completed it would be found that the individual rating in the parishes alluded to would be diminished." Which, in my opinion, he failed to prove, for any one may still observe the six points where they have commenced pulling down houses, without completely clearing any one site for rebuilding. With reference to the purchase of land not being completed, &c., I beg to state that their bill enables them to take any property which may be required; and in cases of a defective title, they are empowered to have the property valued, the amount placed in the Bank of England, and then proceed to pull down the house or houses forthwith.

As to the delay arising from the making of new sewers, this delay is yet to come, for there is not an inch of ground moved for that purpose in this neighbourhood.

The Commissioners of Woods and Forests will require to make, at their own expense, a sewer from Oxford-street to Holborn, and another from Broad-street to Long-acre; but, as there exists one in Plumtree-street at present, the Commissioners of Sewers for Westminster have agreed to make a new one at their own expense, whenever they are called upon to do so.

I am, Sir, your obedient servant,  
A PLUMBER OF PLUMTREE-STREET.  
Bloomsbury, 6th March, 1844.

P.S.—Information regarding the amount of compensation awarded, I shall be most happy to send you when the purchases are completed.

ST. PAUL'S AND WESTMINSTER ABBEY.

SIR,—Parliament being now assembled, I beg to suggest, through the medium of your valuable paper, the propriety of convening a public meeting, for the purpose of considering the steps which it may be advisable to take in reference to the present disgraced condition of the Cathedral Church of St. Paul, and the Abbey Church of St. Peter, Westminster, in order to effect, if possible, the following important objects:—

1st. The abolition of fees.

2ndly. To obtain in these churches increased and better accommodation for the poor in the cities of London and Westminster. And,

3rdly. To get the *Pagan* monuments, which disfigure and profane these holy temples, removed to some other more appropriate receptacle.

I am, Sir,  
Your very obedient servant,  
AN ENGLISHMAN.

[We do not undertake to be answerable for each of the opinions here expressed.—ED.]

MIDDLESEX CHURCHES.

SIR,—While the Camden Society take care of the Cambridge Churches, and the Oxford Gothic Society of the Oxford Churches, can nothing be done to preserve our fine, yet unknown, Middlesex churches from churchward domination, and the reign of painted deal and whitewash? Few persons are acquainted with the still handsome churches within the immediate neighbourhood of London, although barbarously mutilated. Look at *Harmondsworth* Church, with its fine row of Norman arches dividing the nave from the aisles, though every moulding is stopped with whitewash. Who ever heard of such a place, and who that has seen it inside, with the whitewashed columns, and every outside piece of stonework removed or covered with beastly stucco, but must indeed grieve and lament that ignorance should have power thus to abuse man's noblest works? Look at *Harlington* again; its tower still older, and which has been beautified only last year with whitewash. Look at *Hayes*, and mourn for departed greatness and its clerestory; and at *Heston*, whose beauty, indeed, still remains less injured than most. Need I mention more, to shew that while we look farther for beauty, we neglect that which lies almost at one's own door? If more names were wanted, *Hillingdon*, *Harrow*, *Northolt*, *Isleworth*, &c., might be mentioned. Can nothing be done to save these churches from ruin? Will no one attempt their delineation? Will none of your Middlesex readers send you something connected with them? Our churches have indeed been neglected; and, worse still, injured

and spoiled: this must no longer be so. We must stop farther desecration, by boorish churchwardens, neglectful parsons, and niggardly vestries, of those works, which our forefathers of blessed memory raised to the glory of the One Supreme.

Yours truly,  
J. H.  
Southall.

I will just mention, that, among the things not destroyed, are the lych-gates at Hayes and Heston.

[We have had some trouble in unravelling the subtleties of our zealous correspondent, and indeed have been obliged to change the positions of some of his words in order to render the phraseology readable; still, from the nature of our correspondent's hand-writing, we cannot warrant that our printer will give every word correctly as intended. We have small love for white-wash, yet are obliged to confess our belief that had not many subjects of carving been obscured by it, long ago they would either have been hacked away or purloined.—ED.]

#### FOREIGN MEASURES.

SIR,—I should esteem it a favour if you or one of your readers would inform me in the following matter. I find in all foreign works (*French*) on architecture that I possess, the scales to which the drawings are made are invariably in *pieds* or *mètres*. I am desirous of knowing what proportion the scales of *pieds* or *mètres* bear to the scale of *English feet* which we commonly use. I am led to think more upon this point, on account of the very clever drawings exhibited lately by Professor Cockerill, in his Lectures at the Royal Academy, all drawn to the same scale, a system which I think cannot be too much admired or practised.

Your answer to the above will much oblige,  
Sir, your obedient servant,  
27th February, 1844.

L. O. G.

[Our correspondent will find in our 54th Number, page 80, a Comparative Table of French *Mètres* and English Feet; for feet of different nations we refer him to any ordinary Cyclopædia.—ED.]

#### Miscellaneous.

DEATH OF A DISTINGUISHED MATHEMATICIAN.—TRINITY COLLEGE, CAMBRIDGE, Feb. 29.—The following letter has just been received:—"Duncan F. Gregory, Esq., M.A., Fellow of Trinity College, Cambridge, died here this morning at five o'clock. Canaan Lodge, Edinburgh, Feb. 23, 1844." This loss is felt by the university in general, and by the deceased gentleman's own college in particular. He died in his 31st year, of a lingering illness, which he bore to the last with manly fortitude and Christian resignation. He went off in a calm slumber, apparently, to those who watched him, without a struggle. Mr. Gregory was one of the moderators of the Mathematical Honour Examination in 1842, and one of the examiners in 1843. He was the author of a very able work on Differential Calculus, and had got half-way through another on Geometry of Three Dimensions, the sheets having been printed as he proceeded. He was the chief projector of the "Cambridge Mathematical Journal," a work which already enjoys a European reputation, and was its principal contributor till his death. His family, for scientific attainments, was one of the most illustrious in Europe; and James and David Gregory, in bygone years, shed no ordinary lustre in this respect on the land of their birth. Doctor Gregory, an eminent physician of Edinburgh, now dead some years, and father to the recently deceased Fellow of Trinity, was the author of the "Conspectus Medicinæ," and several first-rate medical works. His son inherited his amiable and estimable personal qualities, and was universally beloved and respected.—*Morning Herald*.

GEOLOGICAL.—We are informed that Mr. Hutton has completed his survey of the strata of North Derbyshire coal-field, with a coloured map, 12 by 10 feet, illustrating the various phenomena, particularly the great denudation extending from near Dronfield through Whittington, Brimington, Calow, to near Chesterfield. The map is deposited in Mount St. Mary's College, near Eckington. It enumerates twenty-two oolite or gritstone rocks, and twenty-one thick and thinner coals.

THE QUEEN'S VISIT TO FRANCE.—The *Commerce* announces, that subsequently to the visit of the Queen of England to the Chateau d'En, the King commissioned several artists to decorate a gallery, to which His Majesty had given the name of "Victoria and Prince Albert Gallery." The arrival of the British fleet in the road of Trepot, the landing, entry into Eu, the dinners, concerts, visits to the church and forest, and the re-embarkation, form the subjects of as many pictures, which are to figure in the English gallery, with the busts, portraits, and statues of the principal personages who accompanied the young Queen. The object of the King's visit to Eu was to ascertain the progress made in the decoration of the new gallery.

BOTANICAL SOCIETY OF LONDON.—The ordinary meeting of this society was held on Friday evening, March 1, at the society's rooms, No. 20, Bedford-street, Covent Garden, J. E. Gray, Esq., F.R.S., president in the chair. Various donations to the library and herbarium were announced. The continuation of the paper commenced at the last meeting, being "A Synoptical View of the British Fruticose *Rubi*, are ranged in Groups, with explanatory Remarks." The paper was accompanied by drawings and numerous specimens.

THE SCREW PROPELLER.—A trial of speed between her Majesty's steamers Prometheus and Rattler was made in the Thames, on Saturday fortnight, over a measured distance, the former being fitted with paddles, the latter with a screw propeller, when the latter was proved to have the advantage over her opponent of nearly half a knot an hour.

THE NEW BARRACKS AT FULWOOD.—These new barracks begin to form a conspicuous feature of the locality in which they are placed, and to present an imposing appearance from various points of view. The infantry range is now nearly ready for roofing, and the cavalry range will very shortly be put in progress. There is a large accumulation of material on the ground intended for the erection of the officers' quarters, which will be begun as soon as the weather permits. The place altogether has an exceedingly stirring and cheerful appearance, being crowded with busy workshops of all sorts.—*Preston Chronicle*.

THE WOOD PAVEMENT IN CHEAPSIDE.—The paving committee, in their report, having recommended that the paving of Cheapside should be forthwith commenced, orders have been given to Mr. L. Stevens to complete the street with wood according to Perring's safety system, of which a specimen was laid down last year westward of Bow Church Tower, in Cheapside. The work was commenced on Monday last.

DISCOVERY OF A SEAM OF COAL.—It is rumoured, that the gentlemen now surveying the new line of railway from Lancaster to Carlisle some days ago, discovered a seam of coal, four feet in thickness, three-quarters of a mile from Crooklands, in the direction of Burton-in-Kendal. It is supposed by some to be the terminus of a seam which runs through that part of the country extending from the Ingletton coal-fields.

THE CITY STATUE.—The equestrian statue in bronze of the Duke of Wellington, by Chantrey, is nearly completed; and it will be erected on the space now clearing in front of the Royal Exchange, in time for inauguration on the next anniversary of the battle of Waterloo. It is cast from the cannon taken in the Duke's campaigns; and the surplus gun-metal thus appropriated, amounting to eight tons, has been divided between the Nelson Memorial and the other equestrian statue of Wellington which Mr. M. C. Wyatt is making for the west end of London.

Lord Montagu has transmitted 20*l*, and Messrs. Coutts 20*l*, to complete the Scott monument at Edinburgh; and Sir Thomas M. Brisbane, Lord Murray, and Sir A. Ferguson, have repeated their former subscriptions.

The Commissioners of Woods and Forests have purchased, for the sum of 580*l*, the old buildings on the south side of Holyrood House, and have appointed Mr. Donald Horne, their agent in Scotland, vice Mr. Roderick Mackenzie, deceased.



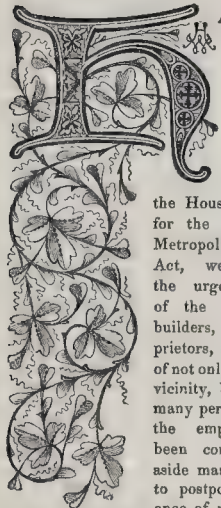




# The Builder.

NO. LVIII.

SATURDAY, MARCH 16, 1844.



HAVING received, through the favour of the Right Honourable the Earl of Lincoln, sooner than we expected, a copy of the Bill now before the House of Commons, for the proposed New Metropolitan Building-Act, we have, from the urgent importance of the subject to all builders, architects, proprietors, and inhabitants, of not only London and its vicinity, but also to very many persons throughout the empire at large, been compelled to lay aside many subjects, and to postpone the appearance of numerous valuable

articles already set up in type. We made various calculations of the extent of space which would be required for containing the whole of this most voluminous Bill, with the requisite annotations thereon. At first we endeavoured to arrange the whole within the extent of one Number of our periodical, with a Supplement, but we soon found, that even with the use of almost the smallest readable type, there was little hope of compressing the whole Bill within less than the extent of two Numbers; we have, therefore, been obliged not only to give a double Number, but also to add a Supplement, or we should otherwise not have had any space left for subjects of general interest. It has, indeed, required very great exertion to lay before our readers, upon notice so short, such an extent of technical matter; and we trust such of them as may be less interested in the measure will nevertheless bear with the suppression of other matter, which has this week of necessity resulted from our prompt attention to a subject of such great and absorbing importance to the metropolis, and which, if once brought to any near approach to perfection, will no doubt form the model for enactments as nearly as practicable similar thereto, to be extended to every principal town throughout the three kingdoms.

In the notes, parallel with the clauses of the body of the proposed Act, will be found numerous critical observations. We have set up more than three dense columns of similar notes, applicable to the voluminous schedules appended to the Bill, in which indeed lie more of the nerves and sinews of the proposed Act than in its great body of clauses; but, to our extreme regret, although we this week reach twelve columns beyond the extent of a double Number, we have been unable to find room for these exact and important observations; we shall, therefore, be compelled to give them in our next publication, with such further remarks as a week's additional deliberation will produce.

In the meanwhile, we have no hesitation in

saying that the measure as a whole is calculated to effect much good. It is true, that in some of its details it is inferior both to the present Building-Act and to the one proposed last year; but then it is in many particulars very much superior to both of them; and we hope that no unflinching obstinacy from any quarter will defeat the consummation of a measure calculated, when improved, corrected, and modified, to effect so much sterling benefit.

Building-Acts seem to have been the terror of lawyers; and, perhaps, the present existing metropolitan statute is, though of so much importance, less understood by members of the legal profession than almost any other parliamentary enactment; notwithstanding also, perhaps, this public statute is of such general concern, and is in parts difficult to expound, there are in law books fewer reports of cases decided upon points relative to it than upon any unimportant Act. Men of the law, indeed, appear always to have grown fidgety and inattentive under building technicalities. Hence has arisen that whenever any proposal for a new Metropolitan Building-Act has appeared, there has not in general been apparent that verbal nicety, that freedom from ambiguity, that terseness of expression, that absolute barrier against even torturing the language into any signification other than the one plainly and even palpably intended to be conveyed by the words which should be found in every good and carefully framed statute, and in which labour few besides lawyers are indeed commonly adept.

beplea.

A COMMITTEE OF THE SOCIETY OF MASTER CARPENTERS is summoned for Monday next, at 12 o'clock, to take into consideration the several clauses in the New Metropolitan Building-Act.

DESCRIPTION OF A CAST-IRON BRIDGE, COMPLETED IN THE YEAR 1840, FOR CARRYING THE BIRMINGHAM AND GLOUCESTER RAILWAY OVER THE RIVER AVON, NEAR TEWKESBURY.

BY CAPTAIN W. S. MOORSOM.

(Read before the Institution of Civil Engineers, January 9.)

This bridge is situated about seven miles north of Tewkesbury: the approaches to it are formed on embankments about 25 feet high, crossing the valley nearly at right angles. In the construction it was desirable to provide for the effect of considerable floods, by aiding the egress of the water, and also to avoid any interference with the navigation of the river; a greater width of water-way was therefore given, than at first view may appear necessary.

The bridge consists of three segmental arches, each of 57 feet span, with a versed sine of 5 feet 2 inches; the length between the centres of the piers being 66 feet 6 inches; the total width between the abutments 190 feet 6 inches; and the breadth of the cutwaters 8 feet 6 inches each, leaving a clear water-way of 173 feet 6 inches.

The principal novelty in the work is the method of constructing the two piers. They are formed externally of cast-iron plates or caissons, filled for the first 12 feet from the bottom with solid masonry and concrete; upon this is built hollow masonry to support the cap-plates, carrying eight pillars on each pier, with an entablature for receiving the ends of the arches, which, with the caps, pillars, and entablatures, are of cast-iron. The abutments at either end are of masonry.

The caissons are, at the bottom, 41 feet 6 inches long, and 16 feet wide, with semicircular ends, tapering upwards for 12 feet, on all sides, to 34 feet 6 inches long, by 8 feet 6 inches wide, from whence they rise perpendicularly for the remaining 8 feet 9 inches. They are constructed of cast-iron flanged plates,  $\frac{3}{4}$  inch thick, screwed together by bolts,

and the joints made with iron cement. The total weight of each caisson is about 23 tons.

The bottom of the river, at the site of each pier, having been prepared by a scoop dredger, worked from a platform erected upon piles, the lower row of plates for the caisson was put together and suspended in the water by iron rods while the other rows were added, gradually lowering the whole as the work proceeded, until the bottom rested on the bed of the river; a quantity of clay was then thrown round the outside, which formed a joint so impervious to water, that with two pumps, each of 5 $\frac{1}{2}$  inches square, the caisson was emptied in six hours, and was afterwards kept dry by one pump, which was worked occasionally during the subsequent excavations within the caisson.

The dimensions of the cast-iron work of the arches, and the masonry of the abutments, are given in detail, with an account of the methods of construction followed, and of the materials employed.

It is stated that these iron caissons, which are proposed by Mr. Ward of Falmouth, the resident engineer, were found to be cheaper than having coffer-dams and stone piers. The total cost of the bridge, including iron-work, painting, masonry, subsequent repairs to the walls, and superintendence during construction, being 10,192*l.*, and the weight of cast and wrought iron employed was about 520 tons.

The partial failure of an arch in one of the abutments is described, and the supposed reasons for the sinking are given, with the means which were adopted for replacing those stones which had been displaced, and it is stated that no sinking has since occurred.

The paper was illustrated by eighteen remarkably well-executed drawings by Mr. Butters.

Captain Moorsom said that there were a few interesting particulars relative to the bridge, beyond those which were given in the paper. Mr. Murchison shewed, in his work on the Geology of the Silurian districts, that the deposits of gravel of the Lickey range of the hills nearer to Birmingham, and that of the Avon near Pershore, were, geologically speaking, identical; but Captain Moorsom found that, as regarded the engineer's operations, they differed in character.

The gravel in the neighbourhood of Birmingham was remarkable for the rounded character of the stones composing it, whereas that which was found in the neighbourhood of this bridge consisted almost entirely of angular stones, which were used without any admixture of sand, for making concrete, which was found to become most compact when the stones were perfectly clean; but the Birmingham gravel required a certain proportion of sand with it, to make compact concrete.

In excavating for the foundations of the abutments, several bones of deer and a human skull were found, at depths from 10 to 14 feet below the level of the bottom of the river.

The circumstances attaching to the partial failure of the small southern abutment arch were peculiar. It had been supposed to arise from expansion of the iron-work taking place all in one direction, but after watching the arch for six months, he thought such an opinion was to a great extent unfounded; and he conceived it to have arisen partly from the abutment wall having slightly sunk at the back, owing to the great quantity of rain which fell at that period affecting the spongy soil upon which it was built.

For seven months, the valley of the Avon, at the spot in question, was (with a very few days' intermission) under water, immediately after the walls had been built, and before the bridge was nearly completed. An amount of sinkage, which was scarcely perceptible in the back of the foundation of the wall, would have the effect of displacing the stones of the arch to the extent of some inches, and it was to this cause that he attributed the separation of the arch stones. As soon as the settlement appeared to have ceased, the defective stones were taken out and replaced, without interrupting the passage of the trains.

The north-eastern wing wall also failed from the same cause, viz., the spongy nature of the soil when it was thoroughly saturated with water; and if this had been foreseen, prevention would have been easy, by placing



a firmer and more extended base of concrete under the footings of the wall.

He thought that the method of forming the piers was as good and as cheap as any known mode that could have been adopted; but if he had to build another bridge of the same dimensions, and under similar circumstances, he would not use cast-iron, but would construct it of timber, not on account of any engineering difficulty, but simply because a timber structure would be very much cheaper, and equally serviceable for the purposes of the railway, taking into account comparative durability as well as present cost.

#### ON THE PROGRESS MADE IN THE APPLICATION OF ELECTRICITY AS A MOTIVE-POWER.

W. R. GROVE, Esq., submitted a communication to the Royal Institution, on the 9th ult., the subjects of which were—1, a brief summary of the laws of the electro-magnetic force; 2, a description of the chief modifications of the engines to which that force has hitherto been applied; 3, the commercial statistics of its application; 4, the purposes for which this power is available. In dealing with the first of these subjects, Mr. Grove exhibited, by many illustrative and successful experiments, the well-known re-actions of iron and other metals on each other, when exposed to the influence of an electric current. The actual application of these familiar phenomena was then shewn in the working models of several machines, which were set in action by the nitric acid (or Grove's) battery, invented by Mr. Grove, and described by him four years ago at the Royal Institution. These machines may be divided into three classes; first, those acting by the immediate deflecting force, as shewn in the galvanometer, Barlow's wheel, &c.; secondly, those on what is called the suspension principle. In these, two powerful electro-magnets are fixed contiguous to the periphery of a wheel, and in the line of its diameter, plates of soft iron being fastened on this periphery at short and equal intervals. The electro-magnets are so arranged as to lose their attractive power as soon as they have drawn through a given space each plate of iron, necessarily presented to them by the revolution of the wheel, but are immediately afterwards re-invested with this power, in order to operate on the next plate. By these means the wheel is kept in constant rotation on its axis. The remaining class of electrically-driven machines are applications of the principle of Ritchie's revolving magnet. In these, an electro-magnet, balanced on a pivot, so as to rotate in a horizontal plane, is arranged between the poles of a permanent magnet. Hence, the alternate attractions of the opposite magnetic poles, combined with its own momentum, cause the electro-magnet to continue rapidly revolving. Having noticed machines, on these various principles, by H. Fox Talbot, Esq., Mr. Hill, of Swansea, and Professor Wheatstone, Mr. Grove proceeded to his third subject—the commercial statistics of electro-magnetic power. It appears, by the experiments of Dr. Botto, that the consumption of 45 lbs. of zinc will produce an effect equivalent to a single horse power for twenty-four hours. The cost of the metal, at 3d. the pound, would amount to 11s. 3d. About 50½ lbs. of the nitric acid of commerce would be required to dissolve the metal in the most economical and effective manner. The charge of this, at 6d. the pound, would be 17. 5s. 6d. The whole expense, therefore, of obtaining the effect of a 1-horse power by an electro-motive apparatus, would be 17. 16s. 9d. In this calculation the cost of the requisite sulphuric acid is assumed to be fully covered by the value of the salts of zinc produced in the operation. The same amount of power produced by a steam-engine would not cost more than a few shillings. Mr. Grove explained that this comparative costliness of the electro-magnetic machines resulted from the sources of their force, zinc and acid being manufactured, and consequently, costly articles; whereas, coal and water, the elements of the steam-engine's force, were raw materials, supplied at once from the earth. Mr. Grove took this occasion to observe, that the experiments of Botto, just alluded to, were made with his (Grove's) battery; and that upon the cost of the constituents of this, the calculations were founded. At first sight, this battery would appear a dear form, from the

expense of the nitric acid; but a little consideration proves the contrary of this. Compare it, for example, with a battery merely charged with dilute sulphuric acid (the cheapest possible electrolyte), to perform an equivalent of work (as the decomposition of a given quantity of water), a series of three cells of the ordinary battery is necessary; hence the consumption of three equivalents of zinc, and three of sulphuric acid. But the intensity of the Grove's battery is such, that the same resistance can be overcome by one cell, consuming only one equivalent of zinc, one of sulphuric acid, and one-third of nitric (there being in this acid three available equivalents of oxygen). Independently of this smaller consumption, Grove's battery has the advantage of occupying only one-sixteenth of the space of the other constructions. In concluding his communication, Mr. Grove mentioned the two well-known applications of electric power—the electric telegraph and the electric clock. To neither of these can steam, or, indeed, any known force, be so applicable as that which travels with a greater velocity than light itself.

#### ON THE LIGHT THROWN ON GEOLOGY BY SUBMARINE RESEARCHES.

THE following interesting lecture was delivered by Professor Forbes at the meeting of the Royal Institution on the 23rd February:—

Having alluded to the researches of two Italian naturalists, Donati and Soldani, who dredged the Adriatic about the middle of the last century, Prof. Forbes entered on the important inferences which he had derived from similar investigations in the Irish Channel, and in the Archipelago. His first conclusion was, that marine animals and plants are grouped, according to their species, at particular depths in the sea, each species having a range of depth appropriated to itself. Prof. Forbes illustrated this assertion by a diagram, indicating the plants and animals respectively inhabiting what he termed the *littoral* zone, which extends immediately from the coast—the *laminarian* zone, where the broad-leaved fuci are most abundant—the *coralline*, in which there is an assemblage of mollusca, especially bivalves and corals, and the *deep sea coral*, so called because in it only we find examples of large corals on the British shores. Prof. Forbes next alluded to the fact of the number of species diminishing according to depth, so that by gaining an accurate knowledge of the Fauna and Flora, appropriated to various seabottoms, the naturalist can infer their depth—no plants are found below 100 fathoms, and the probable zero of animal life is at 300 fathoms. Sedimentary deposits below this depth are consequently destitute of organic matter. This circumstance bids the geologist to be cautious in inferring that any stratum was formed before the creation of animals, on no other account than that it is devoid of organic remains: he should rather conclude from such deficiency, that the stratum was deposited in very deep water.—Prof. Forbes next remarked that British species are found throughout the zones of depth in the Mediterranean Sea; but that in that sea, the proportion of northern testacea in the lower zones greatly exceeds that in the upper, so that there is a representation of climates, or parallels of latitude, in depth. The fourth proposition advanced by the Professor, was, that all varieties of seabottom are not equally capable of maintaining animal life. The sandy parts are usually the desert ones. Hence the scarcity of fossils in sand-stone: though traces of worms (which inhabit the sand) are found in ancient sandstones. As each animal is not able to live, except on its own locality, those marine animals, as the scallop, which are gregarious, deteriorating the ground when they increase beyond a certain extent, die; then the place becomes silted up, the ground changes, and another race occupies it. This fact explains the phenomena of distribution of organic remains in rocks,—i. e. their being grouped together in separate strata, fossiliferous strata alternating with those which are free from organic remains.—Prof. Forbes proceeded to observe, that such animals as are common to many zones of depth, are those which have the greatest horizontal range in space, and are generally those which are present in the

tertiary deposits; and thus it is that the most generally distributed fossils are such as are found in the greatest number of formations; because these are necessarily the most independent of destroying influences. But, on the other hand, as the elevation or depression of strata to a very small extent would destroy the species peculiar to any zone, or to the zone above or beneath it, it becomes an important inquiry how this destruction is compensated. In dealing with this question, Prof. Forbes announced a most important law in zoology, one altogether new to ourselves—viz. *That the mollusca migrate*. He discovered by his own observation, that this is the case even with the limpets, the most fixed of all species. This migration occurs in their egg-state, when the ova are strung together, and floated over the ocean, from shore to shore. In the larva state they are swimmers. In fact, they commence their life in a form closely analogous to that which is permanent among the pteropods. But, though in this state they can live in any zone, they cannot arrive at perfection except in the peculiar zone to which they are adapted. This accounts for the very imperfect shells of prematurely dying mollusca being found at a low depth. Professor Forbes concluded his communication by noticing its bearings on the views of the most eminent geologists of our time. 1st. With regard to Mr. Lyell's principle of distinguishing tertiary strata by the per-centage of recent species in each. This is confirmed by Prof. Forbes's investigations; only in using Mr. Lyell's criterion, the element of depth, which gives climatal character in living animals, must be taken into account. 2nd. Prof. Forbes next noticed that Sir H. De la Beeche had hypothetically anticipated, what his researches established, the representations of climates and depth, ten years ago. 3rd. He lastly ascribed to Viscount d'Archiac and M. de Verneuil, the credit of having announced (what he had observed and mentioned in the course of his communication) that species which are found in a great number of localities, and in very distant countries, are always those which have lived during the formation of several successive systems.

#### ARTESIAN FOUNTAINS.

THE announcement of an intention to sink an artesian well in the neighbourhood of Trafalgar-square has frightened many wise heads into the supposition that such an operation would dry up the neighbouring ordinary wells. This arises from the distinction between an ordinary well and an artesian fountain (as it ought properly to be called) being apparently either unknown or not understood. Such fountains derive their name from having been first bored for in the province of Artois, in France; and the conditions essential to constitute such a fountain are, that the waters shall be forced up to the surface by the pressure from beneath, which is not the case in ordinary wells, from which the waters are pumped up, or drawn up by buckets, &c.

Tertiary basins (geologically speaking), such as London and Paris are situated in, are considered the most favourable for piercing for artesian fountains; and to reach such, it is not only necessary to go below the bed of water which supplies the ordinary wells, but also that, by means of a tube or other conveyance, the superficial beds of water should not mingle with those which are brought up from below to the surface. The means taken to effect this would require a lengthened description: the accidents to which even metal tubes are liable, from being subjected to the enormous pressure sometimes met with, were well illustrated in the case of the celebrated artesian fountain of Paris. The principle upon which artesian fountains are pierced for is the stratified deposition of the beds and the alternation of permeable and impermeable strata in any given place. The ordinary wells of London are all derived from above the London clay; the alluvium covering the surface of which is full of water, from the impermeable nature of the substratum of clay. The quantity of water is so great, that many large distilleries, sugar-houses, and some of the breweries, are supplied with this water. The water of the London clay itself is impure, and contains salts. Such are the saline springs of Bagnigge Wells, St.



George's Fields, Kilburn, and, it is believed, of Epsom.

Whenever a well is sunk above the London clay, the immediate rise of the water has some effect in depressing for a time that of the neighbouring wells; but this is only temporary, for there is no pressure from below. These are not artesian fountains. The latter fountains must be sought for (supposing, to avoid expense, that the uppermost beds were taken) in the alternating sands and clays of the plastic clay formation, or to be more certain of a plentiful supply, in the chalk itself: in either they could have no possible effect whatsoever on any neighbouring wells.

An account is given in Conybeare and Phillips's "Outlines of the Geology of England and Wales" of a well sunk at Messrs. Liptrap and Smith's distillery, one mile east of London, in which the alluvium, London clay, and plastic clay were traversed, and 160 feet of the chalk; the land-springs supplying the London wells were met with at a depth of 29 feet; two beds of the London clay yielded water; a good spring was met with in the lower sandy beds of the plastic clay, and a spring was met with in the chalk at a depth of 123 feet (in the chalk). The lower beds of the chalk formation and every fissure in them are, with very few exceptions, completely filled with water.

As the chalk and plastic clay are in the neighbourhood of Trafalgar-square at a lower level than the higher districts which supply those formations with water, so not only may a powerful fountain be anticipated in such a quarter, but also a rise which will be especially well adapted for ornamental purposes, and that without having any connection whatever with neighbouring wells.—*Literary Gazette*.

#### NEW ARCHEOLOGICAL ASSOCIATION.

THE new society, called the "British Archaeological Association for the encouragement and prosecution of researches into the arts and monuments of the early and middle ages, particularly in England," it is to be under the direction of a central committee resident in London; and among its patrons are already ranked—the Marquess of Northampton, President of the Royal Society; the Earl of Aberdeen, K.T. President of the Society of Antiquaries; the Earl of Powis; Lord Albert Conyngham; the Lord Bishops of Durham, Salisbury, Norwich, and Lichfield; Lord Stanley, of Alderley; Sir E. H. Alderson, Baron of the Exchequer; Mr. Hallam, and Mr. W. R. Hamilton, Vice-Presidents of the Society of Antiquaries. The members of the committee, as at present arranged, are T. Amyot, Esq., F.R.S., Treas. S.A.; C. F. Barnwell, M.A., F.R.S., F.S.A., late of the British Museum; Edward Blore, D.C.L., F.S.A.; W. Bromet, M.D., F.S.A.; the Rev. J. B. Deane, M.A., F.S.A.; C. L. Eastlake, R.A., F.R.S., F.S.A.; Sir H. Ellis, F.R.S., Sec. S.A.; E. Hawkins, F.R.S., F.S.A., Keeper of the Antiquities, Brit. Mus.; T. W. King, Esq., F.S.A., Rouge Dragon Pursuivant; Sir F. Madden, K.H., F.R.S., F.S.A., Keeper of the MSS., Brit. Mus.; T. J. Pettigrew, Esq., F.R.S., F.S.A., Treasurer; Ambrose Poynter, Esq., Hon. Sec. R.I. Brit. Arch.; C. Roach Smith, Esq., F.S.A., Honorary Secretary; T. Stapleton, Esq., F.S.A.; Albert Way, Esq., M.A., Dir. S.A.; Sir R. Westmacott, R.A., F.S.A., Professor of Sculpture, R. Acad.; C. Winston, Esq.; and Thomas Wright, Esq., M.A., F.S.A., Corresponding Member of the Institute of France, &c.

The want of such an active institution of this kind has long been a reproach to the country, and caused the irreparable loss of many a precious relic of antiquity. Its professed objects are "to investigate, preserve, and illustrate all ancient monuments of the history, manners, customs, and arts of our forefathers, and, in furtherance of the principles with which the Society of Antiquaries of London was established, to render available the researches of a numerous class of lovers of antiquity who are unconnected with that institution." The means proposed are, "1. By holding communication with correspondents throughout the kingdom, and with provincial antiquarian societies; as well as by direct intercourse with the Comité des Arts et Monuments of the Ministry of Public Instruction in France,

and with other similar associations on the Continent instituted for the advancement of antiquarian science. 2. By holding frequent and regular meetings for the consideration and discussion of communications received from correspondents and any other persons. 3. By promoting careful observation and preservation of antiquities discovered in the progress of public works, such as railways, sewers, foundations of buildings, &c. 4. By encouraging individuals or associations in making researches and excavations, and affording them suggestions and co-operation. 5. By opposing and preventing, as far as may be practicable, all injuries with which ancient national monuments of every description may from time to time be threatened. 6. By using every endeavour to spread abroad a correct taste for archaeology, and a just appreciation of monuments of ancient art, so as ultimately to secure a general interest in their preservation. 7. By collecting accurate drawings, plans, and descriptions of ancient national monuments, and, by means of correspondents, preserving authentic memorials of all antiquities which may from time to time be brought to light. 8. By establishing a journal devoted exclusively to the objects of the association, as a means of spreading antiquarian information and maintaining a constant communication with all persons interested in such pursuits. 9. By taking every occasion which may present itself to solicit the attention of the government to the conservation of our national monuments, and to the other objects of the association."—Exertions are being made to issue the first No. of the *British Archaeological Quarterly Journal*, which will be a record of all the proceedings, towards the end of March. No fixed plan of pecuniary consideration has as yet been arranged. On the contrary, it is at present voluntary; but we understand it is proposed to hold, at appointed times, an Historical Congress, something after the manner of the British Association, on which occasion we presume there will be some call for the "sineux of war." It is proposed that the assemblage should be made at some place remarkable for its historical monuments, and other objects of antiquity; and we believe that Canterbury or Winchester will be fixed upon for the present year.

#### SOCIETY OF ANTIQUARIES OF NEW CASTLE.

THE thirty-first anniversary of this society was lately held, on which occasion the chair was taken by John Clayton, Esq., when the usual statement of accounts was read, after which the report of the council was read to the meeting. It stated that further delay had been experienced in the appearance of the Pipe Rolls, but it was expected that members who had subscribed to the work would shortly receive their copies. The memorial presented to the Town Council respecting the Brand manuscripts remained unanswered. Successful operations had been carried on in exploring Roman stations at Risingham and Walwick Chesters: Mr. Shanks had enriched the society's collection with various objects of antiquity found at the former place, and Mr. Clayton had contributed to the 'Transactions' an account of his discoveries at the latter. The council having found that there were sufficient papers, with those contributed during the past year, to form a concluding part to Vol. III. of the 'Transactions,' have determined to print them, and an interesting part will be published. Great attention has been paid to the elucidation of the discoveries mentioned above, by plates, &c. By the efforts of sundry individual members, several gentlemen have joined the society, but such exertions must still be kept up in order to secure such a fund as will enable the society to carry on the measures for which it was originally formed. The following gentlemen have become members during the year: namely, P. H. Howard, Esq., M.P., Corby Castle; Wm. Sydney Gibson, Esq., Newcastle; the Rev. W. F. Raymond, Archdeacon of Northumberland; Dr. Besley, Vicar of Long Benton; Rev. Edward Hussey Adamson, incumbent of St. Alban's; H. Ingledew, Esq., Newcastle; J. Straker, Esq., Point Pleasant; Geo. Walker, Esq., architect, Newcastle. Whilst these acquisitions have been made, however, the society have to lament the deaths of Messrs. Biddle and Hewitson, and the resignation of Christopher Blackett, Esq.

At this meeting Charles Roach Smith, Esq., was elected an honorary, and Mr. Ions Hewitson an ordinary member. The various presents received during the year were laid upon the table for the inspection of the members, and the following gentlemen were chosen officers for the ensuing year, namely, President, Sir J. E. Swinburne, Bart., F.S.A.; Vice-Presidents, C. W. Bigge, Esq., Sir C. Monck, Bart.; and the Rev. J. Hodgson: Secretaries, John Adamson, Esq., F.S.A.; and Henry Turner, Esq.; Council, J. H. Hinde, Esq., M.P.; John Clayton, Esq.; John Fenwick, Esq.; Rev. James Raine; Dr. Headlam; R. R. Dees, Esq.; H. G. Potter, Esq.; Dr. Charlton; E. Charnley, Esq.; W. Dickson, Esq.; Thomas Bell, Esq.; and M. A. Richardson, Esq.

#### YORKSHIRE LAND DRAINAGE ASSOCIATION.

THE application of capital to the general and complete drainage of land, as a means of investment—while it would confer the greatest benefit to the farmer, as well as the landholder himself—has, among all the various speculations which have been brought before the public during the past twenty years, been completely lost sight of; to induce, however, capitalists to embark property in this useful and (certain to be) lucrative employment, the attention of the legislature was called to the subject, and, by an Act of Parliament, 3 & 4 Vict., cap. 55, power is given to the owners of settled estates to defray the expenses of draining the same by way of mortgage, and to charge all or any part of the lands so drained with payment to any persons willing to advance the capital necessary for the purpose, either as a rent charge, or by equal yearly instalments, of not less than twelve or more than eighteen years.

This Act embraces in its enactments most clearly the objects sought to be attained by an association on the principles of one which has just been formed under the above title, which, while it numbers among the names upon the provisional committee and among its patrons some of the first in the kingdom as farming landholders, enters upon the proposed undertaking with a spirit commensurate with its importance. The proposed capital is 500,000*l.*, in shares of 25*l.* each; and at the present moment, when agricultural improvement is of such urgent necessity, there is little doubt the association will be properly supported; populous as England is, and extensive as are her towns and villages, compared with other portions of the globe, there is vast room for improvement in agricultural pursuits, and the consequent investment of capital. It is calculated that by proper management the soil of this country could be made to produce four times the amount of food at present raised from it; and, though this will in a great measure depend upon chemistry, as applied to agriculture, still a thorough principle of drainage must in all cases be carried out before chemical effects can be properly developed. Under such circumstances, we hail with much gratification the establishment of such an association, the results of whose operations, we have no doubt, will tend to secure an increase of production, and, consequently, lessen much of the present misery in the agricultural districts, and counterbalance the general depression which prevails in that branch of industry. As this association will in all cases proceed on the most recent improvements, and carry on all its undertakings on the most scientific principles extant, further openings will doubtless be made for the production of many articles of manufacture for drainage, as well as other purposes of agriculture. Ainslie's patent tile machine, the Marquis of Tweeddale's, and various others, have been followed by Watson's patent draining process, which has been so successfully applied in cuttings and embankments on railroads and canals; and the operations of this association will tend to call into activity many other inventions, which, from the want of a stimulus, have hitherto lain dormant. The safety of such a speculation cannot be better shewn than by quoting the words of Lord Stanley (no mean authority on the subject) at a meeting of the Royal Agricultural Society of England, held at Liverpool, in July, 1841—he says, "There



was no bank in the country, no commercial speculation, no investment, so safe, so sure, so profitable, as that in which even borrowed capital may be engaged by investing it under the ground of your own soil." There is no doubt, under good management, the return for capital embarked will be ample, and secure the support of permanent investors—a society of a speculative character being what the promoters most strongly desire to avoid.

In two pamphlets published by J. H. Char-nock, Esq., a member of the Yorkshire Agricultural Society, the subject is most ably discussed, and the objects of the association clearly pointed out; these latter are—1. To provide the requisite amount of money for either owner or occupier, or the two jointly, to thoroughly drain their land, they repaying the same with interest, by half-yearly instalments, during a certain period to be fixed, either at a rate per cent. or a charge per acre, to be determined by competent parties, in proportion to the benefit the land has obtained from the operation of the association; 2. To make tiles or other articles for the purposes of drainage, on the most approved plan, and in the cheapest and most approved localities, to enable them to be supplied at the lowest price; and 3. To take on suitable leases any land considered worth the operation, thoroughly drain it, and relet it. In the discussion of the subject, the author shews, that as the increase of produce—at the most, three crops—will pay for the cost of perfect drainage, it follows that in three years there would, by this system, be put into the occupier's pocket the total sum which, under other circumstances, he would have to disburse during, perhaps, fifteen years—thus supplying him with extra capital; and, as this must tend to give a large increase of employment in the whole of the agricultural districts, it will improve the moral and social condition of the labourer, render him contented, induce others to follow his example, feel that his condition is not unshared by his employers—and render the advantages which we possess, beyond all other countries, in capital, and its practically scientific application, subservient to the general good of the community.

**NATURE THE ARCHITECT OF SOCIETY.**—Human society is not like a piece of mechanism which may be safely taken to pieces, and put together by the hands of an ordinary artist. It is the work of nature, and not of man; and has received, from the hands of its author, an organisation that cannot be destroyed without danger to its existence, and certain properties and powers that cannot be altered or suspended by those who may have been entrusted with its management. By studying these properties, and directing these powers, it may be modified and altered to a considerable extent. But they may be allowed to develop themselves by their internal energy, and to familiarize themselves with their new channel of exertion. A child cannot be stretched out by engines to the stature of a man, nor a man compelled, in a morning, to excel in all the exercises of an athlete. Those into whose hands the destinies of a great nation are committed, should bestow on its reformation at least as much patient observance and as much tender precaution as are displayed by a skilful gardener in his treatment of a sickly plant. He props up those branches that are weak or overloaded, and gradually prunes and reduces those that are too luxuriant; he cuts away what is absolutely rotten and distempered; he stirs the earth about the root, and sprinkles it with water, and waits for the coming spring; he trains the young branches to the right hand or to the left; and leads it, by a gradual and spontaneous progress, to expand or exalt itself, season after season, in the direction which he had previously determined; and thus, in the course of a few summers, he brings it, without injury or compulsion, into that form and proportion which could not with safety have been imposed upon it in a shorter time. The reformers of France applied no such gentle solicitations, and could not wait for the effects of any such preparatory measures, or voluntary developments. They forcibly broke over its lofty boughs, and endeavoured to straighten its crooked joints by violence: they tortured it into symmetry in vain, and shed its life blood on the earth, in the middle of its scattered branches.—*Lord Jeffrey.*

#### DESCRIPTION OF CHESTER.

This is not only the city of singular walks, but of singularities of all kinds. A German would notice one in particular in the Cathedral. Here, to his astonishment, he is led to the tomb of one of his German sovereigns, the Emperor Henry IV. The Chester people, who have invented such singular streets and walks, have firmly made up their minds, that this famous German emperor, of whose death we tell quite a different story, came over to Chester. Here the people received him and kept him till his death, then buried him in their Cathedral, and erected a monument to his memory. I told my guide that I very much doubted the truth of his tale. He replied that there were some people in Chester who doubted it: "but," said he, "I have no doubt on the subject, else why should they print it in the books?" This imperial monument is quite different from and more ornamental than the other monuments, and in order that there should be no mistake, the inscription confirms the popular legend. I can understand how a people, in its tales and legends, can fall into historical errors; but how such a mistake should have come into the daylight of one of the most famous cathedrals, and appear there cut in stone and iron, is incomprehensible. It is known that this unhappy emperor died on the 7th of August, 1106, at Liege, after he had been deprived of the crown by his son, Henry V. Obbert, the Bishop of Liege, at first permitted him to be buried in the Cathedral, but afterwards, as he was excommunicated, he had him dug up, at the command of the papal legate, and thrown, uninterred, on a little island in the Maas. On this island, so runs the tale, a pious monk night and day sang penitential psalms for the Emperor's soul. Henry V. had the body brought to Spiers, where it was buried in St. Mary's Church; but the fanatical Bishop of Spiers would not let it rest there. He removed it from the church, and had it placed in an unconsecrated chapel, where the bones of the unhappy emperor lay five years above ground. Then the bar of excommunication having been removed, he was solemnly interred in the Cathedral. There, as we know, he did not rest, for at the end of the last century but one, when the French laid waste the Palatinate, the bones of the emperor were again scattered. They have, however, been long since restored, and a monument erected over them, which is, however, scarcely so splendid as that which the English have raised to the duplicate of our emperor. There is, however, generally some truth in every legend, and the question therefore arises, what the truth is in this remarkable Chester story. It is possible, 1st, that the emperor, after his dethronement and the ill-treatment he received at the hands of his son, fled from Liege, down the Mass, to England, and that the person who died at Liege was not the emperor: or, 2d, that a stranger and imposter, profiting by the stormy life and obscure death of the emperor, went over to England, and there gained compassion and support by representing himself as the unfortunate sovereign. As neither of these hypotheses can be proved, the question remains, who that Henry IV. was who was honoured in Chester with the title of emperor of Germany, and whence it came that he was confounded with this emperor. Historians have as yet been as little able to solve this question, as to say who was the man with the iron mask.—*Kohl.*

#### THE HOUSE OF SIR CHRISTOPHER WREN.

—In Friday-street, Cheapside, a short time ago, stood the house which was in the occupation of Sir Christopher Wren, the eminent architect, during the erection of St. Paul's Cathedral, and which adjoined the church of St. Matthew, Friday-street. In the course of pulling down the building, which was sold a few days ago, and which is now nearly levelled with the ground; several silver and copper coins were found in the joists of the flooring by some of the workmen. The silver coins were of the reign of Queen Elizabeth, some being in good preservation. The copper coins were of an earlier period. The foundation walls are of extraordinary thickness, a portion of which formed part of the Saracen's Head, which is also taken down.

#### CHURCH-BUILDING INTELLIGENCE, &c.

**Bury St. Edmund's.**—A meeting of some of the principal inhabitants of St. Mary's parish in this town, convened by a friendly circular from the rev. incumbent, was held at the vestry of the church on Monday. The rev. gentleman stated that the repairs of the outer roof had been now completed, and that the condition of the principals, &c., had been throughout ascertained to be fully as bad as Mr. Cottingham had represented those which he had examined. The object of the meeting now was to consider certain alterations and processes of restoration of the interior of this beautiful edifice submitted by the architect, Mr. Cottingham, which were explained by Mr. Eyre. The rev. incumbent stated that the propositions embraced, first, the restoration and cleaning of the roof; secondly, the repair, or rather restoration of the great west window, which was in an absolutely dangerous condition from injury and decay, the stone-work being broken and split in every direction; thirdly, the reparation of the roof of the south aisle, which has been discovered to be in a bad state; fourthly, the removal of the organ gallery within the west porch, the organ to be placed on the ground-floor next the tower, and the vacant space thus obtained so advantageously to the representation of the fair proportions of the building, to be filled up with seats for the poor. It was calculated that about 160 free sittings would be thus obtained. It was also proposed that the pulpit should be placed at the east end of the nave on one side, and the reading-desk on the other. Two very beautiful plans of pulpit and reading-desk drawn by Mr. Cottingham were exhibited, which received general approbation. Reference was made to some proposed and much to be desired repairs and alterations in the chancel, for which also some beautiful plans were submitted. The cost of the whole was estimated at about 1,800*l.* For the above-mentioned restoration and repairs of roof and west window, removal of organ and gallery, and substitution of free sittings, with repair of south aisle, about 1,300*l.* will be required. The rev. incumbent has already received of free-will offerings nearly 900*l.* It was thought, therefore, that these necessary repairs should be proceeded with forthwith, in the confident hope that the additional 500*l.* required will be soon obtained by an appeal to the public. The alterations and repairs of the chancel, together with new pulpit and desk, which would cost about 400*l.* additional, will be contingent upon the subscriptions. Mr. J. H. P. Oakes has undertaken, at a cost, if required, of 250*l.*, to replace the present inappropriate circular window over the east end of the nave, with a new rose window of stained glass, an admirable plan of which has also been made by Mr. Cottingham.

**Pulpit Church.**—The open roof of this fine ecclesiastical structure has recently undergone complete restoration, and is now finished, with its appropriate niches and figures, in a style which it is hoped will afford an example to be followed in the many structures of Suffolk, where restoration is so much needed. The *tout ensemble* is fine. The clerestory is divided by the roof into ten bays by eleven pairs of principal frames and trusses. These frames are formed of three stories of half arches or spandrels, supporting horizontal timbers or hammer beams. The ends of these beams are finished with the figures of angels. The bays are highly ornamented with star Tudor mouldings. The cornice is charged with figures of angels also, and bosses. The compartments are divided by Tudor mouldings. This work has been completed by Mr. H. Ringham, of Ipswich, whose talent in ecclesiastical carving, though highly appreciated in the locality, is not so extensively known as it deserves to be. In case all our readers may not fully understand the meaning of an "open roof," such roofs being mostly, though not altogether, confined to Suffolk and Norfolk, we add a slight description. An "open roof" is a timber roof, without tie beams, the outward thrust or pressure being counteracted by the skilful arrangement of the internal frame-work, such as the roofs of Westminster Hall, the Hall of Eltham,



and Crosby Hall. Many of these roofs adorn the Churches of Suffolk, as for instance St. Mary's, Bury (now in progress of restoration), St. Margaret's, St. Mary Key, and St. Mary Stoke, Ipswich; Hadleigh, Framlingham, Stonham, Ixworth, Rattlesden, Tostock, Rougham, Tuddenham near Ipswich, Wetherden, &c. Several of these roofs now mentioned have also been repaired by Mr. Ringham, to the great benefit of the structures, and to the satisfaction of those who reverence antiquity. —*Gentleman's Magazine.*

## RAILWAY INTELLIGENCE.

House of Commons, Monday, March 4.—Second Report of Select Committee (1st March) considered; Resolution of Committee read, as follows:—

1. That in each case where bills are now pending to authorize the construction of new lines of railway, competing with one another, such bills be respectively referred to one committee.

2. That the committees for the consideration of such bills be specially constituted.

3. That bills now pending to authorize the construction of new lines of railway, which will compete with existing railways, be in like manner referred to committees specially constituted.

4. That such committees be composed of five members, to be nominated by the committee of selection, who shall sign a declaration that their constituents have no local interest, and that they themselves have no personal interest in the bill or bills referred to them, and that they will not vote on any question which may arise without having duly heard and attended to the evidence relating thereto; and that three shall be a quorum.

5. That a select committee be appointed, to consider which of the pending railway bills shall be deemed competing bills, according to the foregoing resolutions.

6. That such select committee be composed of five members, of whom three shall be a quorum, and that the committee have power to send for persons, papers, and records.

7. That such of the standing orders as relate to the composition of the committees on private bills, and the orders consequent thereon, be suspended, so far as regards competing railway bills pending in the course of the present session.

First resolution read a second time; motion made, and question proposed:—"That this house doth agree with the committee in the said resolution;"—Debate arising; motion made, and question put, "That the debate be now adjourned." The House divided—Ayes, 3; Noes 200.

Gravesend, Tilbury, and Eastern-Counties Junction Railway Company.—This company has for its object, the most ready communication between London and Gravesend, which is proposed to be effected by a line from Romford to Tilbury Fort—the company availing themselves of the Act of Parliament already obtained for the Thames Haven line, and making a branch line from Ockendon to the Thames, crossing by way of steam ferry. The time, we are told, to accomplish this would not exceed one hour, or, as the table states, giving the widest limit, one hour and a quarter, while that required by taking the Surrey and Kent lines would require two hours, and thus a saving of three-eighths in time would be effected. There can be no question but that the traffic between Chatham, Gravesend, and London is very large, and, with the facilities afforded by railway communication, this may be expected to be increased to a vast extent. It is stated, that the whole of the works are ready to be contracted for within the subscribed capital, and that the line will be completed in eighteen months. One-fourth of the shares have been taken up, and interest at the rate of 5 per cent. per annum will be allowed on deposits, or payments on shares. The prospectus states, that a dividend of 10 per cent. may be calculated upon.

Project of Railroad from Paris to Boulogne and Calais.—The following are the chief conditions of the Railroad Bill presented to the Chamber of Deputies by M. Dumon, the Minister for Public Works, for constructing a railroad from Paris to the Belgian frontier,

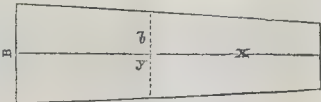
with branches to Calais, Boulogne, and Dunkirk. The branches to Calais and Dunkirk are to commence between Douai and Lille, and to proceed to Calais through Hazebrouck and St. Omer, and to Dunkirk through Hazebrouck and to the west of Cassel. The line to Boulogne is to commence at Amiens, and to proceed through Abbeville and Etaples. A sum of 15,000,000*fr.* is allocated for the construction of the branches to Calais and Dunkirk, and the term of the lease to a public company, should any offer, is to be 23 years from the date of the fixing of the rails. An additional article stipulates that after the receipt of six per cent. for interest, and two per cent. for a sinking fund, the surplus of revenue shall be equally divided between the company and the government. In case that within two months from the passing of the bill no company shall have complied with the conditions proposed, the minister is authorized to complete the road at the expense of the government. Credits for that purpose are provided in the bill. There is to be a diminution of 2*c.* in the tariff of merchandise. There are to be three classes of carriages—the first at 10*c.*, the second at 7*c.* 0-005, the third at 5*c.* 0-005. The third class is to be covered and closed with curtains. The government is to become the proprietor of the railroad at the conclusion of the lease. The government is likewise to be at liberty to purchase the railroad from the company contracting at the conclusion of the 12 years from the granting of the lease. The terms of purchase are to be the same as those prescribed in the Orleans Railroad Bill, with this difference, that the premiums to be added to the dividend, of which the annuity to be paid to the company is to be composed, is to be reduced one-half.

## Correspondence.

## METHOD OF CUTTING A TAPERED PLANK.

SIR,—Your correspondent "R. A. P.," in No. 54, desires to be informed where he may cut a tapered plank, the length of which is  $l$ , and the breadth of the two ends  $B$  and  $C$  parallel to the ends, so that the two parts shall be equal in area. As many cases may occur where such a division of a similar superficies is required, and in other branches of building as well as joinery, you will perhaps insert this reply in your next. It may appear strange to many that a question seemingly so simple cannot be solved but by an algebraic equation of two unknown quantities; but such I believe is the fact.

I have, however, subjoined another method, that is sufficiently correct for practical purposes, and more readily applied. But first for the equation: let the plank be represented by the annexed trapezoid or tapering superficies,



$l$  is the length,  $B$  the width of the broad end,  $C$  of the narrow end; let  $y$  represent the length of the cross-cut, and  $x$  its distance from the broad end. Let it first be granted (I need not prove it) that  $\frac{B+C}{2} \times l = \text{area of the}$

whole plank, we have then given for the

$$\text{1st equation } \frac{B+y}{2} \times x = \frac{y+C}{2} \times (l-x).$$

$$\text{2nd equation } \frac{B+y}{2} \times x = \frac{B+C}{4} \times l \text{ by}$$

the question, to find the value of  $x$  and  $y$ .

To proceed with the first equation. Taking away the denominators on both sides, that is to say, multiplying both sides by 2, and then multiplying the two terms on each side together, we have

$$Bx + xy = ly + Cl - xy - Cx, \text{ and } Bx + 2xy + Cx = ly + Cl \text{ by transposition.}$$

And by dividing both sides by  $B + 2y + C$ , we have

$$x = \frac{ly + Cl}{B + 2y + C}.$$

For the second equation, after multiplying

the terms on each side together, and then multiplying both sides by 4, we have

$$2Bx + 2xy = Bly + Cl$$

And by dividing both sides by  $2B + 2y$ , we have

$$x = \frac{Bly + Cl}{2B + 2y}$$

Thus arises a new equation, viz.—

$$\frac{ly + Cl}{B + 2y + C} = \frac{Bly + Cl}{2B + 2y}$$

to find the value of  $y$ .

By multiplying both sides by the denominators successively, we bring both sides to whole terms; and after expunging those quantities that are common to both sides, and have like signs, we have  $2ly^2 = B^2l + C^2l$ , and therefore  $y = \sqrt{\frac{(B^2l + C^2l)}{2l}}$ .

We have thus  $\sqrt{\frac{(B^2l + C^2l)}{2l}} = \text{width of}$

the plank at the cross-cut, and  $\frac{Bly + Cl}{2B + 2y} = \text{the distance of the cross-cut from the broad end.}$

To apply this, let  $l$  be 8-4, or 100 inches,  $B$  12 inches,  $C$  8 inches, and we have

$$\sqrt{\frac{(144 \times 100) + (64 \times 100)}{200}} = \sqrt{104} =$$

$$10.198039 \text{ inches, the width of the cross-cut.}$$

$$\text{And } \frac{(12 \times 100) + (8 \times 100)}{24 + 20.396078} = \frac{2000}{44.396078} =$$

$$45.0490243 \text{ inches distance from the broad end.}$$

To prove this

$$(12+8) \times 2 \times 100 = 1000 \text{ in. cont. of whole plank.}$$

$$(12+10.198039) \times 2 \times 45.0490243 = 199.999999$$

$$= 500 \text{ inches, the area of one of the parts.}$$

For the other method alluded to above, let  $a b d c$  in the annexed diagram be the given



plank; draw the lines  $o f$  and  $d i$  at right angles with the ends; draw the line  $g k$  parallel to the ends, and midway between them; draw  $g e$  and  $k l$  parallel to  $h f$  and  $m i$ ; then it is easily proved that the triangle  $a e g$  is equal to the triangle  $g h c$ , and consequently the area of the plank on the left of  $g k$  exceeds that on the right, by the two oblongs  $e f h g$ ,  $i l k m$ , so that by adding one of them (which is half the length of the plank, by half the difference in the width of the ends) to  $g k d c$ , it is rendered equal to the other. Let the plank be of the dimensions supposed before, then the area of the oblong is 50 inches; to add this to  $g k d c$ , consider what number multiplied by  $g k$  will produce 50; now,  $g k$  being 10, will require 5; move the rule, therefore,  $2\frac{1}{2}$  inches nearer to the broad end, for the average width, and then find a number which, multiplied by this increased width, will produce 50, and at that distance from  $g k$ , towards  $a b$ , make the cross-cut, which will divide the plank into equal parts, very nearly. The exactness may be increased to any degree by moving the rule for the more correct average width indicated by the last number found, and then finding a new multiplier, and so on.

I remain, Sir, yours most respectfully,

S. HUGGINS.

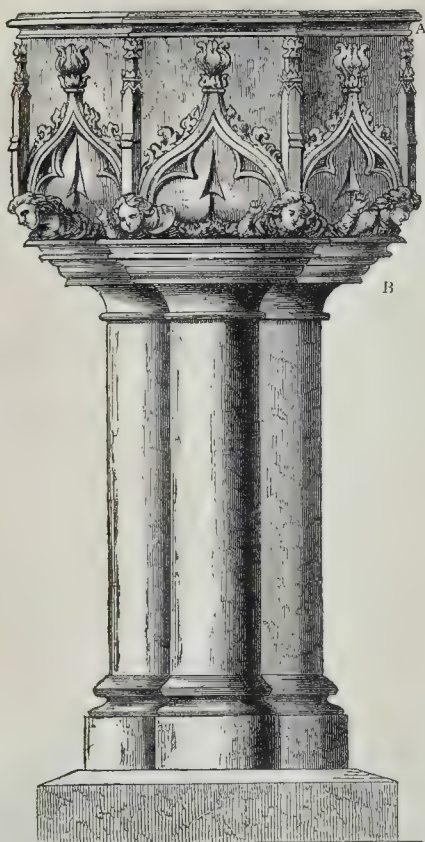
Liverpool, February 29, 1844.

## THE ANCIENT ROMAN WALL OF LONDON.

—While making excavations for a sewer in Duke-street, Houndsditch, a few days ago, the workmen discovered the foundation of the ancient Roman wall, which it was known near this spot took its course from the Minories to the street denominated "London-wall." It was found at about 8 feet from the surface, and was between four and five feet in width. Many of the houses in Bevis-marks (which is adjoining Duke-street) are built upon this wall. It was observed that outside the wall, abutting upon Houndsditch, there was a depth of made earth of about 14 or 15 feet, shewing that the spot had been filled up at some early period, while within the wall the native earth was at a depth of between two and three feet, below which is a bed of sand. At the depth where it is necessary to build the sewer, water is abundant, and the men are now employed in pumping it up.



## FONT IN ST. MARY'S CHURCH, BRECON.



E L E V A T I O N.

## TO THE EDITOR OF "THE BUILDER."

SIR,—The obliging readiness with which you have inserted many little previous contributions from me to your useful magazine, has induced me to send you sketches of a font in St. Mary's Church, Brecon. It is, doubtless, an early production, as the style of the work seems somewhat of the "Decorated period;" though I must confess myself not antiquary enough to determine precisely the date of its execution. It is elaborately ornamented, and its carving is very boldly and accurately chiselled; the effect of its design is certainly very pleasing, and well worthy of being re-produced in modern works intended for the same purpose. Indeed, if many of our little obscure country churches were resorted to, and their beautiful architectural details properly surveyed, often would as much instruction be afforded to the man of letters, to the student, and to the professor, as results from even the contemplation of the prouder conceptions of the genius of our ancestors. Perhaps, in some humble village church, unknown and unnoticed, some pure remain of Saxon or of British architecture may be concealed, by its obscurity secured from even the intrusion of the longing antiquary. In Wales there are many sequestered spots, which are little else than dilapidated ruins, and though possessing few architectural minutiae worthy of notice, are still not devoid of interest, when con-

nected with their associations of the past; and were there to arise, in some of the mountain fastnesses of the principality, another Walter Scott—that far-famed magician of the North—and to breathe the life of his genius through the ivy-clad sanctuaries of our forefathers, and the thousand legends with which they are associated, in conjunction with



PLAN OF THE SHAFT.

some stirring passages of history, to-day as freshly primitive, as in the days of

"High-born Hoel's harp,  
And soft Llewellyn's lay;"

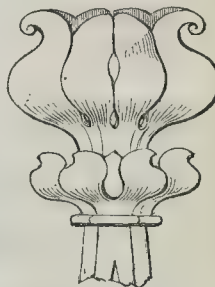
those deserted walls would be invested

with a new and indefinable interest; and these humble relics of devotion, containing the ashes of many an illustrious personage, seated as they are amidst the sublimest display of nature, would become as deservedly celebrated, and be sought for by as many pilgrims, as Ben-Lomond.

The shaft of the font, from the lower necking-mould shewn at B to the square plinth, is formed of wood; therefore an after-

production, probably according to the taste of some country renovator. It appears to me very probable, that the font was originally fixed in the wall, as there are some fragments of a moulding in the back-ground, carved out of the same stone, which seem to have been flush with the face of a wall, forming a sort of label, butting up against the font, leaving exposed three whole sides and two half sides of the octagonal basin. The bowl, within which a metal basin is inserted with a rim, is sunk to the depth of eight inches. I cannot discover any water-drain, therefore I should suppose it always contained a moveable basin of some kind or other. The church in which it is placed is little better than a barn, with the exception of a very fine old tower, a sketch of which I propose to send you at my first leisure. It is above a hundred feet high, and is supported at three of its angles by buttresses, and at the fourth is an octagonal turret. It is coped by very fine moulded battlements. The inhabitants desire to build a new church in the same style as the tower when they have sufficient funds; but I am fearful it will be a long time in hand, although designs

have been furnished, and I think were some years ago partly approved of. There is some very good

MOULDINGS AT A.  
(Half the size of the original.)SMALL  
PINNACLES.  
(Half the size of the original.)FINIALS ABOVE THE ARCHES.  
(Half the size of the original.)MOULDINGS AT B.  
(One-fourth the size of the original.)

Gothic wood-carving also in the church, especially the sounding-board of the pulpit, which is rather a singular piece of workmanship.

I am, Sir, yours, &c., J. L. T.

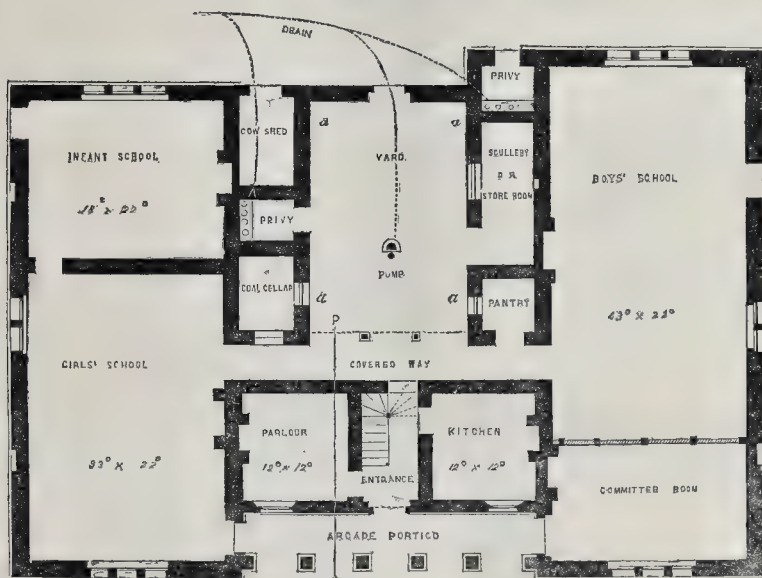
[We should most particularly like to publish all procurable examples of carving, more especially cusps, spandrels, bosses, corbels, crockets, finials, capitals, panels, battlements, cornices, string-moulds, canopy-work, and coat-armoury. Our modern Gothic structures are deficient from the want of correct and tasteful carving more than from any other cause.—Ed.]



## SCHOOL AT GOREY, IN IRELAND.



FRONT ELEVATION.



GROUND PLAN.

SCALE. 5 0 5 10 15 20 25 FEET.



SECTION. (At the Line O P on the Ground-Plan.)

TO THE EDITOR OF THE BUILDER.

SIR,—The number of designs for schools in THE BUILDER sufficiently indicates that the "schoolmaster is abroad."

Under such circumstances it may not be thought amiss to offer the annexed sketches for insertion in your really useful paper.

The drawings consist of a ground-plan, front elevation, and section of a school built about two years ago in this town, at the expense of Stephen Ram, Esq.

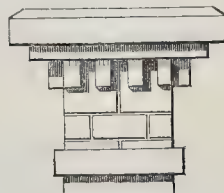
The central portions of the building, including the offices (facing the inner yard), are for the master's and mistress's use; the wings, which are spacious, are thus arranged: on the left side (see ground plan), are the girls' school

and infants' school: the wing on the right is chiefly occupied as the boys' school, the small room adjoining (next the front) being an office or committee-room. At the further end, from the front of each school, is constructed a deal platform, ascended by steps, which admits of the children to sit on; under each platform is space sufficiently large for hanging the cloaks and caps of the children.

The wings have no intermediate floors between the ground and the roof; the middle compartment of the windows in all the school-rooms is hung on centres adjusted by lines that regulate the admission of air, and afford ample means of ventilation.

The master's and mistress's sleeping apart-

ments are on the one-pair story (for which see section), are spacious, their floorings being carried over the arcade. The floors of the school-rooms are tiled, and have each a stove; the building is separated from the high-road by a handsome iron-railing, let into a cut-stone granite



THE CHIMNEY-CAPS (to a larger scale.)

plinth, in the centre of which is the entrance gate, with cut granite piers, inclosing an appropriate space having walks and plots studded with shrubs.

To your English readers, much of the walling will appear very thick, but it must be taken into account that the building is constructed with "rubble stone;" the reveals of windows, and doors, arches, piers of arcade, breasts of chimneys, and chimney-shafts are of brick only; the window-sills, key-stones, string-course of plinth, bases, and caps of the arcade piers, and chimney caps are of granite.

The works are substantially built, the entire cost being a trifle under 1,200*l.*—Yours, &c. Gorey, 22nd Feb. 1844. JOHN KELLY.



## Miscellaneous.

**COWES, ISLE OF WIGHT.**—Osborne House, the seat of Lady Isabella Blackford, has been taken for her Majesty, with an option to purchase, if approved of. The royal household are expected down in May, but considerable additions must be made to the building before it can accommodate a very large establishment. It is beautifully situated in a fine park, with abundance of noble timber. The views are extensive and of varied beauty, though certainly not equal to Norris Castle, which commands Southampton water and the roadstead of Cowes, while Osborne takes a more easterly view, taking in Portsmouth, Spithead, &c., but is shut out by the high grounds of Norris from the views westward. The mansion has, on the ground-floor, drawing-room, dining-room, and library, with two ante-rooms and hall. First-floor.—Five bed-rooms and two dressing-rooms. Second-floor.—Nine rooms. Offices, housekeepers'-rooms, servants'-hall, laundry, kitchen, with beds for maid-servants; three beds for men over the stables. There is plenty of extra accommodation to be had in the neighbourhood. When the Duchess of Kent had Norris, Osborne Villa and another house or two were taken for Sir John Conroy and other parts of the establishment. There are also ten new villas nearly finished in East Cowes-park. Osborne-park and wood, with gardens, &c., contain 346 acres, the whole of which is freehold. The farm adjoining is copyhold, and contains 424 acres. The park runs down to the water. The landing and bathing is good, and strictly private. It joins the grounds of Norris, being directly to the south-east of that estate.—*Sun*.

**CHELMSFORD IMPROVEMENTS.**—The western entrance to this town, which has up to this time profited but little by the large sums expended in buildings in our vicinity, is about to share in the erection of additional houses. A large and elevated piece of ground, purchased at the sale of the Midway estate, by gentlemen connected with the railway company, is now being laid out for building purposes, and, we hear, is to be designated Primrose-hill. A bridge across the river, in connection with the road upon which the land above alluded to abuts, would open a most desirable communication with Writtle, and tend materially to enhance the value of property on both sides of the water.

**THE FORTIFICATIONS OF PARIS.**—The *Réformé* of the 8th inst. states that orders have been given to complete the works of the fortification of Paris as quickly as possible. The troops of the garrison are to be employed for that purpose, and a number of labourers have been sent from the departments to assist. Several detachments of labourers had likewise arrived at Paris from Germany and Belgium.

His Royal Highness Prince Albert presided on the 8th inst. at a meeting of the Commission for promoting and encouraging the Fine Arts in the rebuilding the Palace of Westminster.

**ST. JAMES'S PALACE.**—The noble suite of apartments forming the state-rooms of St. James's Palace have been completely and splendidly furnished and embellished. The appearance of the throne-room is truly magnificent. The hangings of the throne are composed of rich crimson silk velvet, superbly embroidered, and decorated with gold lace. The window-curtains and draperies in the Queen's closet and the throne-room are made of *tissu de verre*, a splendid damask, recently invented. The draperies are very tastefully designed, and arranged and interspersed with crimson velvet. The seats are covered with crimson velvet, and trimmed with gold lace. The throne, the throne-chair, and stool, and all the richly carved window-cornices, mouldings, picture and glass frames, the pier tables, sofas, and chairs, and the general furniture, have been newly gilt. The floors throughout the state apartments are covered with carpets of the Wilton manufacture, having the arms of England appropriately placed at their corners.

Mr. Taplin, who has recently been appointed to the chief direction of the engineers' department of Portsmouth dockyard, with an increase of salary, has invented an ingenious machine for testing the strength of canvas (it is an improvement on the one for testing the strength of wire-rope), and the Admiralty have directed that all which is received into store shall be tried. The machine can produce a strain of 600 lbs. weight, and scarcely any slip of canvas can bear a strain of more than 500 lbs. The machine is something in principle resembling steel-yards. The contractor who undertook to clear the mast-pond in the dock-yard has concluded his work. Several thousand tons of soil and rubbish have been removed to the Government ground at Haslar. Mr. Rolfe, who has taken the contract for excavating at the north end of the yard, has four rails on which the carts travel to the lighters which receive the rubbish he removes, and he has a steam-tug to tow them away when full to the Ordnance ground, near Priddy's Hard.

In consequence of a recent reduction of tonnage on tiles and quarries of every description passing along the line of the Staffordshire and Worcestershire Canal, the markets for these articles at Stourport, Worcester, Gloucester, Bristol, and all intermediate places on the Severn and in South Wales, are become accessible.—*Worcester Journal*.

**DUTY ON PAPER.**—The publishers of Edinburgh have, within these few days, despatched a petition to the House of Commons, praying for the removal of the excise duties on paper; and we understand that the principal paper-makers in Mid Lothian have prepared and sent off a petition of similar import.—*Witness*.

In the United Kingdom, a sum of upwards of 20,000,000*l.* is annually expended in the consumption of gas; and, in London alone, the sum paid to the several gas companies has exceeded 2,000,000*l.* annually.

**DEVON.—FOSSIL REMAINS.**—The workmen lately employed in the brick-field, in Barbican-lane, Barnstaple, while at work, excavating the clay at a depth of fifteen or sixteen feet below the surface, struck upon a hard substance, which was at first taken for the trunk of a small tree petrified, but, on examination proved to be the tusk of a fossil elephant, or horn of some other antediluvian animal. When it was first hit upon, the workmen unfortunately split it in pieces with their pickaxes in attempting to get it up; and, on leaving the field for dinner, shortly after, some boys who were near, completed the work of destruction, and carried away a great portion of it in fragments; but, on its being made known to the proprietor of the field, Mr. E. R. Roberts, a more diligent search was made, and the remainder of the tusk traced, and taken up. It was lying on the lower gravel bed, with a superincumbent stratum of four or five feet of the blue clay, above which is about six feet of the yellow plastic clay, with several feet of coarse gravel and soil above. The tusk must have been of large dimensions, about eighteen inches in circumference, and from four to seven feet in length. It has the shape, grain, and markings of ivory, but the colour and consistence are those of horn, and it retains a considerable degree of elasticity. The fragments, which are in the possession of a gentleman in this town, weigh more than 20*lb.*; and it is supposed that more than that quantity besides was carried away in the first instance, which is to be regretted, as, if attention had been called to it before it was destroyed, it might have been taken up entire. This is, we believe, almost the only instance of antediluvian animal remains having been found in this neighbourhood. Nothing else has been discovered in the brick-field; and from the nature of the ground, great difficulty would be experienced in continuing the search, as immediately on reaching the gravel beneath, the water comes up, and stops all progress, and the clay is consequently not worked to the bottom of the bed.—*West Briton*.

**BELLS IN FRANCE.**—The Archbishop of Bordeaux has published a long and interesting pastoral letter on church bells, from which we extract the following passage:—"There is a diocese in France, that of Belley, in which upwards of 200 steeples have been rebuilt or newly constructed, and provided with bells of all sizes; there is not a village in Lorraine that has not recovered its former peal of bells, and in the towers of the cathedrals of Paris, Lyons, Rheims, Poitiers, Strasbourg, Nancy, Rouen, Amiens, Sens, and Vendome are still to be seen the celebrated *bourdons* which added so much to their renown. The steeples of the cathedrals of Nantes, Chartres, and Rodez have been lately furnished with peals of bells far superior to those of which they had been despoiled. One of the new bells of Rodez weighs 17,000*lb.*, and that about to be cast for Notre Dame de la Garde, of Marseilles, will weigh 22,000*lb.*

## A BILL FOR BETTER REGULATING THE BUILDINGS OF THE METROPOLITAN DISTRICTS, AND TO PROVIDE FOR THE DRAINAGE THEREOF.

(Prepared and brought in by the Earl of Lincoln and Sir James Graham.)

[Note.—The words printed in Italics in the body of the Clauses, are proposed to be inserted in the Committee.]

WHEREAS by the several Acts mentioned in Schedule (A.) to this Act annexed, provisions are made for regulating the construction of buildings in the metropolis, and the neighbourhood thereof, within certain limits therein set forth: but so much as buildings have since been extended in nearly continuous lines or streets far beyond such limits, so that they do not now include all the places to which the provisions of such Acts, according to the purposes thereof, ought to apply; and moreover such provisions require alteration and amendment; it is expedient to extend such limits, and otherwise to amend such Acts.

And so much as in many parts of the metropolis and the neighbourhood thereof the drainage of the houses is so imperfect as to endanger the health of the inhabitants, it is expedient to make provision for facilitating and promoting the improvement of such drainage.

And so much as by reason of the narrowness of streets, lanes, and alleys, and the want of a thoroughfare in many places, the due ventilation of crowded neighbourhoods is often impeded, and the health of the inhabitants thereby endangered, and from the close contiguity of the opposite houses, the risk of accident by fire is extended; it is expedient to make provision with regard to the streets and other ways of the metropolis, for securing a sufficient width thereof.

And so much as many buildings and parts of buildings unfit for dwellings are used for that purpose, and other buildings fit for dwellings are improperly used, whereby disease is fostered and propagated; it is expedient to discourage and prohibit such use thereof.

And so much as by the carrying on in populous neighbourhoods of certain works, in which materials of an explosive or inflammable kind are used, the risk of accidents arising from such works is much increased; it is expedient to regulate, not only the construction of the buildings in which such dangerous works are carried on, but also to provide for the same being carried on in buildings at safe distances from other buildings which are used either for habitation or for trade in populous neighbourhoods.

## CRITICAL NOTES

BY

ALFRED BARTHOLOMEW, Esq.  
ARCHITECT, F.S.A.

The literal signification of the words "*buildings unfit for dwellings are used for that purpose*" is not very clear; the sense would be more apparent if the words ran "*buildings unfit for the purposes of human habitation are used as human dwelling-houses.*"

The words "*it is expedient to make provision for the adoption of all such expedients*" require alteration.



And forasmuch as by the carrying on of certain works of a noisome kind, or in which deleterious materials are used, or deleterious products are created, the health and comfort of the inhabitants are extensively impaired and endangered; it is expedient to make provision for the adoption of all such expedients as either have been or shall be devised for carrying on such businesses, so as to render them as little noisome or deleterious as possible to the inhabitants of the neighbourhood; and if there be no such expedients, or if such expedients be not available in a sufficient degree, then for the carrying on of such noisome and unwholesome businesses at safer distances from other buildings used for habitation.

And forasmuch as great diversity of practice has obtained among the officers appointed in pursuance of the said Acts to superintend the execution thereof in the several districts to which such Acts apply, and the means at present provided for determining the numerous matters in question which constantly arise, tend to promote such diversity, to increase the expense, and to retard the operations of persons engaged in building; it is expedient to make further provision for regulating the office of surveyor of such several districts, and to provide for the appointment of officers to superintend the execution of this Act throughout all the districts to which it is to apply; and also to determine sundry matters in question incident thereto, as well as to exercise in certain cases, and under certain checks and control, a discretion in the relaxation of the fixed rules, where the strict observance thereof is impracticable, or would defeat the object of this Act, or would needlessly affect, with injury, the course and operation of this branch of business.

#### General Provisions—Operation of Act.

1. Now for all the several purposes above-mentioned, and for the purpose of consolidating the provisions of the law relating to the construction and the use of buildings in the metropolis and its neighbourhood; be it enacted, by the Queen's Most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, that with regard to this Act generally, so far as relates to the operation thereof in reference to time, it shall come into operation at the following times; (that is to say) as to the buildings, streets, and other such matters, on the first day of January, one thousand eight hundred and forty-five, and as to the districts and the officers to be appointed in pursuance hereof, on the first day of September next; and that on the said first day of January, all the Acts mentioned in the Schedule (A.) hereto annexed, except so far as in the said Schedule is provided, shall be and are hereby repealed.

2. And be it declared, with regard to this Act generally, so far as relates to the construction of certain terms and expressions used therein, that the following terms and expressions are intended to have the meanings hereby assigned to them respectively, so far as such meanings are not excluded by the context, or by the nature of the subject-matter; that is to say,—the word "street" to include every square, circus, crescent, street, road, place, row, mews, lane, or place along which carriages can pass; and that, whether there be or not, in addition to the carriage-way, a footway paved or otherwise: the word "alley" to include any court, alley, passage, or other public place, which can be used as a footway only; the word "square," as applied to any area of building, to contain one hundred superficial feet; the word "floor" to mean the horizontal platform forming the base of any story, and to include the timber or bricks, or any other substance which constitutes such platform: the word "story" to include the full thickness of such floor, as well as the space between the upper surface of one floor and the under surface of the floor next above it; or if there be no floor, then the space between the surface of the ground and the under surface of the floor next above it: the term "external wall" to comprise all outer walls of buildings now or hereafter to be built, which shall stand wholly upon ground of the owner of such buildings, and shall not be used or intended to be used as party-walls under the definition hereinafter contained, whether the same shall adjoin or not to other outer or to party-walls: the term "party-walls" to comprise all walls which shall be used or built in order to be used as a partition of two or more buildings for the occupation of different families, or actually occupied by different families, and also all walls which shall stand upon ground not wholly belonging to the same ownership or occupation: the term "already built," used in reference to buildings, to apply to buildings built before the first day of January, one thousand eight hundred and forty-five, or commenced before that day, and covered in and rendered fit for use within twelve months thereafter; and used in reference to streets and alleys, to apply to all streets and alleys made or laid out before that day, and which shall be formed and rendered fit for use within twelve months thereafter: the term "hereafter to be built," used in reference to buildings, to apply to all buildings to be built or commenced after the first day of January, one thousand eight hundred and forty-five, or which, being commenced, shall not be covered in within twelve months thereafter; and used in reference to streets and alleys, to apply to all streets or alleys laid out before the said first day of January, or which being laid out shall not be rendered fit for use within twelve months thereafter: the word "owner" to apply to every person in possession or receipt, either of the whole or of any part of the rents or profits of any ground or tenement, or in the occupation of such ground or tenement, other than a tenant from year to year, or a tenant at will: the term "official referees" to mean the persons appointed in pursuance of this Act to be official referees of metropolitan buildings: the word "surveyor" to apply to all surveyors of this Act, or whose appointment is confirmed by this Act; and also to all deputy or assistant surveyors to be appointed under this Act: the words "the surveyor," used without any addition, to mean the surveyor in whose district the buildings, street or alley or other subject-matter shall be, or any deputy or assistant surveyor duly acting in his behalf: the word "month" to mean a calendar month: the expression "the commissioners of works and buildings" to mean the Commissioners of Her Majesty's Woods, Forests, Land Revenues, Works and Buildings: the expression "justice of the peace" to mean a justice of the peace for the county, division, or liberty within which the building or other subject-matter, or any part thereof, is situate; unless it be situate within the city of London or the Liberties thereof, in reference to which any matter or thing elsewhere required or authorized to be done either by one or by two or more justices of the peace, may be done either by the Lord Mayor of the city of London, or by any one, two or more justices of the peace for the said city; or unless the subject-matter be situate in the district of any police court of the metropolis, in reference to which any matter or thing elsewhere required or authorized to be done by two or more justices may be done by one magistrate: and, generally, whenever the name of an officer having local jurisdiction in respect of his office is referred to, without mention of the locality to which the jurisdiction extends, such reference is to be understood to indicate the officer having jurisdiction in that place, within which is situate the building or other subject-matter, or any part thereof to which such reference applies; and subject as aforesaid to the context, and to the nature of the subject-matter, words importing the singular number are to be understood to apply to a plurality of persons or things; and words importing the masculine gender are to be understood to apply to persons of the feminine gender; and words importing an individual, are to be understood to apply to a corporation or company, or other body of persons.

#### Extent of Operation of Act.

3. And be it enacted, with regard to this Act generally, so far as relates to the operation thereof in reference to localities, that the operation of this Act shall extend to all places within the following limits; (that is to say) to all such places lying on the north side or left bank of the river Thames as are within the exterior boundaries of the parishes of Fulham, Kensington, Paddington, Hampstead, Hornsey, Tottenham, Saint Pancras, Islington, Stoke Newington, Hackney, Stratford, Bromley, Poplar, and Shadwell; and to such part of the parish of Chelsea as lies north of the said parish of Kensington; and to all such parts and places lying on the south side or right bank of the said river as are within the exterior boundaries of the parishes of Woolwich, Charlton, Greenwich, Deptford, Lee, Lewisham, Camberwell, Lambeth, Streatham, Footing, and Wandsworth; and to all places lying within two hundred yards from the exterior boundaries of the district hereby defined.

#### Power to Extend the Limits of Act.

4. And forasmuch as, partly by the rapid increase of population in the neighbourhoods of the district to which this Act is to apply, and partly by the tendency of this Act to induce building speculation in such neighbourhoods in order to evade the provisions thereof, the evils which have arisen in the districts not now subject to regulation, will in all probability arise in such neighbourhoods; it is expedient to make provision for the prevention of such evils; and if they should arise, for the remedy thereof, now for those purposes, be it enacted, with regard to this Act generally, so far as relates to the application thereof to other parts and places in the neighbourhood of the districts appointed by this Act, whether such districts immediately adjoin such parts or places or not, that if, from the growing increase of the population or otherwise, it shall appear to her Majesty in Council to be expedient that the provisions of this Act should be extended to any place within twelve miles of Charing-cross, in the city of Westminster, then it shall be lawful for her Majesty in Council to direct, by order in Council, that at or from a time to be named in such order, the provisions of this Act shall apply to such places; and, at or from such time, all such provisions of whatever nature, whether penal or otherwise, so far as they shall be capable of application to such places, shall be and are hereby declared to apply thereto, as if such places were expressly named herein.

#### Regulation of Buildings—Rates of Buildings, and Thicknesses of Walls and Footings, and Rules concerning Buildings.

5. And now generally, for the purpose of regulating the building and the rebuilding upon sites of former buildings, and the enlarging and altering of all buildings, of what nature soever, within the limits aforesaid; be it enacted, with regard to every such building hereafter to be built (except the buildings comprised in Schedule (B.) hereto annexed), so far as relates to building the same, and with regard to every such building, either already or hereafter built (except the said or other buildings comprised in the said Schedule (B.)), so far as relates to the rebuilding, and the enlarging or altering the same, and that whether such buildings be built or rebuilt on old or new foundations, or partly on old and partly on new foundations, that every such building shall be built, rebuilt, enlarged or altered in reference to the walls,

The sentence "timber or bricks, or any other substance which constitutes such platform" has no just agreement of number: this ungrammatical defect may be obviated by making the words run "timber or bricks, or any other substance CONSTITUTING such platform."

The phraseology "belonging to the same ownership or occupation" requires amendment.

The sentence seems to have been intended to run thus—"Or in the occupation of such ground or tenement other than" AS "a tenant from year to year, OR" OTHER THAN AS "a tenant-at-will."

The word "district," as here used, would be well altered.

We think the Council would be so delicate in the use of this power that the provision would consequently become obsolete. We think a matter so strictly penal as a Building-Act should depend alone upon particular statutory enactment.

St. Paul's Cathedral is nearly the centre of the metropolis and the villages immediately adjacent to it. We therefore think it the vertex from which the admeasurement in question should be taken.



whether external or party-walls, and to the fences and the party fence walls, and to the number and height of the stories or rooms therein, and to the chimneys, and to the roofs, and to the timbers, and to the drains, and to the projections, and to any other parts or appendages of every such building, in the manner and of the materials, and in every other respect in conformity with the several particulars, rules and directions which are specified and set forth in the several Schedules (C.), (D.), (E.), (F.), (G.), (H.), (K.), to this Act annexed, according to the classes of buildings, and the rates of such classes to which such buildings are by the Schedule (C.) declared to belong; subject nevertheless to any other rules and directions in this Act contained in the same behalf; and subject in every case of doubt, difference or dissatisfaction in respect thereof, either between any parties concerned or between any party concerned and the surveyor of the district, to the determination of the official referees, upon a reference of the matter in question, according to the provisions of this Act in that behalf.

*Buildings under Supervision of Official Referees.*

6. And be it enacted, with regard to all buildings of the sixth rate of the first or dwelling-house class, and to all buildings of the sixth rate of the second or warehouse class, and to all buildings of the third or public buildings class (except the buildings hereinbefore excepted), so far as relates to the supervision thereof, that, subject to the provisions in the Schedule (C.) and elsewhere in this Act made in respect thereof, every such building shall be built under the special supervision of the official referees, according to the provisions of this Act in that behalf, as well as under the ordinary supervision of the surveyor; and if any difference arise as to whether any such building be liable to such special supervision, the same shall be determined by the official referees; subject nevertheless to an appeal, at the instance of any party interested, to the Commissioners of Works and Buildings, whose decision in the matter shall be final.

*Special Supervision of exempted Buildings.*

7. And whereas, by several Acts now in force, certain buildings and structures have been exempted from the operation of the Act mentioned in the Schedule (A.) hereto annexed, for the regulation of buildings and party-walls within the cities of London and Westminster, and the liberties thereof, and other the parishes and places therein mentioned; but inasmuch as provisions are hereby made for the supervision of buildings of whatever kind, with a view to the public security, inasmuch that the reasons whereon such exemptions were made do not now apply; it is expedient to repeal such exemptions, and to make provision for such special supervision of such buildings as the nature thereof shall require; now for that purpose, be it enacted, with regard to the buildings hereinbefore exempted and comprised in Schedule (B.), so far as relates to the supervision thereof, that, notwithstanding anything contained to the contrary in any Act or Acts now in force, every such building or other structure shall be subject to special supervision by the official referees, according to the provisions of this Act in that behalf.

*Buildings not within Rates.*

8. Provided always, and be it enacted, with regard to any building of whatever kind, which is not hereby expressly assigned to any class or rate of a class, so far as relates to the application of this Act thereto, that if any party be desirous of erecting any building which does not come within any one of the said classes, or of any rate of such classes, then such building shall be built in accordance to such class and rate as shall be directed by the surveyor, subject, as in other cases of doubt, difference or dissatisfaction, to an appeal to the official referees.

*Modification of Building Contracts—Reference to Official Referees.*

9. Provided always, and be it enacted, with regard to any building of whatever class, so far as relates to the modification of any written contract or agreement now in force for erecting or altering such building, other than a contract or agreement in the nature of a building lease, that it shall not be lawful to execute such contract otherwise than in conformity with the provisions of this Act; but it shall be lawful for either party, and he is hereby entitled to deviate from such contract, so far as any part thereof may remain to be executed after this Act shall have come into operation; and the alterations rendered necessary by this Act shall be performed as if this Act had been in force when this contract was entered into; and that if the parties thereto shall disagree about the difference of the costs and expenses of the works when performed according to the provisions of this Act, and the works as stipulated for in such contract, then, upon notice being given in writing by one party to the other, it shall be lawful for either party, and he is hereby entitled, to refer the matter to the surveyor, who shall determine the same, subject to appeal as aforesaid to the official referees; and the award of such official referees shall be final and binding on all the parties, and in all respects as if such award had formed part of the contract; and the costs of the reference shall be borne by all, or any, or either of the parties, in such manner and proportion as the surveyor, or, in case of appeal, as the official referees, shall appoint.

*Modification of Building Leases.*

10. Provided also, and be it enacted, with regard to any building of whatever class, so far as relates to the modification of any lease, or agreement for a lease, being of the nature of a building lease, whereby any person may be bound to erect buildings, that notwithstanding anything herein contained, it shall be the duty of such person, and he is hereby required to erect every building agreed to be built by such lease or agreement, according to the conditions rendered necessary by this Act, in the same or like manner as if this Act had been passed and in operation at the time of making such lease or agreement, without the lessee or tenant being entitled to any compensation, whether by payment of money or reduction of rent or otherwise.

*Commissioners of Works and Buildings empowered to modify Rules generally—Report of Official Referees—Extent of Modification—Representation by Parties—Order thereupon—Costs of Application.*

11. And, for the purpose of preventing the express provisions of this Act from hindering the adoption of improvements, and of providing for the adoption of expedients better adapted to accomplish the purposes thereof; be it enacted, with regard to every building, of whatever class, so far as relates to the modification of any rules hereby prescribed, that if, in the opinion of the official referees, the rules by this Act imposed shall be inapplicable or will defeat the objects of this Act, and that by the adoption of modification of the rules hereby prescribed, its objects will be attained either better or as effectually, it shall be the duty of such official referees to report their opinion thereon, stating the grounds of such their opinion, to the Commissioners of Works and Buildings; and that, if on the investigation thereof it shall appear to the said commissioners that such opinion is well founded, then it shall be lawful for the said commissioners or any two of them to direct that such modification may be made as will, in their opinion, give effect to the purposes of this Act; and that although such official referees shall be of opinion that such modifications are not requisite or admissible, yet if any party interested present to the official referees a representation, setting forth the grounds whereon such modification is claimed, it shall be the duty of the official referees, and they are hereby required to report such representation, as well as their opinion thereon to the said commissioners, with the grounds of such their report and opinion; and that thereupon, if the said commissioners think fit, it shall be lawful for them or any two of them to direct the official referees to make such order in the matter as may appear to them to be requisite; and that, with regard to such application, so far as relates to the payment of the costs thereof, it shall be lawful for the said commissioners to direct such official referees to make such order relative to the costs of such reference to them, as to the said commissioners shall seem fit.

*Power to modify provisions of the Act as to existing Buildings, to be rebuilt.*

12. And be it enacted, with regard to buildings already built, so far as relates to the rebuilding thereof in conformity with this Act, in respect of the required area, or in any other respect than the required height and thickness of walls, that if a full compliance with the provisions of this Act be attended by extreme loss and inconvenience, then, subject to the report of the official referees, and to the consent of the commissioners of works and buildings, and such terms as the said commissioners may impose in that behalf, it shall be lawful for the parties concerned to rebuild such buildings on the site of the old buildings as near as may be practicable, but so that, nevertheless, both the party walls and the external walls be of the required height and thickness.

*BUILDERS.*

*Works to be Executed—Notice to Surveyors—20l. Penalty for Neglect to give Notice, &c.—20l. Penalty for not giving fresh Notices—Penalty for Beginning without Notice, or refusal to admit Surveyor.*

13. And be it enacted, with regard to the works to be executed in pursuance of this Act, so far as relates to the supervision thereof by the surveyors, that two days before the following acts or events, that is to say,—before any building shall be begun to be built; and also, before any addition or alteration which by this Act is placed under the supervision of the surveyor, shall be made to any building; and also, before any party-wall, external wall, chimney-stack, or flues shall be begun to be built, pulled down, rebuilt, cut into, or altered; and also before any opening shall be made in any party-wall, and also, before any other matter or thing shall be done which by this Act is placed under the supervision of the surveyor; it shall be the duty of the builder (by which term is to be understood, both in this provision and elsewhere throughout this Act, the master-builder or any other person employed to execute any work, or if there be no master-builder or other person so employed, then the owner of the building or other person for whom or by whose order such work is to be done), and he is hereby required to give to the surveyor, at his office, notice in the terms specified in the form (Number One) contained in the schedule of notices annexed to this Act, or to the like effect; and that if any builder neglect to give such notice, or begin to build, or do any of the things aforesaid, before such notice, or before the expiration of such period of two days, then, in every such case, the party offending shall forfeit for every such default, and pay to such

[For continuation see SUPPLEMENT.]

The words, we think, should run—"When" such "contract was entered into."

We think this provision too arbitrary to become part of an English statute; it ought without doubt to be altered so as to be equitable to all parties concerned therein.

We think it possible that much good might arise from the exercise of such a provision, but for a practical effect, more injurious and evasive than good, would be the result; we fear it would lead to the commissioners and official referees being much troubled by applications from interested parties, to render inoperative the wholesome provisions of the Act. If such powers become statutory, we think it should also be enacted that the commissioners shall publish an account of every such case of deviation, in order that well-known rules of practice may speedily grow up and be rightly ordered as directory precedents.

The last observations apply to this clause.

We apprehend the words are intended to run thus: "shall for each and every such default forfeit and pay to such surveyor."



# THE BUILDER.

## Tenders.

TENDERS delivered for twenty small Houses and large Coal Store, for Coles Child, Esq., at East Greenwich.—R. P. Brown, Esq., Architect. Feb. 28:—

	£S. 6D.	STOR.
Gerrard.....	13,620	£615
Clark & Co.....	3,344	516
Brighton.....	3,304	638
Emmans.....	3,237	470
J. & T. Ward.....	3,200	485
Burch.....	3,138	546
Brooklin.....	3,036	560
Wallow.....	3,024	455
Cooper.....	3,111	460
Brewer & Co.....	3,014	463
Kempster.....	3,005	495
Jay.....	2,987	483
Mason.....	2,948	448
Gerry.....	2,925	463
Smith.....	2,899	467
Robins.....	2,890	550
Wade (accepted).....	2,858	400

The Tenders were opened in the presence of the parties.

TENDERS delivered for building Schools in Chequer-alley, Bunhill-row, for William Greig, Esq., City-road.—William Lovell, Esq., Architect, Swinton-street. March 11:—

Starkey.....	£625
J. & T. Ward.....	624
Lawrence & Sons.....	622
Winsland (accepted).....	597

Each party taken their own quantities. The Tenders were opened in the presence of the parties.

## NOTICES OF CONTRACTS.

CONTRACT for the Erection of a Chapel, and also additional Buildings for female patients, and other alterations to the Kent County Lunatic Asylum.—Mr. G. Poynder, Clerk, Asylum, Maidstone. March 18.

CONTRACT for supplying her Majesty's several Dock-yards with 2,750 loads of English Elm Timber, and 119 Elm Trees for Pumps.—Secretary of the Admiralty. March 19.

CONTRACT for the Execution of the several Works necessary to be done in the Rebuilding of Brent Bridge, and repairing Finchley Bridge, Hendon.—Clerk of the Peace, Sessions House, Clerkenwell-green. March 26.

For the Erection of a Lock-up House, at Bridlington, in the East Riding of the county of York.—Mr. G. Leeman, Clerk of the Peace, Beverley. April 6.

For the Erection of a Lock-up House, at Howden, in the East Riding of the County of York.—Mr. G. Leeman, Clerk of the Peace, Beverley. April 6.

## ADVERTISEMENTS.

### TUFNELL PARK.

**BUILDING GRUND.** This Estate, consisting of about 180 acres, and situate on the side of Maiden Lane, about one-third of a mile north of the Camden Road Villas, on the road towards Highgate, possessing fine and commanding views of the surrounding country, has been laid out with Roads, Plantations, &c., and is to be LET on LEASE (in Plots as shown on the Plans) for 99 years, for the Erection of single or double detached Villas of a superior class.

N.B.—From the Railway Road, the Brecknock Arms, and Kentish Town, Omnibuses are constantly running to all parts of London.

For Terms and further Particulars, apply to Messrs. Allen and Holmes, 51, Bedford-row; at the Office of John Shaw, Esq., Architect, Christ's Hospital; or Messrs. Woolcott and Son, Builders, on the Estate, and at No. 54, Doughty-st.

**MR. GRAYSON'S ARCHITECTURAL SCHOOL OF DESIGN** established above Fifty Years.—CIVIL ENGINEERS, MILLWRIGHTS, and others taught the principles of MACHINERY and PRACTICAL PERSPECTIVE. The selection of models and casts accompanying the diagrams which are introduced at this Academy will be found of great utility to the Student in elucidating the several Mechanical and Practical Sciences.

Morning classes from 9 to 2; evening from 6 till 9, five nights in the week. For terms apply at 1, Banner-street, Finsbury-square; or by letter, post-paid.

### LITHOGRAPHY.

**H. T. CHURCH** is desirous of calling the attention of ARCHITECTS, SURVEYORS, BUILDERS, and the Public to his LITHOGRAPHIC AND GENERAL PRINTING OFFICE, 88, WATLING-STREET, CITY. Drawings of Machinery, Railway, Canal, and Estate Plans, executed with the greatest accuracy and elegance; a combination of qualities difficult to obtain, as many Printers are entirely ignorant of the nature of the drawings committed to their care for the purpose of being lithographed. H. T. Church having, besides a ten years' experience of the business, had the advantage of three years' observation in the office of an eminent Surveyor, is particularly fitted for the superintendence of drawings, &c., which require to be lithographed with great accuracy. Circular Letters, Fac-similes, Bill-heads, Cards, Labels, Gum Tickets, and every description of Printing in demand in the commercial and manufacturing world executed with any neatness and elegance, and on the lowest remunerating terms.

H. T. Church will wait upon gentlemen in any part of London for the purpose of giving estimates or receiving orders. Country orders instantly attended to, if accompanied by a London reference.

Hill Street, facing Richmond Bridge, and 77, Regent's Quadrant, London.

**JOHN P. HOPE, SURVEYOR, AUCTIONEER, APPRAISER, and HOUSE and ESTATE AGENT.** begs most respectfully to acquaint his friends and the public generally, that he has commenced business as above; and will be most happy to superintend the erection, alteration, or repairs of buildings for noblemen and gentlemen; the measuring and valuing work for builders, &c.; also to sell, by auction, landed and house-hold property, building materials, household furniture, &c. P. H. confidently hopes, by blending his experience in the building department, and his acquaintance with the practice therein, including his having acted as clerk of the works of the Wesleyan Theological Institution, (Richmond), with prompt attention and moderate charges, he shall obtain a share of public patronage and support, which he now earnestly solicits, and which will be his constant study to deserve.

**P.S. AN APPRENTICE WANTED,** who will be treated as one of the family. Residence, Victoria Place, Richmond Hill, Surrey, February 28th, 1844.

### ANTI-DRY-ROT COMPANY.

**KYAN'S PATENT—EXTRACTS** from recent TESTIMONIALS:—From the Engineers' Office, Great Western Railway, August 31st, 1843.

DEAR SIR,—I have sent you by the carrier a section from the centre of one of our longitudinal timbers of the permanent way; it was Kyanized and laid on the line about six years ago, and you will perceive it is as sound as the day on which it was first put down; it is not singular with us, but in all my examinations I have found it equally sound. I think this simple fact will be highly interesting to you. I would remark that the picking having been entirely under my management, I was very particular in having the strength of the solution maintained. Upon first immersion the strength was 1 in 14, at a temperature of 62 degrees, and the time of immersion for seven-inch timber was eight days; during this time the solution was kept of a uniform strength by pumping. In this way I have pickled upwards of 40,000 loads of timber, and the quantity of sublimate consumed comes out at about 1½ lbs. to the load.

Yours truly, J. HAMMOND.

T. Thompson, Esq.

From E. H. & G. Enderby, Great St. Helens, London, November 4th, 1843.

SIR,—In reply to your queries respecting our ship the Samuel Enderby, that was built at the Isle of Wight in 1834, and wholly saturated with Kyan's preparation, we have pleasure in stating that the ship returned from her third voyage to the South Seas on the 1st of July last in a most perfect condition. We invited the officers of the naval department to inspect her timbers, to afford them the opportunity of judging of her condition.

With respect to the crew we have only to repeat what we have before stated, that they have on each voyage enjoyed unusually good health.

We are, Sir, your obedient servants, E. H. & G. ENDERBY.

To the Secretary of Kyan's Anti-Dry-Rot Company.

From Earl Manvers, Thoresby Park, September 2nd, 1843. SIR,—In reply to yours dated 31st ult., in which you state an individual has lately taken an unwarrantable liberty with my name, by asserting in various periodicals that I have impugned Kyan's process, and as the Directors of the Company you represent are pleased to attach some importance to my denial of that gratuitous statement, I derive much pleasure in acquainting them through you that after eight years' very extensive experience of its effects, my early impression in favour of that discovery has been abundantly confirmed, and desire to express my unqualified approbation of Kyan's Patent as a Preservative of Timber of every description.

MANVERS.

Taswell Thompson, Esq., Secretary to Kyan's Anti-Dry-Rot Company.

**PLUMBERS, PAINTERS, BUILDERS,** and OTHERS supplied with CROWN and SHEET WINDOW GLASS, SHEET PLATE, &c. &c., for Pictures Glazing, &c. &c., in any quantity, at Manufacture Prices.

TURPS, per gallon .. .. . 3s. 3d.  
LINED OIL, ditto .. .. . 2s. 9d.  
SHEET LEAD, in sheets, per cwt. .. .. 18s. 6d.  
Ditto, cut to sizes and PIPE .. .. 18s. 6d.  
WHITE LEAD, ditto .. .. 26s. 0d.

Colours, Pig, Brushes, &c. &c., equally low, and quality warranted. Complete Lists, priced, may be had on applying to R. COGAN, 5, Princess-street, Leicester-square, London. PRINT PUBLISHERS, PICTURE FRAME and CABINET MAKERS, can be provided with flatted Crown, flattened Sheet, and the patent Sheet Plate, Lists of which, showing the prices for any Square, from 14 by 12 to 40 by 30 feet and second quality, will be sent (gratis) upon receiving the address. Builders, Glaziers, and others having to Contract, sending a copy of their specifications, with a list of dimensions to R. COGAN, will receive by return of post the lowest prices for all qualities and sizes of Crown Sheet-Glass and Sheet-Plate, &c. Glazing estimated for if required.

**NURSEYRYMEN, MARKET GARDENERS, and OTHERS** requiring Small Glass, will find a greater variety of sizes (a large Stock of which is constantly on hand) than is kept by any other House in London.

**COMMON SHEET AND GLAZING.** The advantages of Common Sheet over Crown for Glazing Sky-lights is decidedly great, and is generally used where strength or superior appearance is required; a light 6 feet 6 in. long, with openings of any width, needs only one lap. This Glass is considerably stouter than Crown, and may be had from 1s. 3d. per foot.

Also may be had, **COGAN'S PATENT CHIMNEY FOR GAS OR OIL**, which effects a great saving in the consumption, produces a more brilliant light, prevents smoke, and is cheaper than any other Patent Chimney sold.

**LAMP SHADES AND GAS GLASSES,**

OF EVERY DESCRIPTION. **GAS CONTRACTORS, FITTERS, GLASS MERCHANTS** and others supplied with Lists of nearly 100 Patterns, with prices affixed, sent to any part of the Kingdom gratis.

**CLOCK MAKERS, ALABASTER FIGURE MAKERS, ARCHITECTS, MODELERS, and OTHERS** supplied with **FRONT ORNAMENT SHADES**, for covering Models of Public Buildings, Geological Curiosities, &c. &c., of all sizes and shapes. List of Prices may be had on application.

French Table Flowers, China Vases, Fancy Glass Ware, and Alabaster Figures in every variety.

R. C. having just completed his Show Rooms for the above articles, begs to invite the inspection of the Public. A Liberal Discount to Bazaar Keepers and others.

## ORNAMENTAL WINDOW GLASS,

2s. per foot super.—CHARLES LONG having greatly improved his machinery for ornamenting glass, is enabled to offer handsome patterns at 2s. per foot super. glass included. 100 feet can be executed and delivered in two days. Address to Charles Long, House Decorator, &c., 1, King-street, Portman-square. For Cash only.

## GREAT BRITAIN MUTUAL LIFE ASSURANCE SOCIETY.

14, WATERLOO PLACE, LONDON. DIRECTORS. The Chisholm, Chairman. William Morley, Esq., Deputy Chairman. John Brightman, Esq. James John Kinloch, Esq. Francis Brodigan, Esq. Henry Lawson, Esq. James William Deacon, Esq. Robert Power, Esq. Jonathan Duncan Dow, Esq. The Rev. F. W. Johnson Alexander Robert Irvine, Esq. Vickers, A.M. John Inglis Jerdein, Esq.

AUDITORS. C. B. Rule, Esq. T. C. Simmonds, Esq. George Thomas, Esq. PHYSICIAN. John Clendinning, M.D., 16, Wimpole Street. SOLICITOR. Walter Prideaux, Esq., Goldsmiths' Hall. BANKERS. Union Bank of London.

**ADVANTAGES OF THIS INSTITUTION.** The whole of the Profits divided ANNUALLY among the Holders of Policies on which five Annual Premiums shall have been paid.

Credit given for half the amount of the first five Annual Premiums, by which means Assurances may be effected and loans for short periods secured with the least possible present outlay, and after payment of the arrears, the Policy-holder will become entitled to participate in the entire Profit of this Institution, precisely in the same manner as if he had paid the whole amount of his Premiums in advance in the usual way.

Thus, for example—a person in the twenty-fifth year of his age, instead of paying 2l. 6s. per annum for an Assurance of 100l., would be required to pay 1l. 3s. only during the first five years, when, on payment of the arrears of Premium, amounting to 5l. 15s., his share of the Profits would be such as to reduce his future Annual Premiums to very little more than the half Premium of 1l. 3s. originally paid by him. The GREAT BRITAIN is the only Mutual Assurance Society in which this very great accommodation is given to the Assured.

Credit allowed for the first five Annual Premiums, on satisfactory security being given for the payment of the same at the expiration of five years.

Transfers of Policies effected and registered (without charge) at the Office.

Claims on Policies not subject to be litigated or disputed, except with the sanction, in each case, of a General Meeting of the Assured, to be specially convened on the occasion.

Holder of Policies of 25,000 entitled (after payment of five Annual Premiums) to attend and vote at all General Meetings of the Assured, who will have the superintendence and control of the funds and affairs of the Society.

Full particulars are detailed in the Prospectus, which, with every requisite information, may be obtained by application to

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## FREEMASONS' and GENERAL LIFE ASSURANCE COMPANY.

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**BUSINESS** transacted in all the branches and for all objects of Life Assurance, Endowments, and Annuities, and to secure constant Reversions, &c. Loans granted. Information and Prospectuses furnished by JOSEPH BERRIDGE, Secretary.

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Physician. William Richard Basham, M.D.

Surgeons. Alfred Leggrat, Esq.; George D. Pollock, Esq.

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The attention of the unassured portion of the community cannot be too pointedly drawn to the unusual advantages offered to the Public by this Society over those of many others, inasmuch as it enables all classes to effect life assurances in the manner most convenient to themselves, and amongst other of its popular features that of allowing the Assured (by Table 2) to leave HALF THE ANNUAL PREMIUMS unpaid for seven years, will not be found underselling public attention.

Immediate and deferred ANNUITIES, and every description of Life Assurance business undertaken by this Society. Prospectuses, and all other requisite information, will be furnished on application to the Secretary, or the Country Agents of the Society.

EDWARD T. RICHARDSON, Secretary.

## ROYAL ADELAIDE GALLERY,

LOWTHER ARCADE, STRAND.—Under the special Patronage of her Most Gracious Majesty. Open daily from 11 to 6 o'clock, and from 7 to half-past 10 every evening. Morning Attractions.—A continued series of Scientific Experiments, Musical Performances, Exhibitions, &c. &c. Evening Attractions.—A selection from 3,000 Models of Machinery, Philosophical Apparatus, Mechanical Instruments, &c., demonstrated and explained: Glass-working, Philosophical Lectures, Hydro-Oxygen Gas Microscope, Monck Mason's AERIAL MACHINE, worked by propulsive machinery, &c. &c. and explained in the Aerial Navigation; ELECTRICAL EELS, a lecture on the Aerial Navigation; ELECTRIC LIGHT, Performance of the Infant Thalia and Adelaide Wizard, Bunsen's CARBON BATTERY, Dissolving Views, Laughing Gas, Sculptures, Paintings, &c. Evening Recreations, in addition to Morning Attractions.—FROMEADE CONCERTS, Vocal and Instrumental, Moss, L. Z. Remy, Conductor.—Admission, One Shilling.



# THE BUILDER.

**PREPARED FLOORING BOARDS.**  
**ALWAYS ON SALE, A LARGE AS-**  
**SORNMENT OF DRY PREPARED FLOOR-**  
**ING BOARDS AND MATCHED BOARDING** of all  
 sorts, planned to a parallel width and thickness, from 1  
 inch to 1 1/2 inch thick. Rough Boarding for Flats.  
**TIMBER, DEALS, OAK PLANKS, SCANTLINGS,**  
**SASH GLASS, &c.**  
 Apply at W. CLEAVE'S Timber Yard, Smith-street,  
 Westminster.



Patronized by Her Majesty's Stationery Office.

**H. MORRELL'S  
 REGISTRATION INK,**  
 MANUFACTURED FOR

**THE USE OF REGISTRARS OF BIRTHS, DEATHS,  
 AND MARRIAGES.**

And warranted made with Galls.  
 This Ink has received its present reputation from the results  
 of Chemical Tests, made under Authority.

**SOLD WHOLESALE AT THE MANUFACTORY,  
 140, FLEET STREET, LONDON.**

And may be had Retail of all the principal Stationers and  
 Booksellers in Town and Country.

\* Observe, each Bottle is sealed with the Maker's Name  
 and Address.

**HER MAJESTY'S DOCK-YARDS.**

**SIR W. BURNETT'S PATENT** having  
 undergone nine years' trial in ALL CLIMATES, is  
 now in daily extensive operation in the above national estab-  
 lishments, as well as by many public companies and private  
 individuals.

This PROCESS preserves TIMBER FROM DRY-ROT,  
 and, when desired, renders it unincumbent.

It is cheap, innoxious, and easy of application.  
 It may be used in ordinary wooden tanks, and does not,  
 therefore, require hydraulic machines, except for the sake of  
 expedition.

It seasons the greenest wood in a very short time, and  
 renders the commonest domestic Timber equal to the best  
 foreign.

**CANVAS, CORDAGE, COTTON, and WOOLLEN**, are  
 not only preserved from ROT, MILDEW, and the AT-  
 TACKS or MOTHS, but are unchanged in colour, and rendered  
 even stronger than before.

Numerous specimens and testimonials may be seen, and  
 every information upon its objects and application will be  
 given at the Company's offices, No. 53, KING WILLIAM  
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**BUNNETT AND CORPE,**

ENGINEERS,

**26, LOMBARD STREET, LONDON,**

AND AT THE WORKS, DEPTFORD.

Patentees and Sole Manufacturers of the

**REVOLVING IRON SAFETY SHUTTERS,**

AND OF

**METALLIC SASH-BARS, MOULDINGS, ETC., IN**

**BRASS, ZINC, OR COPPER,**

FOR

**SHOP FRONTS, WINDOWS, SKYLIGHTS, &c.**

**STALL-BOARD PLATES MADE AND ENGRAVED.**

And all kinds of Metal Work executed to any Design.

Estimates given for Patent Iron Shutters, Metallic Shop

Fronts, Sashes, &c. Glazed complete, with best Plate Glass,

in any part of the kingdom.

**METALS ROLLED OR DRAWN FOR THE TRADE.**

CAUTION.

**PATENT REVOLVING IRON SHUTTERS.**

**BUNNETT AND CORPE, 26, Lombard**

**Street, London,** beg to inform the Nobility,

Gentry, Architects, Builders, and the Public, that there is

not, nor ever has been, any other PATENT REVOLV-

ING IRON SHUTTERS, than the one granted to Mr.

Bunnett in 1836, and since so extensively and successfully

introduced by Bunnett and Corpe, in London, and in the

principal towns throughout the Kingdom.

For their great superiority over every other Iron Shutter.

Messrs. Bunnett and Corpe can with pleasure refer to all the

principal Architects and Builders, as well as to many No-

blemen, Gentlemen, Bankers, and first-rate Trading Firms

in London and elsewhere. Messrs. Bunnett and Corpe con-

sider this Caution necessary, in consequence of Mr. Andrew

Smith's Advertisement in last week's "Builder." The only

revolving Iron Shutter put up by Mr. Smith, in London (an

attempt to evade B. and C.'s Patent), was at Mr. Garratt's

American Stores, Oxford Street; this Shutter proving a

decided failure, it was taken down and replaced by one of

**BUNNETT AND CORPE'S PATENT,** and may now be

seen at their Manufactory at Deptford, with many other of

Mr. Smith's Patent Shutters, for which **BUNNETT AND**

**CORPE'S PATENT REVOLVING IRON SHUTTERS**

have been substituted.

**A. SMITH, BUILDERS' MACHINIST,**

**ENGINEER, &c., No. 69, Prince-street, Leices-**

**ter-square, London, PATENTEE and MANUFACTURER**

**OF THE IMPROVED REVOLVING IRON SHUTTERS.**

The attention of Architects and Builders is particularly

directed to the above, they being VASTLY SUPERIOR to

(and possessing NUMEROUS and IMPORTANT advantages

over) OTHER REVOLVING IRON SHUTTERS.

Any information will be given at the MANUFACTORY,

where Models of the above and other INVENTIONS most

extensively used in Buildings, may be seen, amongst which are.

The Invisible Weather-tight Fastenings and Cill-bars,

for French Casements.

Double Action Door Springs, for Banking-house and

other swing doors.

Improved Cramps for laying Floors.

Copper Wire Rope Lightning Conductors for the protection

of Churches, Towers, Chimney-shafts, and all high

buildings, &c.

Metallic Wire Lides for hanging Sashes, Shutters, &c.

Manufactory for Iron Suspension, Sliding, and other

Doors, Strong Rooms, Plans and Ornamental

Gates, and Columns.—Also, Metal Sashes, Shop-fronts,

Stall-board plates, Brass butt, and other Hinges.

Buildings heated and ventilated on approved plans.

Estimates given for the Improved Iron Shutters, Brass

and other metal Sashes (glazed if required), Galvanized

Iron and Zinc Skylights, and every description of wrought

and cast-iron work.

## VALENCIA SLATE.—THE ATTEN-

TION of BUILDERS is requested to the new mode  
 in which this material is prepared for the market. Prices,  
 for the various thicknesses from half-inch to six inches, with  
 each face and the edges accurately dressed by machinery,  
 will be found extremely moderate, and may be obtained by  
 application at Freeman's Wharf, Millbank-street, where a  
 large Stock may be seen.

## INCORRODIBLE IRON AND WIRE

**SOUTHERN, & J. PORTER, Grove Iron Fence Works,**  
**Southwark, and 77, Cornhill, in relation to his special strong**  
**iron fences, is prepared to supply all kinds of IRON FENCE,**  
 garden wire work, cast and wrought iron balcony, and every  
 description of iron work connected with his business, GAL-  
 VANIZED upon Mr. Sorel's well-established mode, by  
 which means not only is their durability secured, but their  
 disfigurement from rust prevented. Galvanized iron build-  
 ings, roofs, &c., fixed in any part of the Kingdom, or prepared  
 for shipment to the East or West Indies, &c. Barbed, six  
 feet long, five rails, 3s. 6d. each; other sizes in proportion.  
 The trade supplied.

## R. HENLY & Co., WHOLESALE

**IRONMONGERS, and MANUFACTURERS OF**  
**KITCHEN-RANGES, STOVES, &c., 195, Blackfriars-**  
**road, and 117, Union-street, Borough.**

**Strong Self-acting Kitchen-Ranges, with back Boiler**  
**and Oven, and Wrought Bars—**

3 ft. 3 in. 3 ft. 6 in. 3 ft. 9 in. 4 ft.

3 ft. 6 in. 3 ft. 12 in. 3 ft. 16 in. 4 ft. 10 in.

Henry's Patent Improved, with back Boiler and Wrought

Iron Oven:—

3 ft. 3 in. 3 ft. 6 in. 3 ft. 9 in. 4 ft.

3 ft. 6 in. 3 ft. 12 in. 3 ft. 16 in. 4 ft. 10 in.

Best Register Stoves, at 3d., 4d., and 10d. per pair.

Do. Elliptic do., at 3d., 4d., and 6d. do.

All Goods are warranted and delivered free within 6 mile

of London.

## COLLINGS'S PATENT HINGES.—

Sole Manufactory, 64, Bridge-road, Lambeth, where  
 a great variety are always on hand, for churches, schools,  
 houses, and all other doors and windows, of small  
 dimensions, a gate of a ton in weight moving with these  
 hinges as easily as a wicket; they are also admirably  
 adapted for drawing-rooms, being highly ornamental, and  
 folding-doors fitted with them may be removed and replaced  
 in an instant. Rising and spring hinges, with very superior  
 fastenings, for exterior gates, at moderate prices. To be  
 seen at Chas. Collings and Co.'s patent sashers, sugar mill,  
 and apertical hinge manufactory, 64, Bridge-road, Lambeth.

## TO ARCHITECTS AND BUILDERS.

**THE following ARTICLES at REDUCED**

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Rain, Under-ground, and Hot-water Pipe, Eave Guttering,

Iron Bricks, Sash Weights, Scales, and all other articles

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Mangers, Stable Gates and Frames, and Pumps, &c. &c.

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every description of Wrought and Cast Iron Work (both

plain and ornamental) used for Buildings and other pur-

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Elliptic, Register, Hot-Air, Ornamental, and Bright

Stoves, Kitchen Ranges, and Smoke Jacks on the best and

most approved principle, and an extensive assortment of

Furnishing Ironmongery.

Buildings heated either with Cottam's Patent (of which

above 1,500 are now in use) or Rogers's Improved Cornil

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Show Rooms at their Manufactory, 2, Winsley Street,

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## DAY'S PATENT WINDGUARD, for

Ventilating Churches, Hospitals, Factories, Theatres,

Club-houses, Breweries, Mail-houses, Shops, Counting-

houses, School-rooms, Smoking-rooms, Bed-rooms, Nur-

series, Kitchens, Larders, Dining-rooms, and Bath-rooms,

requiring Ventilation; as well as Ships, Mines, Tunnels, &c.

&c.; also, for Preventing Drafts, and is guaranteed to

cure all Smoky Chimneys caused by Wind; and entirely

supercedes the use of Revolving and other Chimney Sweepers

or unsightly on the tops of Chimneys or Ventilators.

The object of this Invention is to create a draft where

otherwise it would not exist, by the spontaneous action of

the external air.

The Windguard forms a pleasing octagonal pillar, and by

its peculiar construction to carry out the principle, which

consists of the wind giving a disposition for a vacuum within,

which causes a continual upward current, and can be regu-

lated at pleasure.

The Windguard applied to Ships and Steam Vessels in the

form of a Skylight, prevents rain or the sea entering within,

however boisterous the weather may be, thereby affording

excellent Ventilation, as well as Light.

The Windguard applied to the Tops of Chimneys prevents

all annoyances from Smoke, and effectively ventilates the

room when fires are not required. This is a most simple and

effective way of Ventilating Bed-rooms, Nurseries, Smoking-

rooms, Offices, &c.; causing the air of the apartment to be

at all times as pleasant as can be desired, and may be regu-

lated by a valve at pleasure.

The Windguard is simple in its application, reasonable in

price, ornamental in appearance, no machinery or anything

movable in it, therefore, cannot get out of order; free from

noise or any unpleasantness whatever; not liable to choke up

with soot, and no obstacle to the machines used for sweeping

chimneys.

The Windguard having been applied, with much success,

to the chimneys of Windsor Castle, Buckingham Palace, and

Clarendon, also to several of the Club-houses, as well as to

the mansions of many noblemen and gentlemen, it is with

great confidence recommended for the cure of smoky chim-

neys generally, and may be had of all respectable ironmongers

in Town and Country, and may be seen daily in operation at

the Patent Ventilating Works, Commercial Road, Fimlico;

where also may be seen Mr. G. T. Day's plans (illustrating

the different applications of his Patent ARCHIMEDIAN

VENTILATOR and his PORTABLE WATER APPARATUS,

for effectually Ventilating, Warming, and Cooling the Air

of Buildings, Ships, &c. By the use of these inventions

many thousand feet of hot steam, or the heat of the sun, or

cold air can be guaranteed to be continually exchanged per

minute, day and night, winter and summer; thereby en-

suring, at all times, free ventilation to the rooms and pas-

sages of buildings, and may be seen in operation at the

size of the apparatus depends on the nature and use of the

buildings and its occupants.

## JOHN'S & Co.'s PATENT STUCCO

**PAINT CEMENT and PATENT STUCCO PAINT.**

—The prospectus, containing a full account of these most  
 valuable materials, and instructions to the workmen how to  
 use them, accompanied also by testimonials from Architects,  
 Engineers, and others, is sent free of charge to every part of  
 the kingdom, who have found out and know how to  
 appreciate their extraordinary qualities, may be obtained  
 free, on application to the following Architectural Book-

Mr. John Weale, No. 59, High Holborn.

Mr. J. Taylor, No. 1, Wellington-street, Waterloo-bridge.

Mr. Reid, Charing-cross, No. 10, Strand.

At The Builders Office, York-street, Covent Garden.

And of Messrs. Mann & Co., Sole Agents for the Patentees,

Maiden-lane, Queen-street, Chesham.

Mr. John Weale, No. 59, High Holborn.

Mr. J. Taylor, No. 1, Wellington-street, Waterloo-bridge.

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At The Builders Office, York-street, Covent Garden.

And of Messrs. Mann & Co., Sole Agents for the Patentees,

Maiden-lane, Queen-street, Chesham.

## BASTENNE BITUMEN COMPANY,

**Offices, 31, Poultry.** The Directors of this Company

beg leave to call the attention of ARCHITECTS, BUILD-

ERS, and others, to the very beneficial results attendant on

the use of BITUMEN in the erection of buildings, &c. Its

application as a FLOORING will be found eminently useful.

It is also valuable for numerous other purposes, more par-

ticularly where the object sought for is the EXCLUSION

OF DAMP AND VERMIN.

Scale of prices per foot square—

clay brick pavement at 6d. and 7d. per foot square.

1 inch thick ..... 7d.

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Works not measuring 400 feet, 1d. per foot extra.

Roofing, executed at 6d. and 7d. per foot square.

Concrete is charged in addition according to the thickness

when required.

Carriage and men's time are charged extra when works

are executed beyond three miles from the General Post-

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Bitumen 2s 6d per ton, without grit.

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CHARLES F. TILSTONE, Sec.

## MARTIN'S CEMENT.

**IMPORTANT TO ARCHIT**



[Continued from page 130.]

surveyor, treble the amount of the fees which such surveyor would have been entitled to receive for his trouble in inspecting the same, and shall also forfeit for every such default a sum not exceeding twenty pounds; and that if, for any period exceeding three months, any builder having duly begun any building requiring compliance with the provisions of this Act, shall suspend the progress of such building, and shall again go on with the same; or if, during the progress thereof, the builder be changed; then, in any such case, two days before such builder or other such person shall enter upon the performance of the work, it shall be the duty of such builder to give notice to the surveyor; which notices must be in the terms specified in the forms (numbers two and three) contained in the Schedule of Notices annexed to this Act, or to the like effect; and must be given to the surveyor, or left at the surveyor's office, in like manner as is required upon beginning any new building; and that if any builder make default or neglect to give or leave such notice, he shall forfeit for every such offence a sum not exceeding twenty pounds; and that if any such building, chimney, or wall be begun to be built, pulled down, rebuilt, cut into, or altered as aforesaid, or be proceeded with after any suspension of the progress thereof before such notice has been given; or if such surveyor or the official referees be refused admittance to inspect the same premises, then such building or work shall be liable to be abated as a nuisance under the provisions herein contained.

## BUILDINGS GENERALLY.

*Supervision of Works—Notice of Irregularities to Builders and others—To cut into Works—Amendment of Works—Proceedings thereon by Official Referees—Costs.*

14. And be it enacted, with regard to such buildings and works, so far as relates to the supervision thereof, that if in building, pulling down, rebuilding, cutting into or altering any part of any building, or party-wall or external wall, or chimney-stack or flue, any work, or any other thing be done contrary to or not conformably with the rules and directions of this Act; then forthwith it shall be the duty of the surveyor and he is hereby required to give forty-eight hours' notice to the builder to amend any such irregularity which he shall deem to have been committed; and, after the expiration of such notice, to proceed to inspect the work; and that, if the work be so far advanced that he cannot ascertain whether the irregularity has been committed or not, or exists or not, then it shall be lawful for him and he is hereby empowered to order any work to be cut into, laid open or pulled down, which shall in his opinion prevent his ascertaining whether any such irregularity exists or not; and that if, within forty-eight hours, the builder to whom any such notice shall have been given, refuse or fail to amend any irregular work, or any builder refuse, when ordered by the surveyor, to cut into, lay open or pull down any work which shall in his opinion prevent his ascertaining whether such irregular work exists or not, then, as soon as conveniently shall be, it shall be the duty of the surveyor to give information thereof to the official referees; and that upon the receipt of such information, it shall be the duty of such official referees, and they are hereby required to proceed to hear the matter, and if any breach of the rules, regulations and directions of this Act be found to have been committed, or if there appear good reason to suppose any such breach has been committed and is concealed, then it shall be lawful for the official referees, or any two of them, and they are hereby authorized to direct by their award that such building, party-wall, external wall, chimney-stack, flue or other thing, or such part thereof as they shall deem necessary, to be amended, removed, cut into, laid open, or pulled down; and that all the costs, charges and expenses of the said work, and of the said application to the official referees shall be borne by such party or parties as the official referees shall determine.

*Special Supervision of highest-rate Buildings—Penalty—Notice to Official Referees—Survey—Approval—Disapproval—Amendment of Defects—Notice of Completion—New Survey—Certificate—Prohibition of Use—Penalty.*

15. And now, for the purpose of making provision for the supervision of buildings of the sixth rate of the first or dwelling-house class, and of the sixth rate of the second or warehouse class, and of all buildings of the third or public building class (except the buildings hereinbefore excepted); be it enacted, with regard to every such building, so far as relates to the special supervision thereof, that when all the walls of any such building shall have been built to their full height, and all the timbers of the floors, roofs and partitions shall have been fixed, it shall be the duty of the architect or builder, and he is hereby required, to give notice thereof to the official referees; and if the official referees be of opinion that such building is subject to the special supervision herein provided, then within seven days after such notice it shall be their duty to survey the said building; and that, if they approve of the same, then within seven days after such survey, to certify such approval under their hands to the architect or builder; or that if any part of the walls, timbers, roof or internal supports appear to such official referees defective, insufficient or insecure, then, within the said seven days after such survey, they are hereby required to give to such architect or builder notice of such parts as shall so appear to them defective, insufficient or insecure, which notice must be in writing; and that, upon the receipt of such notice, it shall be the duty of the said architect or builder, and he is hereby required to amend and strengthen such defective, insufficient or insecure parts; and that, until the official referees shall be satisfied, and shall have certified in writing their approval as aforesaid, it shall not be lawful to cover up any such parts; and that, upon completion of every such building, it shall be the duty of the architect or builder to give fresh notice to the official referees; and that, thereupon, or within seven days after such notice, it shall be the duty of the official referees to survey the same; and that, if upon such survey it shall appear that such building has been built sufficiently strong, then it shall be their duty to certify accordingly, which certificate must be under their hands and the seal of office of registrar of metropolitan buildings; and that until such certificate shall have been made, it shall not be lawful to use such building for any purpose whatever, without the express authority in writing of the official referees, under their hands and the seal of office of the registrar of metropolitan buildings; and that, if before the certificate of satisfaction shall have been made, any such building subject to special supervision shall be used for any purpose, without such express authority in writing, then, on conviction thereof before two justices of the peace, the owner or occupier of such building shall forfeit for such offence a sum not less than five pounds, nor exceeding five hundred pounds, for every day during which such building shall be so used without having obtained such certificate of satisfaction, or such express authority as aforesaid; and one half thereof shall go to the person giving information, and the other half to the poor of the parish in which such building shall be situate.

*Special Supervision of Buildings in Schedule (B)—Survey by Official Referees—Occasional Inspection—Notice of Deficiencies—Amendment of Defects—Approval by Official Referees—Notice of Completion—New Survey—Certificate—Prohibition of Use—Penalty.*

16. And be it enacted, with regard to the buildings comprised in Schedule (B), to this Act annexed, so far as relates to the supervision thereof, that before the builder begin to build the same, it shall be the duty of such architect or builder, and he is hereby required to give notice thereof to the official referees, and also, at the same time, to transmit the plans thereof for their inspection; and that forthwith thereupon it shall be the duty of the official referees, and they are hereby required to proceed to survey the situation of the intended building, with a view to ascertain whether such building can be erected on such situation with due regard to the security of the public; and that from time to time, during the progress of such building, it shall be the duty of such official referees, and they are hereby directed to inspect the same, with a view to ascertain the sufficiency thereof; and that if such building or any part thereof appear to such official referees defective, insufficient or insecure, then they are hereby required to give to such architect or builder notice of such parts as shall so appear to them defective, insufficient or insecure, which notice must be in writing; and that, upon the receipt of such notice, it shall be the duty of the said architect or builder, and he is hereby required to amend and strengthen such defective, insufficient or insecure parts; and that, until the official referees shall be satisfied, and shall have certified in writing their approval as aforesaid, it shall not be lawful to cover up any such parts; and that, upon completion of every such building, it shall be the duty of the architect or builder to give fresh notice to the official referees; and that thereupon, or within seven days after such notice, it shall be the duty of the official referees to survey the same; and that if upon such survey it shall appear that such building has been built sufficiently strong, then it shall be their duty to certify accordingly, which certificate must be under their hands and the seal of office of registrar of metropolitan buildings; and that, until such certificate shall have been made, it shall not be lawful to use such building for any purpose whatever, without the express authority in writing of the official referees, under their hands and the seal of office of the registrar of metropolitan buildings; and that if before the certificate of satisfaction shall have been made, any such building subject to special supervision shall be used for any purpose, without such express authority in writing, then, on conviction thereof before two justices of the peace, the owner or occupier of such building shall forfeit for such offence a sum not less than five pounds, nor exceeding one hundred pounds, for every day during which such building shall be so used without having obtained such certificate of satisfaction, or such express authority as aforesaid; and one half thereof shall go to the person giving information, and the other half to the poor of the parish in which such building shall be situate.

*Entry on Premises—Refusal to permit Inspection—Forcible Entry.*

17. And be it enacted, with regard to buildings and works, so far as relates to the entry thereon for the supervision thereof, that, at all times during the progress of any operations in respect thereof within the meaning of this Act, it shall be lawful for the surveyor, and for the official referees, and they are hereby respectively authorized to enter upon the premises upon which such operations have been commenced; and that if any person refuse to admit the surveyor, or the official referees authorized under this Act, at any reasonable hours, from time to time to inspect any building in course of construction, demolition, alteration or re-construction, then in every such case, on conviction thereof, the party offending shall forfeit for every such offence a sum not exceeding twenty pounds; and such building or work shall be liable to be abated as a nuisance under the provisions herein contained in that behalf; and that if the surveyor or the official referees

The words "or such other person" seem to be inserted without due relation to the context.

The word "such," before the words "building, chimney or wall," does not seem to have due relation to the context.

We apprehend the word "such" should precede the words "builder refuses when ordered by the surveyor."

The words ought to be "SHALL be amended, removed, cut into, laid open, or pulled down."

The words "architect or builder" are not sufficiently definite.

This clause and the sixteenth clause, disposing of very great power, which none but great masters of architectural construction are justly entitled to exercise, would become extremely tyrannical, vexatious, and ruinous, in the custody of incompetent persons; we think the powers proposed to be delegated ought to be more clearly defined. We think society would be injured by an architect of great and original genius having the designs of his works interfered with by an official referee of less knowledge, ability, and genius: it is true, the men would find their just level in the end, but probably not before ruinous expense or mischief had been incurred.

The word "such," before the word "architect," seems to have no proper relation to the context.

The word "PLANS" is not sufficiently definite, but should be followed by the words "Elevations and other drawings which have been made for the same."



be refused admittance from time to time, at any reasonable hour, to make inspection of any work, then for that purpose it shall be lawful for such surveyor or for such official referees, and they are hereby empowered, by and with the aid of a peace officer, to enter upon the ground, building and premises where the same shall be.

*All Buildings not according to this Act declared a Nuisance—Summons before Justices—Recognizances to pull down and amend—Imprisonment—Removal of Buildings declared Nuisances—Expenses.*

18. And for the purpose of more effectually enforcing the observance of the provisions of this Act, be it enacted, with regard to any buildings, drains, timber buildings, chimneys and flues, party-walls, party fence-walls, external walls and projections, and every other part of every building of every class, or rate of any class, which shall be hereafter built, rebuilt, enlarged or altered within the limits of this Act, contrary to the provisions hereof, so far as relates to the removal thereof, that if the same be not built, rebuilt, enlarged or altered in the manner and of the materials allowed every other respect according to, and in conformity with, the several rules and directions which are in this Act particularly specified; and if any person build or begin to build, or cause the building or beginning to build, or alter, or cause to be altered, or use or cause to be used any part of any ground or building, projection, drain or other thing contrary thereto; and if, in either of such cases, it so appear by the certificate of the official referees; then the said building, projection, drain or other thing, or such part thereof so irregularly built or begun to be built, or so irregularly altered or begun to be altered, or so used, shall be deemed a nuisance; and that thereupon it shall be the duty of the surveyor, and he is hereby directed to summon the builder before any two justices of the peace; and that thereupon it shall be the duty of such builder, as such justices shall require, and he is hereby required to enter into a recognizance in such sum as the said justices shall appoint, for abating and taking down the same within such convenient time as the said justices shall respectively appoint, or otherwise for amending the same according to such rules and directions as are herein contained, and also for paying the costs, charges and expenses incurred by the surveyor in laying the information and obtaining the conviction, including such compensation for the surveyor's loss of time as the said justices shall think fit; and that if the party so required fail to enter into such recognizance, then it shall be lawful for either of such justices or any justice, and they are hereby required to commit such builder to the common goal of the city, county or liberty where the offence shall be committed, there to remain without bail or mainprize until he shall have abated or demolished or otherwise amended such irregular building, or such nuisance shall be abated or demolished by order of such justices respectively (which order the said justices are hereby empowered to make), and until the costs, charges and expenses thereof, and of all operations and proceedings in relation thereto, shall have been paid: and further, that if application be made to any two or more justices, then, thereupon, it shall be their duty, and they are hereby empowered to order the surveyor or any other person to abate such nuisance, and to order the persons authorized by them so to abate or demolish the same, to sell and dispose of the materials thereof, and, out of the moneys arising by such sale, to repay to themselves, and all persons by them employed for such purpose, the reasonable charges for abating or demolishing such nuisance, and also such costs and expenses as aforesaid, and to pay the surplus moneys arising by such sale (if any) to the owner of the building; and that if the moneys arising by such sale be not sufficient to pay such charges, then such owner, or, if there be no owner, then it shall be the duty of the occupier to make good the deficiency; and if he fail, then he shall be liable to the same remedies for the recovery thereof as are by this Act provided concerning the expense of taking down ruinous buildings, and putting up hoards for the safety of passengers.

#### PARTY WALLS—PARTY FENCES—INTERMIXED BUILDINGS.

##### *Fifty Shillings Penalty on Workmen offending—Imprisonment.*

19. And be it enacted, with regard to any building or work, so far as relates to the non-observance of the provisions of this Act in that behalf by workmen and others, that if any workman, labourer, servant or other person employed in any building, or in the alteration, fitting up or decoration of any building, wilfully, carelessly or negligently, and without the direction, privity or consent of the person causing such work to be done, do any thing in or about such building contrary to the rules and directions of this Act, then upon conviction thereof before any two justices of the peace, upon the oath of one or more credible witnesses or witnesses (which oath the said justices and every such justice is hereby empowered and required to administer), every such offender shall be liable to forfeit for every such offence a sum not exceeding fifty shillings; and that if any such forfeiture be not paid upon or immediately after such conviction, then it shall be the duty of any such justice to whom application shall be made, to commit the offenders by warrant under the hand and seal of such justices to the common goal for any term not exceeding one month, at the discretion of such justices.

##### *Execution of Works.*

20. And from hence as, from time to time, occasion hath arisen and will hereafter arise, to execute the following works in relation to adjoining buildings and premises, parted by the same party-wall or party fence-wall, but belonging to different owners, or occupied by different persons, or to buildings intermixed, belonging to different owners, or occupied by different persons; namely—the reparation of the party-walls by which such premises shall be parted; the pulling down and rebuilding of such party-walls; the raising of such party-walls; the reparation of party fence-walls; the rebuilding of such party fence-walls; the raising of such party fence-walls; the pulling down timber partitions parting the buildings of different owners, or occupied by different persons, and in lieu thereof to build proper party-walls; the pulling down buildings built over public ways, or having rooms or stories, the property of different persons, or occupied by different persons, lying intermixed, for the purpose of building proper party-walls or party-arches; and generally the performance of other necessary works incident to the connection of such party-walls or party fence-walls with the premises adjoining: it is expedient to make provision, as well for facilitating the execution of such works by any such owner desirous to execute the same—who is herein denominated the “building-owner”; as for protecting the interests of the owner of the adjoining premises—who is herein denominated the “adjoining owner.” And for that purpose, be it enacted, with regard to all premises parted by a party-wall or party fence-wall, or parted by timber partitions, and with regard to all intermixed properties not so parted, so far as relates to the execution of any such works by any owner of any such premises, that if the adjoining owner shall have consented thereto, or if, without such consent, the required notice of such work shall have been given by or on the part of the building-owner to such adjoining owner, then, subject to such modification as shall be made by virtue of the provision in that behalf; and subject to the provision for supplying the want of consent of the owners; and subject moreover to the respective conditions hereby prescribed, with regard to such works respectively, as well as to the payment of the costs of such works, and to the sanction or to the award of the surveyors or of the official referees, as hereby prescribed in reference thereto, it shall be lawful for every such building-owner and he is hereby authorized or required to execute such works.

##### *Consent of, or Notice to, adjoining Owner.*

21. And be it enacted, with regard to such works, so far as relates to the notice thereof, that unless the adjoining owner consent thereto, it shall not be lawful for the “building-owner” to execute such works, until he have given notice thereof to such “adjoining owner”; and every such notice, with regard to the pulling down, rebuilding or repairing of party-walls or party fence-walls, must be given one month, at the least, before the survey of the work is to be made, and six months, at the least, before the work is to be commenced; and every such notice, with regard to the pulling down and rebuilding intermixed walls and timber partitions, must be given six months, at the least, before such work is to be commenced; and every such notice must be in the form or to the effect of the notice (number eight) for that purpose contained in the schedule of notices hereunto annexed.

##### *Modification of Work to suit adjoining Owner—Delay of Operations—Application to Official Referees—Authority to Build.*

22. And be it enacted, with regard to every such work, so far as regards the modification thereof, in order to render it suitable to the premises or to the convenience of the adjoining owner or his tenant, that if the adjoining owner desire that any modification be made in the work so as to render it suitable to his premises, or if he desire that the work be delayed, so as to cause it to be executed at a more reasonable or a more convenient time in reference to the business or to the family or domestic arrangements of such adjoining owner or his tenants, then, within seven days after the receipt of notice thereof, it shall be the duty of the building-owner, and he is hereby required to signify his consent to or dissent from such modification or delay; and that if the building owner do not within such seven days signify his consent to such modification or delay, then it shall be lawful for the adjoining owner, and he is hereby entitled, to require the building-owner to delay the work until the decision of the official referees shall have determined thereon; and that if within seven days thereafter application be made in writing to the official referees, and notice thereof be given to the building-owner, then it shall be the duty of the building-owner to delay the same till the decision of such official referees shall have been given thereon; and that if, within the period of six months from the date of the first notice, such adjoining owner do not make any objection or any requisition in conformity with this enactment, then, subject to the provisions of this Act with regard to such works, it shall be lawful for the building-owner and he is hereby authorized to proceed to execute the same.

##### *Supplying Want of Consent of adjoining Owners—Notice of Inspection by Surveyor—Notice to Parties—Confirmation by Official Referees—Proceedings on Appeal against Certificate—Notice by Official Referees—Survey—Award—Works Authorized.*

23. And be it enacted, with regard to any such works hereby authorized to be done in relation to party-walls, party-arches, party fence-walls, or other such structures, belonging to the owners of adjoining buildings

We think it would be burdensome to the surveyors and official referees, if refused admission to premises, to require the aid of a peace officer unless violence be used towards them.

The clause would run better if written—  
“The pulling down of timber-partitions which part buildings which are the property of different owners, or which are occupied by different persons, for the purpose of building in lieu thereof proper party-walls.”  
The words should be—“The pulling down of buildings.”



or parting adjoining premises, so far as relates to supplying the want of consent of the adjoining owners, that if the adjoining premises be unoccupied, or if the owner thereof cannot be found, or if the owner, although found, cannot, by reason of legal disability or otherwise, consent to the work, or if the owner will not consent thereto, or if differences arise amongst the parties concerned, then the notice required to be given in respect of such work must be served both on the surveyor and on the official referees, in addition to such other parties entitled to notice under this Act upon whom such notice can be served; and that forthwith on the receipt of such notice it shall be the duty of the surveyor and he is hereby required to give notice to the parties by whom such work is to be executed, and to any one or more surveyors or other agents by them appointed, as to the day and hour when he will view the premises; and at such time the surveyor of the district is hereby authorized to proceed to inspect such premises accordingly, and to certify to the official referees, first, whether such works ought to be done or not; and secondly, if the same ought to be done, whether it ought to be done in the proposed manner; and thirdly, the site whereon the party-wall should be built; and with regard to intermixed buildings, what party-arches may be necessary over or under any rooms of such buildings so intended to be rebuilt; and fourthly, the quantity of the soil or ground or other parts of the premises (if any) necessary to be laid to or taken from the house of the person desirous to rebuild, to the house of the person permitting him to erect a party-wall or party-arch; and fifthly, the compensation (if any) which should be made and paid by the building-owner, of either or any of the premises affected thereby, to the adjoining owner, in lieu of the lessening either of the said buildings by such party-wall or party-arch, or as a satisfaction for such other injury (if any) as shall be done or occasioned thereby to any of the said parties; and that upon the receipt of such certificate, it shall be the duty of the official referees, and they are hereby required, to cause notice thereof to be given to the parties or to such of them as are known; and that if within seven days after such notice to the parties, the certificate be not appealed against, and if the official referees be of opinion that the work is proper to be done, and the compensation is fair, then it shall be lawful for the official referees to confirm such certificate, and to authorize the building-owner to proceed with the works, as if the consent of the adjoining owner had been obtained: and that if any party concerned shall appeal against the certificate of the surveyor as to the work to be done, or as to the compensation, or as to any other matter referred to in such certificate, in pursuance of the above provisions, then it shall be the duty of the official referees, and they are hereby required to appoint one of their number to survey the building in question; and that for that purpose it shall be the duty of the official referees so appointed, and he is hereby required to give notice to the parties, and to any one or more surveyors or other agents by them appointed, as to the time when he will view the premises; and that at such time it shall be the duty of such referee, and he is hereby authorized to view such premises accordingly, and to inquire into the matters appealed against, and to certify to the official referees his opinion thereon; and that upon such certificate being made, it shall be lawful for the official referees to make their award, thereby either confirming, or reversing, or modifying, as to them the case may seem to require, the certificate of the surveyor, and appointing by whom and in what proportions the expenses of the surveys and of the reports thereon are to be paid; and such award shall be final and conclusive; and with regard to any works by such award authorized, so far as relates to the proceedings of the building-owner, that upon the making of the award, the periods of the notices by this Act prescribed with regard to works of that nature have elapsed, then immediately upon the making of the award, but if such periods have not elapsed, then as soon after the making of the award as such periods shall have elapsed, it shall be lawful for the building-owner, his agents, servants and workmen, to proceed to execute the works.

#### *Reparation and Rebuilding at joint Expense.*

24. And be it enacted, with regard to any party-wall, party-arch or external wall used wholly or in part as a party fence-wall, so far as relates to the reparation and rebuilding thereof, at the joint expense of the owners of the buildings parted thereby, that if such party structure be so defective or so far out of repair as to render it necessary to pull down and rebuild the same, or any part thereof, then, on notice being given by the owner of one of the buildings to the adjoining owner, it shall be lawful for the building-owner to require a survey, certificate, and award authorizing the execution of such reparation or rebuilding, according to the provisions hereinbefore contained in that behalf.

#### *Rebuilding of Party-walls.*

25. And be it enacted, with regard to party-walls, so far as relates to the rebuilding thereof, at the expense of the building owner, that if the owner of one of the buildings desire to re-build such party-wall, then, on giving to the adjoining owner the required notice of six months, it shall be lawful for such building-owner, and he is hereby entitled to pull down and rebuild such party-wall; but upon condition that he do pay all the costs and charges thereof, and also all the expenses incidental to the execution of the work, including therein the fees and expenses of the survey, and the fees of the surveyors and in respect of any services performed by the official referees.

#### *Rebuilding a Party-wall—Building of an external Wall against a Party-wall.*

26. And be it enacted, with regard to any party-wall so far as the rebuilding thereof; that if the owner of one of the buildings parted by such party-wall rebuild such building of a higher rate, and do not pull down such party-wall and build a proper wall in lieu thereof, then it shall be his duty, and he is hereby required, to build up an external wall against such party-wall.

#### *Damage arising from Erection of external Wall against a Party-wall—Cutting into Footings and Chimneys.*

27. And be it enacted, with regard to an external wall built against a party-wall, so far as relates to the operations incident thereto, and to the making good any damage occasioned thereby, that if it be necessary to excavate or dig out the ground against the wall of any adjoining building, for the purpose of erecting a wall thereon, then it shall be lawful for the building-owner and he is hereby entitled so to do: but upon condition, that the said building-owner do, at his own costs, shore up and underpin such wall, or such part tiles or slates bedded in cement; such underpinning to be done in a workmanlike and substantial manner; and that if, for the purpose of erecting such external wall, it be necessary to cut away part of the footings of such party-wall on the side next to the wall so to be built, and any part of the breasts and chimney-shafts belonging to the building about to be rebuilt, as shall project beyond the perpendicular face of such party-wall, in the lowest floor thereof, then, on giving notice of such intention in writing to the owner of the adjoining building, at least one month before commencing operations; and on the expiration of such notice, it shall be lawful for the building-owner and he is hereby authorized to cut away such portion of the footings, breasts and chimney-shafts aforesaid; but so that the same be done, and the brick-work where cut be again made good in cement, under the superintendence and to the satisfaction of the surveyor.

#### *Making good such Damage—Survey—Damage from Carelessness—Rebuilding.*

28. Provided always, and be it enacted, with regard to such party-wall, so far as relates to the making good of any such damage, that if it be so damaged and injured by such cutting away, as in the opinion of the adjoining owner or occupier to be ruinous or dangerous, then, upon application for that purpose, it shall be the duty of the surveyor, and he is hereby required to survey such wall; and if upon the survey thereof it be found ruinous or dangerous, then to condemn it; and that, thereupon, it shall be the duty of the building-owner to pull down and rebuild such party-wall; and that if, in the opinion of the surveyor or of the official referees, such damage or injury shall have been occasioned by want of due care, on the part of the building-owner, then it shall be the duty of such building-owner and he is hereby required to pull down and rebuild such party-wall; and that at his own costs and charges, including therein all the costs and expenses incident to such survey, and the pulling down and rebuilding of such party-wall, and the reinstating and making good all the internal finishings and decorations damaged thereby; and that if the owner of the building to be rebuilt do not proceed with all due despatch to pull down and rebuild such party-wall, and to reinstate and make good all the internal finishings and decorations of the adjoining premises, and to pay the costs and charges and expenses of the survey, then it shall be lawful for the adjoining owner so to do, and he is hereby entitled to recover all the costs and expenses in respect thereof from such owner, his heirs, executors, administrators, or assigns.

#### *Rebuilding of sound Party-walls—Reference to Official Referees.*

29. And be it enacted, with regard to any sound party-wall against which an external wall shall have been built, and which shall have been suffered to remain so far as relates to the rebuilding thereof, that if, while such party-wall continues sound, the adjoining building be pulled down or rebuilt, and such party-wall be pulled down, then the owner of such adjoining building shall not be entitled to more than his just proportion of the materials thereof, nor to more than his just proportion of the ground on which such party-wall was built, nor shall he build on more than his just proportion of the said ground, unless he shall have agreed with and satisfied the owner of the building so previously rebuilt for his half thereof; and that if the said owners cannot agree concerning the division of such materials, or of such ground, or of the building thereon, or concerning the reimbursement of the party first rebuilding as aforesaid, then the price and all matters in difference, including the sale and purchase of the ground in question, shall be settled by a reference to the official referees, whose award shall be final.

#### *Raising of Buildings—Future Buildings—Existing Buildings—Chimneys of adjoining Buildings—Use of raised Buildings.*

30. And be it enacted, with regard to every building hereafter built, so far as relates to the raising thereof, that it shall be lawful to raise any building, but so that, nevertheless, the party and external walls and chimneys thereof, when so raised, be of the materials and of the several heights and thicknesses hereinbefore described for party and external walls and chimneys of the rate such building shall be of when so raised; and

The words "for the building-owner to require a survey" are not sufficiently definite, notwithstanding explanation of § 2.

Stone ought to be permitted to be used as well as "stock-bricks and tiles or slates," and the word "cement" is too indefinite—any mortar is a cement. The word "CHIMNEY" ought to be placed before the word "breasts."

A party-wall may be "ruinous" or even "dangerous" without it becoming necessary to take down and rebuild such party-wall: this provision, if strictly enacted and strictly enforced, might become vexatious and burdensome in expense. A party-wall may be dangerous, and yet be so underpinned and repaired, as to be as sound and effective as a new one.



with regard to buildings already built, so far as relates to the raising thereof, that, although the walls of such buildings be not of the thicknesses prescribed by this Act, if, in the opinion of the surveyor, such walls be sufficiently secure to allow of the raising thereof, then it shall be lawful to raise any such building already built to an additional height, not exceeding ten feet; and with regard to any building adjoining one which shall be raised, so far as relates to the raising of the chimneys thereof, that if any building be raised, it shall be the duty of the owner of such building, and he is hereby required to build up, at his own expense, the party-walls between his own and any adjoining building, and all flues and chimney-stacks belonging thereto; and with regard to any building raised, so far as relates to the use thereof by the adjoining owner, that if at any time the owner of any such adjoining building make use of any portion of the part raised of such party-wall, it shall be lawful for the owner of the premises so first raised, to claim, and he is hereby entitled to recover the cost of a proportionate part of the portion which shall be so used, together with the cost of such parts of the chimney-stacks as belong thereto.

*Repairing and Rebuilding of Party Fence-walls—Deficient Party Fence-wall.*

31. And be it enacted, with regard to party fence-walls, so far as relates to the repair and rebuilding thereof, that it shall be lawful for the owner of any of the premises parted thereby to repair, pull down, and rebuild the same; and if the wall be below the height of nine feet from the ground on either side, then either to raise it to that height, or to pull it down and to rebuild it to that height; but upon condition that he do pay all the expenses thereof; and that if a building be to be erected against such party fence-wall, and such wall be not conformable to the requisites prescribed for a proper party-wall for a building of that class and rate, then it shall be lawful for the building-owner, and he is hereby entitled to pull down such party fence-wall; but upon condition that he do pay all the expenses thereof; and also that he do make good every damage which shall accrue to such adjoining premises by such rebuilding.

*Pulling down party Timber Partitions.*

32. And be it enacted, with regard to the party timber partitions of existing buildings belonging to different owners, so far as relates to the pulling down thereof, and any wall under or over the same, that if one of the buildings be rebuilt, or if one of the fronts of such buildings be taken down to the height of one story, or for a space equal to one-fourth of such front from the level of the second floor upwards, then, without the consent of the adjoining owner, but upon giving the requisite notice, it shall be the duty of the building-owner, and he is hereby required, to pull down such timber partitions, and the walls under or over the same, and in lieu thereof to build a proper party-wall; and that at the expense of the owners of all the premises parted thereby.

*Pulling down Internixed Buildings.*

33. And be enacted, with regard to buildings built over public ways, or having rooms or stories, the property of different persons, lying internixed (except inns of court hereinafter provided for), so far as relates to the pulling down and laying the parts thereof to each other, that if a party-wall or party-arch cannot be built without pulling down such buildings, and so laying parts thereof to each other, and if, in default of the consent of all proper parties, the official referees authorize such works, then it shall be lawful for the owner of either of the said buildings to execute the same; but so that the party-walls or party-arches be conformable to the provisions of this Act, and the directions of the said official referees in their award made in that behalf.

*Exceptions of Inns of Court, &c.*

34. And be it enacted, with regard to the rooms or chambers in the inns of court, (that is to say) in Sergeants' Inn, Chancery-lane, or in any of the four inns of court, or in any of the inns of Chancery, or any other inns set apart for the study or practice of the law, so far as relates to the building of party-walls, that the walls or division between the several rooms and chambers in such inns, belonging to and communicating with each separate and distinct staircase, shall be deemed to be party-walls within the meaning of this Act, and as such must be built in conformity with the regulations and clauses herein contained relating to party-walls.

*Power of Entry on Premises to effect Works—Opening Doors and Removal of Goods—Continuance of Entry—Penalty for Hindrance.*

35. And for the purpose of facilitating and regulating the execution of any works authorized by this Act, or by any award, in pursuance thereof, in respect of any party-wall or party-arch, parting the buildings or grounds belonging to different owners, or in the occupation of different persons, or in respect of internixed buildings; be it enacted, with regard to any such works, so far as relates to the power to enter the adjoining premises in order to execute the same, that if such work have been duly authorized, either by the consent of the parties competent to give such consent, or by the award or certificate of the official referees, then, at any time between the hours of six in the morning and seven in the afternoon (Sundays excepted), it shall be lawful for the building-owner, or any other person acting in his behalf, accompanied by a constable or other officer of the peace, and they are hereby respectively empowered, to enter on the premises of the adjoining owner, so far as may be necessary for executing such work; and that if the outer-door of such building be shut, and being thereunto required, the person therein refuse to open the same, or if such building be empty and unoccupied, then it shall be lawful to break open such outer-door; and if any goods, furniture, or other thing obstruct the building of such intended party-wall or party-arch, or the pulling down any wall, partition, or other thing necessary to be pulled down and removed in order to the building of such intended party-wall or party-arch, then to remove such goods, furniture and things to some other part of the same premises, or if there be no room on the premises sufficient for that purpose, to remove them to any other place of safe custody; and that from and after such entry, and at all usual times of working, it shall be lawful for the builder employed to erect such intended party-wall or party-arch, and for his servants and all others employed by him, to enter into and upon the premises, and abide therein the usual times of working, as well for the shoring up of the said building so broke into and entered upon, and for taking down and removing any party-wall, partition, wall-work, or other thing necessary to be taken down and removed for the purpose aforesaid, as to build such intended party-wall or party-arch; and that if in any manner any such owner or other person hinder or obstruct any workman employed for any of the purposes aforesaid, or wilfully damage or injure the said works, then every such person so offending shall forfeit for every such offence a sum not exceeding ten pounds.

*Stopping of Openings in external Walls abutting on other Premises—Stoppage thereof—Costs of stopping up—Certificate of Official Referee—Recovery of Costs.*

36. And now, for the purpose of further protecting the interests of adjoining owners, be it enacted, with regard to external walls adjoining the ground or building of another owner, so far as relates to the making of openings therein, that if, without the consent in writing of the owner of such ground or building, any opening be made in any such wall, then it shall be lawful for such owner, and he is hereby entitled, to require the owner of the premises in which such opening shall be made to stop up the same with brick-work; and that if, within one month after such notice such stoppage be not effected, then it shall be lawful for such owner, and he is hereby entitled, either by himself or his workmen, with tools, implements and materials, to cause such openings so to be stopped, and he is also hereby entitled to be repaid the costs thereof; and with regard to such costs, so far as relates to the adjustment thereof, that if such owner refuse to make payment thereof, or if there be any dispute as to the amount thereof, then, on application for the purpose to the official referees, by either of the parties concerned, it shall be lawful for the person by whom they have been incurred, and he is hereby entitled, to refer the matter of such dispute to the official referees, and to hear their determination thereof; and that it shall be the duty of such official referees to give to the applicant a certificate in relation thereto; and that if any party liable to pay any sum of money under such certificate fail to do so, then it shall be lawful for the party entitled to such costs to recover the same, in the manner hereinafter provided for the recovery of the costs, charges and expenses of executing any works in pursuance of this Act.

*Building of Party-walls next vacant Ground—Consent of adjoining Owner.*

37. And be it enacted, with regard to walls, so far as relates to the building thereof on vacant ground at the line of junction of premises belonging to different owners or in different occupations, that one month before the owner of any piece of vacant ground, or ground not hitherto built upon, shall build any building adjoining to another piece of vacant ground, or ground not hitherto built upon, or build a fence-wall for such piece of ground, it shall be his duty, and he is hereby required to give to the owner or occupier of such adjoining vacant ground a notice, which must be in writing, and must set forth his desire to build a party-wall or party fence-wall, and describe the thicknesses and dimensions of such desired party-wall or party fence-wall; and that if such adjoining owner shall signify his consent in writing, then the same must be built partly on the ground of one of the said owners or occupiers, and partly on the ground of the other owner, which last-mentioned part is to be paid for as is hereinafter directed by such other owner or occupier; but if he do not signify such consent, then it shall be the duty of the building-owner to build an external wall for such building, and fence-wall for such ground entirely upon his own ground.

*Building of Chimney-breasts, &c. in new Party-wall for adjoining owner—Instructions by adjoining Owner—Reimbursement of Expenses.*

38. And be it enacted, with regard to any new party-wall, built on the line of junction of premises belonging to different owners, so far as relates to the providing of chimney-breasts and other accommodation for the adjoining owner, that when the owner of any piece of vacant ground shall have obtained the consent of the adjoining owner to build a party-wall on the line of junction of their respective premises, then, ten days at the least before beginning to build such party-wall, it shall be the duty of the building-owner to give the adjoining owner notice thereof; and that if in due time the adjoining owner shall give instructions in writing

It is presumed that "if one of the fronts of" ANY "such building" is the meaning intended to be conveyed.

So "broken into" is presumed to have been intended. This clause leaves undefined the ultimate fate of such "goods, furniture, or other things" as may be removed "to any other place of safe custody" for the purpose of performing the work.

If any external wall in question with any opening therein be of stone, it would be unreasonable to require brick-work alone to be used.



or by a plan, then it shall be the duty of the building-owner to construct, if practicable, such and so many chimney-jambs, breasts and flues of chimneys, in all such parts of such party-wall as shall be by such instructions required, and to leave such recesses in every such wall as may be so required; but so that they be conformable with the directions of this Act concerning party-walls and chimneys; and that thereupon it shall be lawful for the building-owner to claim, and he is hereby entitled to recover from the adjoining owner all the expenses of constructing such chimney-jambs, breasts and flues of chimneys and recesses, as provided by this Act in that behalf.

#### RUINOUS BUILDINGS.

*Repairing and Rebuilding—Application to Official Referees—Survey—Notice to Lord Mayor, &c. and to Overseers—Erection of Hoards, and Notice to Parties—Repairs—Appeal against Survey—Demolition.*

39. And whereas buildings within the limits of this Act are often, either from litigated titles thereto, or from the obstinacy, neglect or poverty of the owners thereof, or of the parties interested therein, or from other causes, in so ruinous a condition that passengers are endangered thereby; now for the purpose of making provision in that behalf; be it enacted, with regard to ruinous buildings, so far as relates to repairing or pulling down the same, that, upon receiving information of any building being in a ruinous and dangerous condition, it shall be the duty of the surveyor, and of the overseers for the time being of the parish or place in which the same shall be, and they are hereby respectively required, to apply forthwith to the official referees to authorize a survey to be made thereof; and that, thereupon, it shall be lawful for the official referees to direct the surveyor to make such survey; and that thereupon it shall be the duty of such surveyor to do in all respects as in the case of a survey of party-walls; and that upon the receipt of the certificate of the surveyor, it shall be lawful for the official referees, and they are hereby required to cause a copy thereof to be transmitted, if the premises be within the city of London, then to the court of Lord Mayor and aldermen, and if they be elsewhere, then to the overseers of the poor of the parish or place in which such premises shall be; and that, thereupon, it shall be the duty of such Mayor and court of aldermen and overseers to cause, with all convenient speed, a proper and sufficient hoard to be put up for the safety of all passengers; and to cause notice in writing to be given to the owner of such building to repair or pull down the same or any part thereof as the case may require, within fourteen days then next ensuing; and that if within the said fourteen days the repair or demolition thereof be not begun and be not completed as soon as the nature of the case will admit, then on a declaration being made before the said Lord Mayor or a justice of the peace, of such notice having been so given (which declaration the said Lord Mayor and justice are hereby respectively empowered and required to receive), it shall be lawful for the said Lord Mayor and court of aldermen, and also for every such overseer of the poor by and out of the money in his hands, and they are hereby severally authorized and required, with all convenient speed, to order and cause such building or such part thereof so certified to be in a ruinous and dangerous condition, as shall be necessary for the safety of the passengers, to be repaired or pulled down, or secured in such manner as shall from time to time be requisite: provided always, that if such Lord Mayor or aldermen, or such overseers, appeal against such certificate, it shall be the duty of the official referees to proceed to survey, to certify and to award in all respects as in the case of an appeal from the certificate of the surveyor with reference to party-walls or intermixed buildings; and that if such official referees certify that the said premises are ruinous and dangerous, it shall be the duty of the said Lord Mayor or the said overseers to repair or pull down such building as aforesaid.

*Disposal of Materials to pay Costs—Payment of Surplus on Demand—If no Demand—City of London or Overseers to Refund within Six Years.*

40. And be it enacted, with regard to any such ruinous buildings so pulled down, so far as relates to the disposal of the materials thereof and to the application of the proceeds, that it shall be lawful for the said Lord Mayor and court of aldermen, or the said overseers, to sell and dispose of such of the materials as they shall judge necessary, and out of the moneys arising from the sale thereof to reimburse to themselves, the surveyors and official referees, and every person by them respectively employed for the purposes aforesaid, all the charges of the survey and appeal, and of putting up every such hoard, and of repairing, pulling down and securing such premises, and of selling the said materials as aforesaid, or so much thereof as the moneys arising by such sale will extend to; and that if there be any surplus after payment of all expenses, then, upon demand thereof made by such owner, it shall be the duty of the said Lord Mayor, or of the said overseers, to account for and pay such surplus of the moneys arising by such sale to the owner of such building; and that if no such demand be made, then such surplus shall, as regards places within the city of London, and the liberties thereof, be paid to the Chamberlain of the city; and as regards all other places, such surplus shall be added to the moneys raised as rates for the relief of the poor of the parish or place, and accounted for accordingly: provided nevertheless, that, at any time within six years from the deposit of such surplus, it shall be lawful for any such owner, his executors or administrators, to claim, and he and they are hereby entitled to recover such surplus; and the said Lord Mayor and aldermen of the city of London, as regards the said city and liberties thereof, are hereby required to pay such surplus out of the cash in the chamber of London; and every overseer, as regards places not within the said city or the liberties thereof, is hereby required to pay such surplus out of any monies raised or to be raised by any rate for the relief of the poor.

*If a deficiency, to be paid by Owner; or levied by Warrant of Distress; or Occupier to pay and deduct from Rent; or by Distress on Occupier—Payment of Money to Chamberlain or to the Overseers.*

41. And be it enacted, with regard to any such ruinous buildings, so far as relates to the expenses of putting up such hoard, repairing, pulling down and securing such buildings, and selling the materials beyond the amount thereof, which shall have been satisfied by the application thereto of the proceeds of the materials, that if the monies arising from such sale be insufficient to repay all such expenses, then, from time to time, such owner fail to pay such deficiency, then it shall be lawful for the Lord Mayor for the time being, if such ruinous building in question be within the city of London or the liberties thereof, or if elsewhere, for two or more justices of the peace, to levy the amount thereof by warrant under their hands and seals, by distress and sale of the goods and chattels of such owner, if any such can be found; and that if no such owner can be met with, or being met with, shall not, on demand, pay the said deficiency, and no sufficient distress of the goods and chattels of such owner can be found, then it shall be lawful for the person who shall at any time thereafter occupy any such building, or the ground where the same stood, and he is hereby authorized and required to pay and deduct the same out of the rent thereof; and that if he neglect or refuse to pay such deficiency, then it shall be lawful for the said Lord Mayor, or two or more such justices of the peace, and they are hereby empowered and required to cause the same to be levied by distress and sale of the goods and chattels of any occupier of the premises, together with the costs of every such distress and sale; and that if the same shall be situated within the city of London and its liberties, it shall be the duty of the person by whom the time to time placed to the credit of the cash of the said city of London; and if the premises, in respect of which such money shall be received or recovered, be not situate within the said city of London and the liberties thereof, then to pay the amount received to the overseers of the poor for the time being of the parish or place where the premises shall be situate, to be by them placed to the account of the said parish, in aid of the poor-rate of the parish or place.

*Repair of ruinous Chimneys, &c.—Notice—Repairs—Certification of Expenses—Recovery from Owner or Occupier—Penalty—Fees and Expenses—Reimbursement of Occupier.*

42. And be it enacted, with regard to ruinous chimneys, roots and projections, so far as relates to the repairing thereof, that if a chimney-shaft, chimney-pot, or other thing thereon, on the eaves, or parapet, or coping, or slates, or tiles on the roof, or any projection from the front walls of any building, be deemed by the surveyor to be in danger of falling; then it shall be the duty of such surveyor and he is hereby required to require the occupier of such building, or if there be no occupier, then the owner thereof, to take down or given; and that if, within the time specified, such occupier, or some other person interested in such building, do not begin to take down or secure the same, and, as soon as the nature of the case will admit, complete such taking down or securing of the same, to the satisfaction of such surveyor, then it shall be the duty of such surveyor to give information thereof to a justice of the peace; and, thereupon, it shall be the duty of such justice of the peace to proceed to cause such chimney-shaft, chimney-pot, or other thing thereon, or the eaves, or parapet, or coping, or slates, or tiles on the roof or projection from the front or side wall of such building as shall be considered by such surveyor in danger of falling, to be forthwith taken down or secured; and that if there be no occupier or known owner, then it shall be lawful for such justice to direct that the reasonable expenses, to be certified by the official referees, be paid by the overseers of the parish or place in which such building shall be situated; and that if thereafter the owner of such building should become known, or if the building should become occupied, then it shall be lawful for the overseers of the poor, and they are hereby entitled to recover the amount of such expenses from such owner or from such occupier, as in the case of ruinous buildings hereinbefore provided for; and that if within the time limited the occupier or some other person interested in such building do not take down or secure the same, then for every day during which the same shall so remain unrepaired or not sufficiently secured, such occupier or the owner, if there be no occupier, shall forfeit and pay the sum of five pounds; and that such occupier or owner shall also pay the surveyor's fees and all other costs, charges and expenses attendant upon any such taking down or securing the building; and all such surveyor's fees, and other costs, charges and expenses may be recovered and levied

"By a plan" is not a sufficient designation; the words should be "by a plan AND ELEVATION, OR OTHER SUFFICIENT DRAWINGS."

These provisions would form a very great improvement upon those of the present Building-Act, whereby the power is left to very incompetent persons.

There is no statement who is to be paid first, or if the parties interested are to be paid equally in proportion to the proceeds of the sale.

There do not appear to be here any provisions for the expenses of surveying.

"Required to require" should be altered.



in the same manner as such penalty; provided always, that if the occupier of such building be not bound by virtue of any lease or other instrument to repair, reinstate or secure the premises, then such occupier is hereby entitled to retain out of the rent payable in respect of such premises, all such penalties, costs, charges and expenses attendant upon or arising out of the taking down or securing, or the repairing or rebuilding the same, as in the case of any other works, the costs of which he is hereby required to pay in the first instance.

*Injury by the Fall of Chimneys, &c.—Compensation.*

43. And be it enacted, with regard to adjoining buildings, so far as relates to the making good any damage arising from the falling down of parts thereof (except any such part of a party-wall as shall belong to and be used conjointly by the owners or occupiers of the buildings parted thereby), that if at any time any injury or damage be caused to any part of an adjoining building, or to the internal decorations and furniture in such building, by the falling down from any other building of any chimney-shaft, chimney-pot, parapet, coping or other thing, then it shall be the duty of the owner of the building from which such part shall fall, and he is hereby bound and required to reimburse the expense to which the owner or occupier may be put in making good such injury or damage, in like manner as herein directed concerning the reimbursement of the expenses of ruinous party-walls; and such costs shall be recoverable in the manner hereinafter directed for the recovery of the costs and expenses of executing works in pursuance of this Act.

*Court of Mayor and Aldermen.*

44. And be it enacted, that all the powers and authorities by this Act vested in the mayor and aldermen of the city of London, may be lawfully exercised by the court of mayor and aldermen of the said city, to be holden in the outer chamber of the Guildhall of the said city, according to the custom of the said city.

*EXPENSES OF WORKS.*

*Repayment of Expenses of Works in certain cases—Recovery of Expense from adjoining Owners—Delay of Payment.*

45. And, for the purpose of reimbursing any building-owner for the expense of works incurred in respect of any party-structure; be it enacted, with regard to the following works, so far as relates to the reimbursement, by the adjoining owner, of expenses incurred by the building-owner, in respect of any party-structure, built to part the buildings or premises belonging to other owners from the buildings or premises belonging to himself; that is to say—first, with regard to any party-wall hereafter built on the line of junction of any two buildings; and, second, with regard to any party-wall hereafter built on the line of junction of any building and any vacant ground, or of vacant premises, belonging to different owners or occupiers; and, third, with regard to a ruinous and defective party-wall pulled down and rebuilt, either with the consent of the adjoining owner, or in pursuance of the condemnation thereof, according to this Act, except a party-wall condemned on account of the injury done thereto by any building-owner, and the expenses of which and of other incidental works the official referees shall have awarded to be paid by such building-owner, by virtue of the provision in that behalf; and, fourth, with regard to one or more timber partitions between any two or more buildings pulled down, and a party-wall built in lieu thereof; and, fifth, with regard to a new party-wall or party-arch built in lieu of any party-wall or party-arch between intermixed properties pulled down, either with the consent of the adjoining owner, or in pursuance of the condemnation of such party-wall or party-arch; and, sixth, with regard to any party-wall built on the site of a party-fence or party-fence-wall, and used otherwise than as a party-fence-wall by the person who shall not have built the same; and, seventh, with regard to every other case of reimbursement in respect of any party-structure; that if the party-structure be built in the manner, and of the materials, and of the thicknesses of such structure as required by this Act in reference thereto, then it shall be lawful for the building-owner at whose expense such work shall have been executed, to claim, and he is hereby entitled to be paid and to recover from the owner of any adjoining building or ground, the following compensations; that is to say,—if a new party-wall or party-arch built on the line of junction by one owner, be made use of, either wholly or partially, by the adjoining owner, then a sum of money proportionate to the value of so much of such party-structure so made use of; and if chimney-jamb, chimney-breasts and flues have been set up in any party-wall in pursuance of the instructions of the owner of any vacant ground adjoining to the same, then a sum equal to the value thereof; and if an unsound party-wall or other party-structure be pulled down and rebuilt, then a sum of money equal to a proper proportion of the value of the new party-structure, deduction being made for a due proportion of the old materials, and also a proportionate part of all expenses which shall be necessary for pulling down the old party-structure, in lieu of which such new party-structure shall be built; and if a party-wall be built in lieu of a timber partition or other party-structure, and be made use of by the adjoining owner, then a sum of money proportionate to the value of so much of such new party-wall as shall be so made use of; and also a proportionate part of all expenses which shall be necessary for pulling down the old timber partition or other party-structure; and if a party-wall or party-arch already built, or hereafter rebuilt, be used by an adjoining owner, then a sum of money proportionate to the value of so much of such party-structure, as the adjoining owner shall use, deduction being made, where proper, for the value of old materials; and, in every case, the whole of the reasonable expenses of the shoring up the adjoining building, and of removing any goods, furniture or other things therein, and of pulling down any wainscot or partition thereof; and also such surveyors' fees and any other fees payable in respect of any acts performed by the official referees; and also, such other costs (if any) as may have been awarded by the official referees as aforesaid, in any of the cases hereby provided for; and until such expenses shall be so paid, every person at whose expense such party-structure shall have been built is hereby entitled to and shall be possessed of the sole property thereof, and of the ground whereon it stands, and the same shall be vested entirely in the person at whose expense such party-structure shall have been built.

*Recovery of Costs of Buildings—Account—Data of Account—Examination of Accounts by Official Referees—Disapproval—Approval and Demand of Payment—Recovery of Amount.*

46. And be it enacted, with regard to the costs of all the works which shall be executed under this Act, incurred either by an owner or by an occupier, on behalf of the owner of adjoining premises, or on behalf of the owner of the same premises, so far as relates to the recovery thereof, that within twenty-one days after the completion of the work, it shall be the duty of the person by whom such expense shall have been incurred, to deliver to the adjoining owner of the building or premises in respect of which such expense shall have been incurred, an account in writing of the expenses of the work, including all preliminary and incidental operations; and also if the work shall have been executed by the authority of the official referees, by virtue of the power hereby provided for supplying the want of consent of owners, then a copy of such account shall also be delivered to the official referees at their office; and that every such account must contain a true account,—First, Of the number of rods and parts of rods of brick-work, and of all digging, and of concrete, stone-work and other requisite materials, and of the labour required in executing so much of the work as the owner of the adjoining building shall be liable to pay, and of the respective prices thereof; and, Secondly, Of any deduction which such adjoining owner shall be entitled to make therefrom on account of the old materials of so much of the wall or other structure pulled down, which shall have belonged to him; and also a true account of the expenses of all other preliminary and incidental operations; and that all such works must be estimated and valued, in every such account, at such rates and prices as shall from time to time be fixed by the official referees; and that if within ten days from the delivery of such account, any party dissatisfied with the proportion of the amount thereof charged to him, appeal to the official referees, then upon the receipt thereof, or if, in cases of want of due consent as aforesaid, such account be delivered to the official referees as aforesaid, it shall be the duty of the official referees to examine such account, and to certify whether they approve or disapprove of the items thereof, and whether the rates and prices are duly charged, and whether the proportion of the account charged to the party appealing be duly charged, and also to appoint how and by whom the expenses of such examination are to be borne, and also to appoint the time or times at which the amount of such account, and of such expenses payable by the party, are to be paid; and that if they certify their disapproval, or that the charges are not duly made, or the amount fairly apportioned with regard to the party appealing, then before any demand be made or any proceedings be taken thereon, the account must be amended, and again examined by the official referees, and certified as aforesaid; and that if the official referees certify their approval, then at the time or times appointed by the said official referees, it shall be lawful for the person entitled to such costs and expenses to demand the amount thereof; and that if within ten days after the delivering of such account to the party liable to pay the same, such party do not either appeal against such account or pay the same; or if, within ten days after the demand thereof, in conformity with the certificate of the official referees, the amount thereof, together with the costs of the examination of the account as the official referees shall certify, he not paid; then it shall be lawful for the person entitled thereto to recover the same, or so much thereof as shall be then due, by the summary proceeding hereby provided.

*Reimbursement of Costs of Works to Occupiers—Discharge and Repayment.*

47. Provided always, and be it enacted, with regard to works executed under this Act, so far as relates to the reimbursement to the occupier of any costs by him paid in respect thereof, that, unless there be some express agreement to the contrary between the parties, it shall be lawful for such occupier and he is hereby entitled to deduct from the rents due or becoming due from him to his lessor or landlord, the amount of any such costs, charges and expenses payable by him to his lessor or landlord, and the costs, charges and expenses of any distress and sale made on him through the default of his lessor or landlord; and that the receipt for such payment shall be a sufficient discharge to any occupier for so much money as he shall have so paid, or which shall have been so levied on his goods and chattels in pursuance of



this Act, and shall be allowed by such lessor or landlord in part or full payment (as the case may be) of the rent due to him by such occupier.

**Recovery of Expenses of Buildings—Differences—Determination by Official Referees—Charges—Receipt of Rents—Recovery of Rents—Priority of Right—Limitation of Distress—Continuance of Distress until Payment made.**

48. And be it enacted, with regard to the costs and all other expenses of pulling down, securing, repairing and rebuilding party-structures, or other parts of buildings, according to the provisions of this Act, so far as relates to the recovery thereof, amongst the several owners of the premises, that when such costs and expenses shall have been ascertained and paid by the owner upon whom the payment thereof shall have first fallen, then as to any building or tenement held under any lease, or agreement for a lease, or other agreement for the occupation thereof, made before the coming into operation of this Act, it shall be lawful for such owner, and he is hereby entitled to recover the same from the persons now bound or liable by law, or by any existing contract, to maintain and repair such buildings, in respect of which such costs and expenses shall have been incurred; but if any dispute or difference arise as to the persons so bound or liable, then every such dispute or difference shall be referred to the official referees; and that thereupon such official referees shall ascertain and determine the persons bound or liable to pay such costs and expenses, and also in what proportions such costs and expenses are to be paid by the parties liable to pay the same, and their decision shall be final; and that as to any building or tenement held under any lease or agreement for a lease, or other agreement for the occupation thereof, made after the coming into operation of this Act, all such costs and expenses shall be charged upon the building or tenement in respect of which such costs and expenses shall have been incurred; and that in default of such costs and expenses being duly paid, it shall be lawful for the party to whom the same shall be payable, and he is hereby entitled to receive from the occupier thereof the rents and profits of such building or tenement; and for that purpose to give notice to such occupier to pay over to him such rents and profits; and that thereupon if such occupier fail to pay such rent and profits accordingly, then it shall be lawful for the person to whom such costs and expenses shall be payable to recover the same by the summary proceeding hereby provided, in such proportions and at such times as shall be appointed by the award of the said official referees in that behalf; and that after such notice shall be given, and before such costs and expenses shall be paid, it shall not be lawful for any person otherwise entitled to receive such rents and profits, and he is hereby disabled to bring any action or take any proceeding at law or in equity to recover such rents or profits; provided always, that if on the hearing of the application for the warrant to levy such costs and expenses by distress according to the provision of this Act in that behalf, the owner shew that he is not bound to pay, in respect of such building or tenement, any rent or profit, or that the amount of the rent or profit payable by him is not sufficient, then it shall not be lawful to issue such warrant, if there be no rent due or accruing; or if there be rent due or accruing, then to the extent only of the amount of such rent; and that if such costs and expenses or any part thereof remain unpaid, and if the same or any future owner be or become liable to pay rent in respect of such building or tenement, then from time to time, until the same be paid, it shall be lawful to levy the same by distress, according to the provisions in that behalf, upon the same or any such future occupier.

**Official Referees to determine Contributions—Proportional Contributions—Recovery of Excess paid by any Contributor.**

49. And be it enacted, with regard to such costs and expenses of works executed under this Act, so far as relates to contributions thereto by persons bound or liable to make contribution, that for the purpose of enabling the party upon whom the payment of such costs and expenses shall fall, either in the first instance or subsequently, to obtain contribution from others interested in like degree, it shall be lawful for every such person, whether he be freeholder, copyholder, leaseholder, mortgagee in possession, and whatever may be his interest or the degree of such his interest, and whether he hold in his own right, or in right of others, and whatever may be the kinds and degrees of their respective interests, and he is hereby entitled, to a contribution from every other person having an owner an interest in the premises, of whatever kind or degree; which contribution is to be computed, according to the amount of his interest, in proportion to that of other persons interested, so far as such persons may be known, or can be reached by process of law or equity; that it shall be lawful for any party so interested, and he is hereby entitled, to require the official referees to settle and determine the same by their award, and their decision shall be final; and that if the person upon whom the payment of such costs and expenses shall have fallen, have paid, in respect of the interest of another or others, either unknown or who could not be reached by process of any court of law or equity, more than his own just proportion, then, on the production of such award, duly made, signed and sealed, it shall be lawful for such person to have and exercise against other parties against whom such award shall be made, and he is hereby entitled to the like remedies, to compel payment of money, as are hereby given for compelling the first payment of such costs and charges of such expenses.

**STREETS AND ALLEYS.**

**Width thereof—Penalties.**

50. And now, for the purpose of making provision concerning streets and other ways of the metropolis; be it enacted, with regard to such streets and other ways, so far as relates to securing a sufficient width thereof, that, from the passing of this Act, all the conditions, regulations and directions contained in the Schedule (I.) to this Act annexed, shall be duly observed and performed; and that if any person offend in respect thereof, he shall be liable to all the penalties and forfeitures by this Act imposed in respect of any buildings either built contrary thereto, or without due notice to the surveyor appointed in pursuance of this Act to inspect such buildings.

**BUILDINGS—USE THEREOF.**

**Use and Occupation of Cellars or Rooms unfit for Dwellings—Noxious Uses—Penalty.**

51. And now, for the purpose of discouraging and prohibiting the use of buildings unfit for dwellings, and the improper use of other buildings; be it enacted, with regard to every building of the first or dwelling-house class, whether already or hereafter built, so far as relates to the use and occupation thereof, or of any room or cellar thereof, that it shall not be lawful to let separately to hire any such room or cellar not constructed according to the rules specified in the Schedule (I.) to this Act annexed, as a dwelling, nor to occupy or suffer it to be occupied as such, nor to let, hire, occupy, or suffer to be occupied, any such room of less dimensions than one square, or built underground, for any purpose (except for a ware-room or store-room); and further, with regard to every building of the first or dwelling-house class, so far as relates to the use and occupation thereof, that it shall not be lawful to use or to suffer any part thereof to be used as a pig-sty, dog-kennel, or for any other noxious purpose; and that if any person wilfully let, or suffer to be occupied, or used, in manner aforesaid, any underground cellar or room contrary to the provisions of this Act, or any other part of such building, contrary to the provisions of this Act, then, on conviction thereof, before two justices of the peace, such person shall be liable to forfeit, for every day that such cellar or room shall be so occupied, a sum not exceeding twenty shillings; and the half of such penalty shall go to the person who shall sue for the same, and the other half to the poor of the parish in which such unlawfully occupied or used cellar or room shall be situate.

**Buildings near dangerous Businesses as to Fire—Distance from Buildings—New Businesses—Prohibition after Thirty Years—Fifty Pounds Penalty and Costs—Costs—Distress or Imprisonment.**

52. And now, for the purpose of making provision, concerning businesses dangerous in respect of fire or explosion, be it enacted, with regard to the following businesses, (that is to say) the manufacture of gunpowder or of detonating powder or of matches ignitable by friction or otherwise, or other substances liable to sudden explosion, inflammation or ignition, or capable of causing sudden explosion, inflammation or ignition, or of vitriol, or of turpentine, or of naphtha, or of varnish, or of fireworks, or painted table-covers, and any other business dangerous, on account of the liability of the materials employed therein to cause fire or explosion on matters coming in contact therewith, so far as relates to the erection of buildings in the neighbourhood of the place where any such business is carried on, and so far as relates to the carrying on of any such business in the neighbourhood of public ways or buildings, that it shall not be lawful hereafter to erect any building, of any class, nearer than fifty feet to any building which shall be in use for any such dangerous business; and that it shall not be lawful for any person to establish or newly carry on any such business, either in any building or vault or in the open air, at a less distance than forty feet from any public way, or than fifty feet from any other building, or any vacant ground belonging to any other person than his landlord; and that if any such business be now carried on in any situation within such distances, then, from the expiration of the period of thirty years next after the passing of this Act, it shall not be lawful to continue to carry on such business in such situations; and that if any person erect any building in the neighbourhood of any such business contrary to this Act, then, on conviction thereof before two justices, he shall forfeit the sum of fifty pounds; or if any person establish anew any such business, or carry on any such business contrary to this Act, then, on conviction thereof before two justices such person shall be liable to forfeit for every day during which such dangerous business shall be carried on, a sum not exceeding fifty pounds, as the said justices shall determine; and that it shall be lawful for the justices also to award to the prosecutor such costs as shall be deemed reasonable; and that if the offender either fail or refuse to pay such penalty and costs immediately after such conviction, then they may be levied by distress of the goods and chattels of the person convicted; or if there be no such distress, then such person shall be committed to the common gaol or house of correction for any time not exceeding six months, at the discretion of such justices; and that by warrant under the hands and seals of two or more justices of the peace,

The proposal to give power to the official referees to award, in cases of dispute, the costs of party-walls, and other matters done under the present Act, and to determine who are the parties liable for the same, is excellent; as many cases of dispute relative to bearing the expense of new party-walls erected under the present Act are still likely to arise, from the difficulty of awarding to the several parties interested their just proportions of such expenses.

We imagine "disabled from bringing any action AND FROM taking any proceeding" to be intended.

"Future OCCUPIER" we presume to be meant, otherwise there will be no congruity with the closing words of the clause, "any SUCH future occupier."

The general purport of this proposed regulation is excellent; but we fear, that out of the very justice intended to be applied by it to reach all the several interests of complicated cases, great litigation and its attendant expenses will arise.

We apprehend the words "LIKE degree" are not proper for expressing the several liabilities of the parties interested; as, for instance, one man may have taken of a freeholder a piece of ground at 3l. rent, and may have underlet it to a third person at 10l. rent; he again may have underlet the same ground at 20l. rent to a fourth party, who is a builder, and who has laid out 500l. upon the ground; this party may have underlet the estate again to a fifth at 70l. rent; this fifth party, finding the estate unprofitable, may have underlet it again to a sixth at a reduced rent of 50l.; this sixth party may have so increased the buildings that the estate has become worth a 100l. per annum: in the mean while some of the parties may have become insolvent, some may have been made bankrupts, some may have died, some may have become insane, and some may have left children minors. Under such a complication, an arbitrator would have to exercise great care and ability in dividing the several interests according to term, rent, value, and legal liability, which if "LIKE" would form another miracle.

The expression should be "Nearer than fifty feet from any building," or "Nearer to any building than fifty feet," the words "from such building" being then merely understood.

We cannot see any reason why FIRE-WORK MANUFACTORIES and OTHER PLACES OF DANGEROUS FABRICATIONS should be legalized or in any way countenanced for thirty years in any situation whatever contiguous to human habitations or to public ways.



*Buildings near dangerous and noxious Trades as regards Health—Distance from Buildings—New Businesses—Prohibition after Thirty Years—Fifty Pounds Penalty and Costs—Distress or Imprisonment.*

53. And now, for the purpose of making provision concerning businesses offensive or noxious, be it enacted, with regard to the following trades or businesses; that is to say, blow-boiler, bone-boiler, fell-monger, slaughterer of cattle, sheep or horses, soap-boiler, tallow-melter, tripe-boiler, and any other business offensive or noxious, so far as relates to the erection of buildings in the neighbourhood of any such business, and so far as relates to the carrying on of any such business in the neighbourhood of any public way, or of other buildings of the first or dwelling-house class, that it shall not be lawful hereafter to erect any buildings of the first or dwelling-house class nearer than fifty feet to any building which shall be in use for any such offensive or noxious business; and that it shall not be lawful for any person to establish or newly carry on any such business, either in any building or vault or in the open air, at a less distance than forty feet from any such public way, or than fifty feet from any other such buildings of the first or dwelling-house class; and that if any such business be now carried on in any situation within such distances, then, from the expiration of the period of thirty years next after the passing of this Act, it shall cease to be lawful to continue to carry on such business in such situation; and that if any person erect any building in the neighbourhood of any such business, contrary to this Act, then, on conviction thereof before two justices, he shall forfeit the sum of fifty pounds; or if any person establish anew any such business, or carry on any such business contrary to this Act, then, on conviction thereof before two justices, such person is hereby made liable to forfeit for every day during which such building shall remain near to such dangerous business, or during which such business shall be carried on, a sum not exceeding fifty pounds, as the said justices shall determine; and that it shall be lawful for the justices also to award to the prosecutor such costs as shall be deemed reasonable; and that if the offender either fail or refuse to pay such penalty and costs immediately after such conviction, then they may be levied by distress of the goods and chattels of the person convicted; or if there be no such distress, then such person shall be committed to the common gaol or house of correction for any time not exceeding six months, at the discretion of such justices, and that by warrant under the hands and seals of two or more justices of the peace.

*Use of Means to mitigate Noxiousness of Trades—Adoption of Means to mitigate after Conviction.*

54. Provided always, and be it enacted, with regard to any such offensive or noxious business, whether such trade or business be now carried on at a less distance than forty feet from any public way, or than fifty feet from any other building, or be hereafter carried on at a greater distance, yet so as to cause danger or annoyance, so far as relates to the mitigation of any penalty or punishment for unlawfully carrying on thereof, that if any party charged with carrying on such business shew that in carrying on such business all the means then known to be available for mitigating the effect of such business in any such respect have been adopted, then it shall be lawful for such justices to receive evidence thereof, and according to such evidence to mitigate the penalty as to them shall seem fit: provided further, with regard to such offensive or noxious business, so far as relates to the adoption of means to mitigate the injurious effects thereof, that if it shall appear to such justices that the party carrying on any such business shall have made due endeavours to carry on the same with a view to mitigate so far as possible the effects of such business, then although he hath not adopted all or the best means available for the purpose, yet it shall be lawful for such justices assembled, and they are hereby empowered, to suspend the execution of their order or determination, upon condition that, within a reasonable time to be named, the party convicted do adopt such other or better means as to the said court shall seem fit, or before passing final sentence and without consulting the prosecutor, to make such order touching the carrying on of such business as shall be by the said court thought expedient for preventing the nuisance in future.

*Conviction and Appeal as to certain Trades not specified—Recognizances—Sessions—Proceedings.*

55. And be it enacted, with regard to any business not hereinbefore enumerated by name as offensive, noxious or dangerous, or which shall not have been adjudged by any of her Majesty's superior courts of law at Westminster to be nuisances, and with regard to any building erected or continued within any such distance as aforesaid from any such business dangerous, noxious or offensive, so far as relates to a conviction in respect of any such business, and to an appeal from such conviction, that if any person be dissatisfied with the decision of such justices, and if, within two days after such decision, notice be given by or on behalf of such person of his intention to appeal, and if he enter into recognizance to the party appealed against, with two sufficient securities conditioned to try such appeal, and to abide the order of the court, and pay to the party appealed against, such costs (if any) as shall be awarded against him, then it shall be lawful for such party so dissatisfied to appeal against such conviction to the justices of the peace at their general quarter sessions of the peace, to be holden within four months after such conviction, for the place in which such premises shall be situate; and that if the premises be situate within the city of London, and liberties thereof, then the appeal must be to the quarter sessions thereof, or if the premises be situate in the counties of Westminster, Kent, or Surrey, or in the city and liberties of Westminster, or in the liberties of her Majesty's Tower of London, then to the quarter sessions thereof respectively, as the case shall be; and that if, within the above-mentioned period, such appellant shall have entered into such recognizance as herein required, then it shall be lawful for such justices, and they are hereby empowered, to proceed to hear and examine, on oath, into the causes and matters of such appeal (which oath they are hereby empowered to administer), and to determine the same, and to award such costs to be paid by the said parties as they think proper; and the order, judgment, and determination of the said justices in their respective sessions shall be binding and conclusive upon all parties.

*Appeals to Quarter Sessions for Surrey and Kent—To Sessions at Southwark—To Sessions at Greenwich—Further Meetings—Adjournments.*

56. And be it enacted, with regard to any appeal in respect of a conviction for carrying on any such dangerous, offensive, or noxious business, so far as relates to the place where such appeal is to be heard, that if the appeal be to the general quarter sessions of the peace for the county of Surrey or the county of Kent, then the jury (if any) to be impaneled, in pursuance of this Act, and all parties required to attend the quarter sessions of the peace, and the said counties pursuant to such application, shall be impaneled and required to attend at some general or special adjournment of the said quarter sessions to be held within six weeks next after the original sessions; and that if the matter relate to the county of Surrey, then such adjournment shall be to some convenient place in the borough of Southwark in the said county; and that if the matter relate to the county of Kent, then such adjournment shall be to some convenient place in the borough of Greenwich in the said county; and such times and places shall be appointed by the justices of the said counties respectively assembled at such original sessions; and that, from time to time, every further meeting of the said sessions, for any thing to be done upon such application, shall be appointed at or within the space of three weeks from the last meeting; and that, from time to time, it shall be lawful for the justices of the peace for the said counties of Surrey and Kent respectively, and they respectively are hereby empowered and required to make such adjournment and hold such sessions as there shall be occasion.

*Common Law and Statutory Remedies not affected.*

57. Provided always, and be it declared, with regard to any business which is contrary to any existing Act of Parliament, or otherwise contrary to law, so far as relates to the operation of this Act in that behalf, that, notwithstanding anything in this Act contained, this Act shall not be deemed to authorize any person to carry on any such business either within such limits or otherwise, or any business which it is unlawful to carry on, within any limits or in any manner contrary to any public, local or private Act of Parliament, or otherwise contrary to law; nor to affect, abridge or restrain the right, the duty or the power of any person, whether private person or public officer, to prosecute, either civilly or criminally, any person who shall carry on, within the limits of this Act, any offensive, noxious or dangerous business.

*Regulation or Removal of Trades deemed Nuisances by Purchase—Memorial to Queen in Council—Order for Removal—Compensation—4 Vict. c. —Unlawful to continue such Trades after Purchase.*

58. And further, for the regulation or removal of any offensive, noxious or dangerous business now carried on; be it enacted, with regard to any such business, so far as relates to the purchase thereof or of the premises wherein it shall be carried on, that if two-thirds in number of the inhabitant householders of any parish or place in which such business shall be carried on, present a memorial to her Majesty in Council, praying the removal of such business from that place or neighbourhood, and thereby engaging to provide compensation to the persons carrying on the same, either at the expense of the memorialists, or by means of a rate to be levied on the inhabitants of the county or other proper person in the place, part thereof as may be affected by such business, then it shall be lawful for her Majesty to refer the matter to the Lords of the Committee of Privy Council for Trade, to consider the character of such business, whether it be offensive, noxious or dangerous; and if it appear to be so, and that there are no means of rendering it otherwise by the adoption of methods available, without unreasonable sacrifice on the part of the person by whom it is carried on, then it shall be lawful for her Majesty, by Order in Council, to direct that the removal of such business may be purchased by the person by whom it is carried on, at the expense of the memorialists or by means of a rate, as to her Majesty shall seem fit; and also to direct the person by whom it is carried on, to pay to the person in the place, part thereof in which such business is carried on, such compensation as may be determined by the Lords of the Committee of Privy Council for Trade, according to the provisions of an Act made and passed in the fourth year of the reign of her present Majesty, intituled, "An Act to enable her Majesty's Commissioners of Woods to make a new Street from Coventry-street to Long-acre, and for other Improvements in the Metropolis," to determine what compensation shall be paid to the party carrying on such business for the removal thereof, and to the owner and occupiers of the premises for the restriction of the use of his buildings for such purpose; and that if, within three months after the verdict of such jury shall be given, and judgment thereon, the inhabitants of such place or

We think no person, who has recently or within twenty years set up any such noxious or dangerous establishment, should virtually be allowed to injure neighbouring property and estates, by depriving their owners of their undoubted and, as we imagine, indefensible right to build and dwell in peace and health on their own freeholds. We think no such dangerous nuisances ought to remain within the verge of habitable property, but should alone be suffered to exist on detached estates, the confines of which are sufficiently remote from the danger and nuisance to prevent the public and all neighbours and neighbouring property from being injured or annoyed.

These endeavours "to mitigate the injurious effects" will come too late after the explosion of the remaining premises where fire-works are made or sold, which have not already exploded and destroyed their inmates, and the neighbouring buildings and their inmates. If any "vested rights" prevent the instant removal of these horrible and culpable nuisances, they ought at once to be bought up at the public expense, and all such abominations be immediately banished to desert spots.

We think in a "Building-Act" which is to be general, and is also intended to be lasting, the provisions of the Act referred to ought to be copied verbatim, to avoid the trouble and annoyance of extraneous reference.



neighbourhood pay such compensation, then, within three months from the receipt or tender of such compensation, it shall cease to be lawful for the party carrying on such business to continue the same, and for any owner or occupier thereof either to carry on or to permit to be carried on such business in the same or any part of the same premises.

*Funds for defraying Compensation—By a Rate.*

59. And be it enacted, with regard to the funds for defraying such compensation, so far as relates to the raising thereof, that if her Majesty shall by such order direct the compensation to be paid by means of a rate, then it shall be lawful for the overseers of the parish or place to raise such sum as shall be necessary, as part of the poor's-rate on the inhabitants of such parish or place, or such part thereof affected by the business, as shall be appointed by such order in Council, to defray such compensation, in pursuance of their memorial aforesaid; and that thereupon such rate may be levied and recovered accordingly.

*SURVEYORS, THEIR DISTRICTS AND DUTIES.*

*Appointment of Districts.*

60. And now, for the purpose of dividing the district to which this Act is to apply into several smaller districts, for the convenient execution therein of this Act, and for appointing competent surveyors for superintending the same in each such district, and for regulating the duties of their office; be it enacted, with regard to such districts, so far as relates to the appointment and alteration thereof, that at any time after this Act shall come into operation, and from time to time, it shall be lawful for the Lord Mayor and Aldermen of the city of London, with reference to the city of London, and the liberties thereof, and for the justices of the peace for the county of Middlesex, the county of Surrey, the county of Kent, the city and liberties of Westminster, and the liberty of her Majesty's Tower of London, in their general quarter sessions respectively, or any adjournment thereof, with reference to their respective counties, city and liberties, and they, respectively, are hereby empowered, but subject, nevertheless, to the consent of her Majesty's Principal Secretary of State for the Home Department, to nominate and appoint, as surveyors, such and so many discreet persons, of the full age of thirty years, and properly educated and skilled in the art and practice of building, as they think fit, and to divide the district to which the purposes of this Act, and to unite, enlarge and alter such districts for the more convenient distribution of the business.

*Appointment of Surveyors.*

61. And be it enacted, with regard to the surveyors to be assigned to such districts for the purposes of this Act, so far as relates to their appointment, that at any time after this Act shall come into operation, and from time to time, it shall be lawful for the said Lord Mayor and aldermen of the city of London, with reference to the city of London and the liberties thereof, and for the said justices of the peace in their general quarter sessions respectively, or any adjournment thereof, with reference to their respective counties, and they are hereby required, but subject, nevertheless, to the consent of her Majesty's Principal Secretary of State for the Home Department, to nominate and appoint, as surveyors, such and so many discreet persons, of the full age of thirty years, and properly educated and skilled in the art and practice of building, as they think fit.

*Tenure of Office.*

62. And be it enacted, with regard to such surveyors, so far as relates to the tenure of their office, that it shall be lawful for every such surveyor and he is hereby entitled to hold such his office of surveyor during the pleasure only of the said Lord Mayor and aldermen and of the said justices respectively.

*Functions generally.*

63. And be it enacted, with regard to such surveyors, so far as relates to their functions generally, that it shall be the duty of every such surveyor, and he is hereby required, to see that all the rules and directions of this Act are well and truly observed in and throughout his district; and for that purpose to proceed from time to time in due course, upon the receipt of any notice, or if from ignorance or neglect, or from any other circumstance, notice of any work intended to be done have not been given, then, upon such work being observed by or being made known to him, to inspect the works intended to be done, or which shall have been commenced; and to cause all the rules and directions of this Act in respect thereof to be strictly observed; and also to attend and perform every thing required of him by this Act, whether with or without notice; and also to inspect ruinous buildings and projections in danger at all times when needful, and to take all necessary measures thereupon; and also to survey all buildings built, rebuilt, enlarged, or altered by or under the superintendence of a district surveyor within any other district to which he shall be appointed by the official referees for that purpose; and also to cause a book for registering all notices, informations, and complaints, to be at all times kept at his office, and to enter in such book every notice, information, or complaint which shall be delivered or made to him, and any proceeding thereon by him taken.

*Qualifications and Disqualifications.*

64. And be it enacted, with regard to such surveyors, so far as relates to their qualifications and to their disqualifications, that at the time of his appointment, every such person appointed to be a surveyor must be of the full age of thirty years; and that during the time that any such person shall act as a justice of the peace for the county in which his district shall be situated, it shall not be lawful for him, and he is hereby disqualified to hold the office of a surveyor or of deputy or an assistant surveyor for any district under this Act.

*Continuance of present Surveyors, 14 Geo. 3, c. 78. (1774.)*

65. And be it enacted, with regard to the surveyors who, at the time of this Act coming into operation, shall have been appointed under the Act of the fourteenth year of the reign of King George the Third, mentioned in the schedule (A.), hereto annexed, so far as relates to their continuance in office, and the application of this Act to them, that it shall be lawful for them, and they are hereby entitled, to continue to be the surveyors for the purposes of this Act, and for the districts assigned to them at the time this Act shall come into operation, until they shall be removed; and to act in all respects as if they had been appointed under this Act; and that every provision in this Act applicable to district surveyors, so far as relates to the exercise of the office of surveyor, and to their remuneration in that behalf, shall apply to them.

*Declaration of Official Fidelity.*

66. And be it enacted, with regard to every surveyor hereafter appointed, so far as relates to making a declaration of official fidelity, that, before any such surveyor shall act in pursuance of this Act, it shall be his duty, and he is hereby required to make a declaration of official fidelity, which must be administered by the said Lord Mayor and aldermen in their court of aldermen, or by the said justices of the peace in their respective general quarter sessions, and must be in the form or to the effect following; that is to say,—“I, A. B., being one of the surveyors appointed in pursuance of an Act made and passed in the year of the reign of her present Majesty, intitled, ‘An Act for regulating the Construction and the Use of Buildings in the Metropolis and its Neighbourhood, and commonly called the Metropolitan Buildings Act,’ do solemnly declare, that I will diligently, faithfully and impartially perform the duties of my office, and to the utmost of my power, skill, and ability, endeavour to cause the several provisions of the said Act to be strictly observed, and that without favour or affection, prejudice or malice to any person whomsoever.”

*Regulation of Duties—Offices—Attendance—Return of Name and Residence.*

67. And be it enacted, with regard to the surveyors, so far as relates to the regulation of their official duties, that it shall be the duty of every surveyor for the city of London and the liberties thereof, and he is hereby required, to have an office, at his own expense, in such public situation as shall be approved by the Lord Mayor and aldermen; and that it shall be the duty of every other surveyor, and he is hereby required to have an office, at his own expense, in some central part of the district to which he shall be appointed, as shall be approved by the justices of the peace in quarter sessions, within whose jurisdiction he shall act; and that it shall be the duty of every such surveyor, or some other person in his behalf, and he is hereby required to attend at his office every day (Sundays, Christmas-day and Good Friday excepted) from ten of the clock in the morning till four of the clock in the afternoon; and that immediately upon his appointment, and from time to time, upon every change of his residence, or of his place of business, or oftener if required, it shall be the duty of every surveyor, and he is hereby required, to make a return to the registrar of metropolitan buildings, and to the overseers of the poor of every parish or place within his district, of his name and place of abode and the place where such office shall be.

*Surveyor pro tempore—Duty of Deputy—Fees.*

68. And be it enacted, with regard to such surveyor, so far as relates to the appointment of a deputy or substitute in certain cases, that if any surveyor shall be prevented by illness, or any other unavoidable circumstances, from attending to the duties of his office, then forthwith it shall be his duty and he is hereby required, but subject to the previous consent and approval of the official referees, to appoint some other surveyor as his deputy to perform all such his duties for so long a time as he shall be so prevented from executing them; and that thereupon, during such time as aforesaid, it shall be the duty of such deputy surveyor, and he is hereby required to perform all the duties of such surveyor, and that in all respects as if he were the surveyor appointed or confirmed under this Act; and that it shall be lawful for such deputy surveyor, and he is hereby entitled to receive the fees payable in respect of the services so performed by him in such district.

*Vacancies—Occasional Services—Fees therefor.*

69. And be it enacted, with regard to such surveyors, so far as relates to the filling up of vacancies, that if any vacancy shall happen through the death of any surveyor, then, within one month thereafter, it shall be the duty of the Lord Mayor and aldermen or the justices of the peace, and they are hereby respectively

The words should run, “disqualified from holding.”

If the proposed Act be intended to go down to posterity, for the words “Her present Majesty” should be substituted “Her Majesty Queen Victoria.”

The words might run, “It shall be the duty of every such surveyor, and such surveyor or some other person on his behalf shall attend at his office every day,” &c.





required, to appoint a successor as herein directed; and that, in the meantime, it shall be lawful for the official referees to direct the surveyor of any one or more of the other districts to perform the duties of surveyor for the vacant district; or if no district surveyor can be spared from his own district, to appoint some other competent person for that purpose: and that every such surveyor is hereby entitled to receive the fees payable in respect of the services so performed by him in such vacant district.

*Regulation of Business—Assistant Surveyors—Duties of Assistants—Fees.*

70. And be it enacted, with regard to the surveyors, so far as relates to the regulation of their business, that if it shall appear to the official referees that the district appointed for any surveyor is too extensive for the prompt discharge of his functions, then it shall be their duty to represent such their opinion to the Lord Mayor and aldermen of the city of London, or to the justices of the peace with whom the appointment of a surveyor for that district may rest; and for that purpose to transmit with their letter of representation a transcript of their "Register of Notices," with the results; and that if at any time it appear to such official referees, that on account of the pressure of business in any district, or on any other account, the surveyor of that district cannot discharge his duties promptly, as regards the builders and others engaged in building operations, and efficiently as regards the purposes of this Act, then it shall be lawful for such official referees, and they are hereby empowered, to appoint any other district surveyor to assist the surveyor of such district in the performance of his duties; or if no district surveyor can be spared from his own district, then to appoint some other competent person to give such assistance; and that with regard to all buildings surveyed by such assistant surveyor, and all other acts done by him, it shall be the duty of such assistant surveyor to make returns, and to act in all respects as if he had been appointed by the said Lord Mayor and aldermen, or by the said justices, to be the surveyor of such district; and that every such person shall be entitled to receive the fees payable in respect of the services so performed by him.

*Superintendence of Surveyors.*

71. And be it enacted, with regard to such surveyors, so far as relates to the supervision of buildings, built, rebuilt, enlarged or altered by or under his professional superintendence, that it shall not be lawful for any such surveyor to survey any such building for the purposes of this Act; but that such building must be surveyed by another district surveyor, or by another surveyor to be appointed by the official referees for that purpose.

*Surveyor's Fees—Refusal of Payment—Fees to be paid only for Work done agreeably to Act—Refunding Fees.*

72. And be it enacted, with regard to such surveyors, so far as relates to their remuneration, that upon the expiration of one month after the roof of any building erected and surveyed under this Act, shall have been covered in, and all the walls thereof have been built to their full heights, and the principal timbers and floors shall have been fixed in their places, and upon the expiration of fourteen days after the completion of any addition, alteration and repair, and upon the expiration of fourteen days after each special service shall have been performed, and upon delivering to the owner of the building an account of the fees incurred, and upon tendering a receipt, signed with his christian and surname, and stating the amount of such account and the work done, it shall be lawful for the surveyor, and he is hereby entitled to receive for his time and trouble and expenses in causing the rules, regulations, and directions of this Act to be observed, the several fees specified in the Schedule of Fees (L.), hereunto annexed; and that if, on tender of such receipt, any owner or occupier who shall become liable to pay any such fee shall refuse to pay the same, then, upon application to any justice of the peace, it shall be lawful for such justice, and he is hereby required to issue his warrant to levy the amount of such fee by distress and sale of the goods and chattels of the party so refusing, in like manner as poor's rates are by law recoverable; provided always, that if the work in respect of which such fee shall become payable have not been done in every respect agreeably to the directions of this Act, then it shall not be lawful for any surveyor to receive such fee; and that if he shall so receive it, then, upon application to the official referees by any party interested in the building in respect of which such work shall have been executed, and upon its appearing that such fee has been received wrongfully, it shall be the duty of such official referees, and they are hereby required to order the said surveyor to refund such fees.

*Surveyor's Returns—Inspection of Returns—Authentication and Effect of Returns.*

73. And be it enacted, with regard to such surveyors, so far as relates to a return of the business done by them, and to the inspection thereof, that, within seven days after the first day of every month, it shall be the duty of every surveyor, and he is hereby required to make a return to the registrar of metropolitan buildings, enumerating therein the number and nature of all the several works executed within the previous month under his supervision, and the fees paid to him for the same, and also a copy of the list or register of notices served upon him, with the results thereof, and to keep in his office a copy of such return; and that if any person shall apply to inspect the same, then on the payment of one shilling, it shall be open for inspection, at all reasonable times; and with regard to such return, so far as relates to the authentication and effect thereof, that every such return must be signed by such surveyor, and if so signed, it shall be deemed to be a certificate that all the works enumerated therein have been done in all respects agreeably to this Act, according to the best of his knowledge and belief, and that they have been duly surveyed by him; but no such return shall be any protection from, or hindrance to, any future proceedings in respect of works not executed according to the provisions of this Act, though the same may have been done before the making of such return.

*Penalty for Extortion, Negligence, or Unfaithfulness—Incapacitation of Surveyors.*

74. And be it enacted, with regard to every surveyor, so far as relates to the discharge of his duties, that if any surveyor receive any higher fee than he shall be entitled to under this Act, or if in his capacity of surveyor he receive a fee for any act or omission in respect of which he is not entitled to receive any remuneration, or if he refuse to refund any fee wrongfully received by him, in respect whereof the official referees shall have made an order to that effect, or if at any time he wilfully neglect his duty, or behave himself negligently or unfaithfully in the discharge thereof, and if, upon complaint thereof, such conduct be made to appear to the Lord Mayor and aldermen of the city of London, or the court of quarter sessions having jurisdiction over the district for which he shall act for the time being, then it shall be lawful for the said Lord Mayor and aldermen, or the said court of quarter sessions, as the case may be, and they are hereby respectively required, either to fine every such surveyor in such sum of money not exceeding fifty pounds as they shall think fit, or to discharge him forthwith from his said office; and that if for any such cause such surveyor be discharged, he shall be incapable of being again appointed a surveyor for the purposes of this Act.

*OFFICIAL REFEREES.*

*Appointment of Two Official Referees—Tenure of Office.*

75. And now, for the purpose of providing for the appointment of competent official referees to superintend the execution of this Act throughout all the districts to which it is applicable, and also to determine sundry matters in question incident thereto, as well as to exercise, in certain cases, a discretion in the relaxation of the fixed rules and directions of this Act, where the strict observance thereof is impracticable, or would defeat the object of this Act, or would needlessly affect, with injury, the course and operation of this branch of business; be it enacted, with regard to the official referees, so far as relates to their appointment, to their qualifications and to the tenure of their office, that it shall be lawful for her Majesty's Principal Secretary of State acting for the Home Department, and he is hereby empowered to appoint two persons, being architects, to be official referees of metropolitan buildings, and from time to time, as he shall think proper, to remove such official referees, and in their place to appoint other persons so qualified.

*Their Functions generally.*

76. And be it enacted, with regard to such official referees, so far as relates to their functions generally, that it shall be the duty of such official referees, and they are hereby required to superintend the execution of this Act, by the several district surveyors already existing, or hereby authorized to be appointed, and to perform the several matters to them respectively assigned by the provisions of this Act, and to determine all questions referred to them, whether expressly by this Act, or at the instance of any one or more of the parties concerned.

*Matters of Reference—One Referee may act.*

77. And be it enacted, with regard to the official referees, so far as relates to their jurisdiction, that if any doubt, difference or dissatisfaction, in respect of any matter within the limits of this Act, arise between any parties concerned, or between any party and any surveyor, or between any two surveyors, as to any act done or to be done in pursuance of this Act; or as to the effect of the provisions thereof in any case; or as to the mode in which the provisions and directions of this Act are or ought to be carried into effect; and to the manner as to whether the requirements implied in terms of qualification, applied to sites, to soils, to materials or to workmanship or otherwise, and denoting good, sound, fit, proper or sufficient, are fulfilled in certain cases; or as to the district in which any building, matter or thing is to be deemed to be situate, especially in cases where such building, matter or thing is partly in one district and partly in another; or as to the expenses to be borne by the respective owners of premises parted by the same party-walls, or the proportions thereof; or as to the proportions of the expense to be borne by the occupier, or by the owners of premises, in respect of any work executed, or any other matter whatever; then it shall be lawful for any party concerned, and he is hereby entitled, to require the official referees to determine such matter, but so that such requisition be made in writing, and that it set forth, either generally or otherwise, the matters

We think this needs some restriction, or persons may be found to evade the statute in some trifling, for the purpose of avoiding payment of the fees.

The words should run, "deemed to be a certificate of all the works enumerated therein done in all respects agreeably to this Act, and of such works as have been done contrary thereto, and of the proceedings which have been taken therein."

We do not think two Official Referees sufficient to perform the business.



in respect of which the determination of the official referees is required; and that the determination of such referees, or of one of such referees, with the assent of the registrar of metropolitan buildings, as to all or any of the points in difference on which such referees shall make their award, and as to the costs, charges and expenses of such reference, shall be binding on all parties to such reference.

*Award and Powers of Referees—Legal Effect of Awards—Effect as to Persons.*

78. And be it enacted, with regard to the official referees, so far as relates to their authority in respect of any reference to them, and to the effect of their award upon the rights and interests of the owners and occupiers of property, that it shall be lawful for such referees and they are hereby empowered to exercise all such powers as arbitrators as they would have had in case they had been appointed under an order of her Majesty's Court of Queen's Bench at Westminster; and that if such award be given in writing, and be sealed by the official seal of the registrar of metropolitan buildings, it shall be as effectual as if made under an order of reference by such court, and shall be enforced by the said court in all respects as if made under an order of such court; and that it shall be binding and conclusive against every person, body politic and corporate, including the Queen's Majesty, her heirs and successors, claiming any estate, right, title, trust, use or interest in, to or out of the said premises or any part thereof, either in possession, reversion, remainder, or expectancy, and against every other person whomsoever.

*Effect of Awards as Evidence.*

79. And be it enacted, with regard to such award, so far as relates to the effect thereof as evidence of the matter thereof, that if on the trial or hearing of any cause or matter in any court of law or equity or elsewhere, any copy of an award, signed and sealed with the seal of the said registrar, be produced, then it shall be the duty of all judges, justices, and others, and they are hereby required to receive the same as *prima facie* evidence of the matters therein contained.

*Declaration of Official Fidelity.*

80. And be it enacted, with regard to the official referees, so far as relates to the declaration of official fidelity, that before any official referee shall act in pursuance of his appointment, it shall be his duty and he is hereby required to take the following declaration, to be administered by the Chief Baron or any other of the barons of her Majesty's Court of Exchequer; that is to say:—"I, A. B., do solemnly declare, that I will diligently, faithfully, and impartially execute the duties of an official referee in relation to matters arising under the provisions of the Act made and passed in the year of the reign of her present Majesty, intituled 'An Act for regulating the Construction and the Use of Buildings in the Metropolis and its Neighbourhood, and commonly called 'The Metropolitan Buildings Act.'"

*Regulation of Business of the Official Referees—Official Referees may delegate Powers and revoke them.*

81. And be it enacted, with regard to such official referees, so far as relates to the regulation of the business of their office, that when any matter is by this Act required, directed or permitted to be done by the official referees, the same may be done by any one of them, with the assent of the registrar of metropolitan buildings, unless express provision to the contrary be made, and if done by any one of them with such assent, it shall be as valid and effectual as if done by all of them; and that, subject to such restrictions and regulations as may be made in that behalf by the Commissioners of Works and Buildings, it shall be lawful for the official referees to appoint any one of their number, under their hands and the seal of the registrar of metropolitan buildings, to make any inquiry or any survey which shall appear to them either necessary or expedient in order to enable them to determine any matters in reference.

*REGISTRAR OF METROPOLITAN BUILDINGS.*

*Appointment of Registrar—Tenure of Office—Rules of Office—Seal of Office—Use of Seal of Office—Report of Objections by Registrar—Authority of Commissioners of Woods—Interim Registrar.*

82. And, for the purpose of duly recording relaxations of the requisitions of this Act, made in pursuance of the provisions hereof in that behalf, and of providing for the revision from time to time both of such relaxations and requisitions, and of providing against the partial exercise of the powers of this Act, and for the more effectually providing for the due recording of the acts of the official referees, and for exercising a due control thereon; be it enacted that it shall be lawful for the Commissioners of Works and Buildings, and they are hereby authorized and required to appoint a registrar of metropolitan buildings; and that such registrar shall hold his office during the pleasure of the said commissioners; and that, subject to the provisions of this Act, it shall be lawful for the said Commissioners to make rules for regulating the execution of the duties of the office of the said registrar; and that it shall be the duty of such registrar to keep a seal, and to affix such seal to all documents made by the said official referees, and required to be sealed; and to keep all the documents and records relating to the business of their office, and to register the same; provided always, with regard to such registrar, so far as relates to the affixing the seal of office to any document, that if it shall appear to the said registrar that any such documents are contrary to law, or not complete in any of the requisite forms, or beyond the competence of the said official referees, either with regard to the provisions of this Act or any rules or regulations prescribed for their guidance, by the said Commissioners of Works and Buildings, then it shall be the duty of the said registrar to refuse to affix the seal; and that thereafter, if the said official referees shall so require, it shall be his duty, and he is hereby required to report the matter and the particular grounds and reasons for his refusal to the said commissioners; and that upon the receipt of such report it shall be lawful for the said Commissioners to authorize the said registrar to affix the seal or to confirm his refusal; provided always, with regard to such office of registrar, so far as relates to the execution of his duties in certain events, that if such registrar be ill or otherwise unable to discharge the duties of his said office, or if he be absent, then it shall be lawful for the said commissioners of works and buildings to appoint some other person to act in his behalf, and to assign to such person such part of the remuneration of the said registrar, or otherwise to remunerate him as the Lords of the Treasury shall appoint in that behalf.

*Declaration of Official Fidelity.*

83. And be it enacted, with regard to the registrar, so far as relates to the declaration of official fidelity, that before any registrar shall act in pursuance of his appointment, it shall be his duty and he is hereby required to take the following declaration, to be administered by the chief baron, or any other of the barons of her Majesty's Court of Exchequer; that is to say:—"I, A. B., do solemnly declare, that I will diligently, faithfully, and impartially execute the duties of registrar in relation to matters arising under the provisions of an Act made and passed in the year of the reign of her present Majesty, intituled, 'An Act for regulating the construction and the use of buildings in the metropolis and its neighbourhood,' and commonly called 'The Metropolitan Buildings Act.'"

*Custody and Inspection of Records of Official Referees—Copies of Awards—Authentication of Copy, and Fees therefor.*

84. And be it enacted, with regard to such awards, certificate and other records of the said official referees, so far as relates to the custody and the inspection thereof, that all such awards, certificate, and other documents relating to the business of their office shall be kept in the office of the registrar of metropolitan buildings; and that if, for the purpose of evidence or otherwise, any party require a copy of such award, then, on payment of the expense thereof, and of such fees as may be appointed in that behalf, it shall be lawful for such party, and he is hereby entitled to demand from the registrar an inspection thereof, or a copy thereof or extract therefrom; and that, on such payment and demand, it shall be the duty of such registrar, and he is hereby required to give, under his hand and seal of office, a copy of any such award, or any other document, to the person so demanding the same.

*Office of Registrar, and Regulation of Business.*

85. And be it enacted, with regard to the registrar of metropolitan buildings, so far as relates to his office or place of business, and to the regulation of the business thereof, that it shall be lawful for the commissioners of works and buildings, and they are hereby required to appoint, in some central and convenient situation within the city of London or the city of Westminster, an office for carrying on the business of the registrar of metropolitan buildings, and registering all documents relating to such business; and in such office to keep a register of all matters referred to the official referees, and otherwise of all matters which shall come under their cognizance in pursuance of this Act; and also to keep and preserve all documents connected with the duties of official referees; and also to receive all notices requiring any act to be done by them, and to file and number them in the order in which they are received.

*Registration of Awards, &c.*

86. And be it enacted, with regard to all the awards and certificates, and all documents relating to the business of the official referees, so far as relates to the registration thereof, that the same shall be registered not only chronologically in the order in which they are received, but according to the subject-matters thereof, and also according to the order of and in relation to the provisions of this Act.

*Remuneration of Official Referees and Registrar—Quarterly Payments.*

87. And be it enacted, with regard to such official referees and registrar, so far as relates to their remuneration, that it shall be lawful for her Majesty to grant to each of such official referees and the said registrar a salary not exceeding one thousand pounds by the year, in four equal quarterly payments; and that if any such official referee or such registrar shall be appointed, or shall die, resign, or be removed from office, in the interval between two quarterly days of payment, then he shall be entitled to a proportionate part of the salary for the period of such interval during which he shall hold such appointment.

We apprehend the words should run, "MAKE the following declaration." See also ante, "her Majesty Queen Victoria." The same observations apply to § 83.

This and the following provision are most excellent.

We think as the "Registrar" is to be a kind of judge, and would to some knowledge of building require to have added the legal knowledge of a barrister, that for proper remuneration, and for insuring the employment of a respectable and impartial person, his salary should be 1,500*l.* per annum.



## OFFICIAL REFEREES—REGISTRAR.

*Funds for defraying Expenses of the Official Referees and Registrar—Nature of Levy.*

88. And forasmuch as the services of such official referees and of such registrar will be employed chiefly on behalf of the localities comprised within the limits of this Act, it is expedient to provide for the payment of a portion of their salaries by means of a county rate, or by a rate in the nature of a county rate on such localities, in proportion to the assessed value of inhabited houses and buildings therein, or as near thereto as may be; now, for that purpose, be it enacted, with regard to such official referees and registrar, so far as relates to the payment of a portion of their salaries out of local funds, that it shall be lawful for the Lord Mayor and aldermen of the city of London, and they are hereby required, to direct the chamberlain of the said city, and for the justices of the peace for the several counties of Middlesex, Surrey, and Kent, and they are hereby respectively required to direct the treasurer of such respective counties to pay half-yearly to or into the hands of the cashier of the commissioners of works and buildings, on account of the said official referees and of the said registrar, the several sums of money hereafter mentioned, as and by way of contribution to such salaries; that is to say,—the city of London, and the liberties and the suburbs thereof, the sum of 100*l*.; the county of Middlesex, 1,000*l*.; the county of Surrey, 320*l*.; the county of Kent, 80*l*.; and to cause the same to be levied by a rate upon the several parishes and places within the limits of this Act, in such amounts as to such justices may seem proper, having regard to the assessed value of the inhabited houses and the buildings in such places respectively, in addition to the county rate in respect thereof; and that for the purpose of levying such sums, they shall be deemed to be part of the county rate, and leviable by all the ways and means by which a county rate is leviable, and subject in all respects to the legal incidents of a county rate.

*Payments of Official Referees and Registrar out of the Consolidated Fund.*

89. And be it enacted further, with regard to the official referees and registrar, so far as relates to the payment of the balance of their salaries, that such balance shall be payable and paid out of the Consolidated Fund of the United Kingdom.

## LEGAL PROCEEDINGS.

*Fees of Office, and Application thereof—Balance to Consolidated Fund—Regulations as to Receipt, Custody, and Accounts.*

90. And be it enacted, with regard to the fees payable to the registrar, so far as relates to the appointment thereof, and to the application thereof, that from time to time it shall be lawful for the Commissioners of the Treasury to appoint such fees to be paid in respect of the services to be performed by the said official referees or by the said registrar, as shall be deemed requisite to defray the expenses of the said office or incident to such services, and the salaries or other remuneration of any persons employed under the registrar in the execution of this Act, with the sanction of the Commissioners of the Treasury, and which are not otherwise provided for by this Act; and that the balance, if any, shall be carried to the Consolidated Fund of the United Kingdom, and be paid accordingly into the receipt of her Majesty's Exchequer at Westminster; and that it shall be lawful for the Commissioners of the Treasury to regulate the manner in which such fees are to be received, and in which they are to be kept, and in which they are to be accounted for.

*Informalities in Distress—Action for Damages.*

91. And now, for the purpose of regulating sundry legal proceedings, be it enacted, with regard to any distress for any sum of money to be recovered by virtue of this Act, so far as relates to the remedying of any damage occasioned by any irregularity therein or in reference thereto, that notwithstanding there be any defect of form in the proceedings relative to any such distress, neither the distress itself shall be deemed unlawful, nor shall the party making the same be deemed a trespasser ab initio; but that if any irregularity be committed by any party, then, subject to the conditions in this Act prescribed with regard to actions brought for any thing done in pursuance thereof, it shall be lawful for the person aggrieved by such irregularity and he is hereby entitled to recover full satisfaction for the special damage only; and that by action on the case, and not by any other action whatsoever.

*Tender of Amends—Payment of Compensation into Court.*

92. And be it enacted, with regard to any action for any irregularity or other proceeding, so far as relates to the tender of amends or payment of money into court in respect thereof, that if, before such action be brought, the party who committed or caused to be committed any such irregularity or wrongful proceeding, make or cause to be made tender of sufficient amends, then the plaintiff shall not be entitled to recover in such action; and that although such tender shall not have been made, yet if at any time before issue joined the court in which such action shall be depending, or a judge of any of the superior courts grant leave, then it shall be lawful for the defendant to pay into court any sum of money, by way of compensation or amends, in such manner and under such regulations, as to the payment of costs and the form of pleading, as is and are customary and in force in the said superior courts.

*Recovery of Money under Awards—Distress—Imprisonment.*

93. And be it enacted, with regard to every sum of money by this Act, or by any award or certificate or other proceeding in pursuance of this Act, charged upon any person in respect of any work done in pursuance or in accordance with this Act, so far as relates to the recovery of such sum of money, that it shall be lawful for the party claiming the same to proceed in a summary way before any two justices of the peace, or if the matter arise within the district of the metropolitan police, then before any police magistrate having jurisdiction within that district; and that, on proof of such sum of money being still due, it shall be lawful for such justices or such police magistrate, and they respectively are hereby required to issue a warrant to levy the amount thereof, and also the costs of the proceeding to be levied by distress of the goods and chattels of the person in default; and if such person have no goods and chattels whereon to distrain, or if such goods and chattels be insufficient for that purpose, then it shall be lawful for such justices or police magistrate, or for any other justice or police magistrate, to commit the person in default until the amount of such sum so due, and of such costs, shall have been fully paid.

*Prosecution of Offences—Complaint—Summons—Distress—Imprisonment.*

94. And be it enacted, with regard to all offences against the provisions of this Act for which no other proceeding is provided, so far as relates to the prosecution thereof, that it shall be lawful to proceed by complaint before any one justice of the peace; and that it shall be lawful for such justice to summon the party against whom such complaint shall be made; and that on conviction of the offender before two justices, or before any police magistrate, it shall be the duty of such justices or magistrate, and they are hereby required, to cause the amount of the penalty hereby imposed in respect of such offence, and of the costs of any such proceeding in respect of such offence, to be levied by distress of the goods and chattels of the offender; or if he have no goods and chattels whereon to distrain, or if they be insufficient for that purpose, then it shall be lawful for such justices or magistrate, or for any other justice or magistrate, and they are hereby empowered, either on failure of such distress or in the first instance, to commit the offender till he shall have paid the full amount of such penalty and such costs.

*Removal of Orders, &c. into Superior Courts—Certiorari.*

95. And be it enacted, with regard to every order which shall be made by virtue of or under this Act, and to any other proceeding to be had touching the conviction of any offender against this Act (except proceedings touching the conviction of any offender for carrying on a trade or business offensive, noxious or dangerous contrary to this Act, otherwise than those hereinbefore specified), that it shall not be lawful for any person to remove such order or other proceeding by certiorari, or any other writ or process whatsoever, into any of her Majesty's courts of record at Westminster; and every such order and other proceeding is hereby declared not to be so removable.

*Limitation of Actions for Penalties.*

96. And be it enacted, with regard to every penalty or forfeiture incurred under this Act, so far as relates to the limitation of proceedings for the recovery thereof, that if, within six calendar months next after such penalty or forfeiture shall have been incurred, an action or prosecution be not brought or commenced against the person liable in respect thereof, then thereafter it shall not be lawful for any person to bring such action or commence such proceeding in respect of such penalty or forfeiture.

*Recovery of Penalties—Appropriation.*

97. And be it enacted, with regard to every such penalty or forfeiture, so far as relates to the recovery and the appropriation thereof, that it shall be lawful for any party to sue or proceed for the same; and that if such penalty be not otherwise specifically appropriated, then the person so suing or proceeding shall be entitled to receive the amount thereof for his own benefit.

*Regulation of Actions against Persons acting under this Act—Limitation of Action—Notice of**Action—Venue in London—Venue in Middlesex—Plea and Evidence—Verdict—Costs.*

98. And, for regulating proceedings against persons acting in pursuance of this Act; be it enacted, with regard to any action or suit against any person in respect of any act or thing done or intended to be done in pursuance of this Act, so far as relates to the limitation thereof, and to the notification thereof to the offending party, and to the venue thereof, and to the pleadings therein, and to the evidence of the matters thereof, and to the verdict therein, and to the judgment of the court thereon, and to the costs of such action, and to the recovery of such costs, that, after the expiration of six months next after the fact committed, it shall not be lawful to bring any such action or suit against any person in respect of any such act; and that if twenty-one days at the least before the commencement of the action or suit, notice in writing of an intention to bring such action or suit be not given to every person against whom

We do not think the partition of expenses as here contemplated would be equitable.

The words should run, "in pursuance of or in accordance with this Act."

## SCHEDULES TO WHICH THE FOREGOING ACT REFERS.

SCHEDULE (A).—This schedule contains merely a description of the Acts and parts of Acts repealed by this Act.

SCHEDULE (B).—(See § 5 & 7.)—Containing List of Buildings of whatever Class, exempted from Ordinary Supervision, and placed under Special Supervision.

All bridges or structures wholly underground, and embankment walls, and retaining walls, and wharf or quay walls: and her Majesty's royal palaces, and any building being in the possession of her Majesty, her heirs and successors, or employed for her Majesty's use or service: and the offices and buildings of the Governor and Com-



such action or suit shall be brought, then it shall not be lawful for any person to bring any such action or suit against any person in respect of any such act; and that if the cause or matter of any such action or suit arise within the said city of London or the liberties thereof, then such action or suit must be laid in the city of London, and not elsewhere; and that if the cause of any action or suit arise in any part of the limits aforesaid, out of the said city of London and liberties thereof, then it must be laid and tried in the county of Middlesex, and not elsewhere; and that in every such action or suit it shall be lawful for the defendant, and he is hereby entitled, to plead the general issue; and at the trial to be had thereof, to give this Act and the special matter in evidence, and to prove that the matter or thing for which such action or suit is brought was done in pursuance and by the authority of this Act; and that if, upon the trial of such action, it appears that the said matter or thing has been so done in pursuance of this Act, or if it appears that such action or suit was brought before the expiration of twenty-one days after such notice given as aforesaid, or if it appears that sufficient satisfaction was made or tendered before such action was brought, or if upon plea of payment of money into court, it shall appear that the plaintiff has not sustained damages to a greater amount than the sum paid into court, or if any such action or suit be not commenced within the time herein for that purpose limited, or if it be laid in any other county or place than as aforesaid, then and in every such case it shall be the duty of the jury, and they are hereby required to find for the defendant; and that if a verdict be found for the defendant, or if the plaintiff in any such action or suit become non-suited, or discontinue or suffer a discontinuance of any such action or suit, or if judgment be given for the defendant thereon, on demurrer or by default or otherwise, then the defendant shall be entitled to have judgment to recover full costs of suit, and to such remedy for recovering the same as any defendant shall have by law.

#### Costs of Actions.

99. And further, for the prevention of vexatious litigation, be it enacted, with regard to every action in respect of any matter or thing done or intended to be done in pursuance of this Act, so far as relates to the costs of such action, that if the defendant apply to the superior court at Westminster in which such action is pending, or to any judge of any of the said courts, then it shall be lawful for such court or any such judge to require the plaintiff to give such security as such court or judge shall think fit, for the payment of all costs, charges and expenses incurred or to be incurred in and about the said action, and which shall be or become payable by him on the taxation thereof by the proper officer.

#### Prosecutions for preventing Neglect or Evasion of this Act—Notice of Action.

100. And be it enacted, with regard to any penalty or forfeiture incurred by any default in complying with the provisions of this Act, so far as relates to proceedings for the recovery thereof, that at any time within three months after such penalty or forfeiture shall have been incurred, it shall be lawful for any surveyor appointed or confirmed by virtue of this Act, and all other persons, and they are hereby entitled to commence and prosecute proceedings for the recovery thereof, or for the recovery of the expenses of pulling down or altering of any building against any owner, occupier, builder, workmen, or other person, or for any default made in complying with the provisions of this Act; provided always, that if such proceedings be taken by any person, except one of the surveyors, or except the official referees, then notice of the intention to commence such proceedings must be given at the office of the surveyor of the district, and at the office of the registrar of metropolitan buildings.

#### MISCELLANEOUS.

**Notifications—Married Female—Infant, Idiot or Lunatic—Owner unknown—Building unoccupied—Immediate Landlord—Part Ownership—Service of Notices—Damages arising from defective Service.**

101. And be it enacted, with regard to notices by this Act required, so far as relates to the service thereof upon the owner or occupier of any building or ground, that every such notice must be given as follows, that is to say—If such owner be a married female, other than a cestuque trust in regard to such property, then such notice must be given to the husband of such married female; or if such owner be an infant, idiot or lunatic, or cestuque trust, then such notice must be given to the guardian, trustee or committee of such infant, idiot or lunatic, or cestuque trust; or if such owner, husband, trustee, guardian or committee is not known or cannot be found, then such notice must be given to the occupier of such building, fence or ground to which it shall relate; or if such building or ground be unoccupied, then such notice must be affixed to some conspicuous part of such building, fence or ground, at a height of not more than nine feet from the ground; and if the person in the occupation of any building or premises, ground or tenement, in respect of which notice is to be given, allege that he is not the owner thereof, then such notice must be given to the immediate landlord of such occupier, and it shall be the duty of such occupier, and he is hereby required to inform any person by whom such notice shall be required to be given, or any other person applying on his behalf, of the name, place of residence, or place of business of such owner or landlord, or of his agent or other person by whom the rent of such building, premises, ground or tenement shall be received; and if such other person by whom the rent of such building, premises, ground or tenement shall be received, or if such owner or landlord be not in receipt of the whole of the rents or profits of such building, premises, ground or tenement; and if any notice shall be served upon such owner or landlord, then, immediately upon the receipt thereof, it shall be his duty and he is hereby required to transmit to his immediate landlord or his agent, and also to any other person having an interest in such building or premises, ground or tenement, or in receipt of the rents or profits thereof under the same immediate landlord, or to the agent of such person, a copy of such notice: provided always, with regard to every such notice, so far as relates to the service thereof upon any such owner, that if it be served upon the immediate landlord of the occupier or upon his agent, by or on behalf of the person by whom it is hereby required to be served in the first instance, then, although it may not be served by such immediate landlord upon any other landlord or owner, such service is to be deemed to be sufficient service; but nevertheless, if any owner suffer damage by the failure of any other person, being either the occupier or any person holding under such owner, to serve such notice, then such owner shall be entitled to recover the amount thereof against such person by whom such damage shall have been occasioned; and that every notice served under this clause, on any person, must contain a copy of the provisions, so far as they require him to transmit the same to his immediate landlord, or the agent of such landlord.

#### Mode of Service upon Occupier.

102. And be it enacted, with regard to notices by this Act required, so far as relates to the mode of service thereof upon the occupier of any building or ground, that if such notice be intended for the occupier of any building or ground, then it must be given either personally or by leaving the same with some inmate at the premises, or it must be affixed as aforesaid.

#### Mode of Service upon Owners, by delivery—Effect of Notice.

103. And be it enacted further, with regard to all such notices, so far as relates to the mode of service thereof upon owners by delivery, that every such notice (except such notice as may, according to the provision in this Act, be sent by post), must be given either personally or by leaving the same with some inmate at the usual place of abode of such party, or if that be not known, then at his last known place of abode; and that every such notice, when so given to such persons respectively as aforesaid, or left at the last known place of their respective abodes, or when so affixed as aforesaid, according to the cases hereinbefore mentioned, is hereby declared to have the same effects and consequences as if given to the actual owner.

#### Mode of Service upon Owners, by transmission.

104. And be it enacted further, with regard to notices, so far as relates to the mode of service thereof by transmission, that if any owner, upon whom the same is required to be served, be not within the limits of this Act, or have not, within the limits of this Act, any agent acting in his behalf in the matter of the premises to which the notice refers, then it shall be lawful to give notice by post-letter, duly registered according to the practice for the time being, adopted with regard to letters transmitted by post; but so that, nevertheless, such letter be posted in such time as will afford to the person addressed, after the receipt of such letter, the full period of notice required in the case.

#### Notices for Surveyors and Official Referees.

105. And be it enacted, with regard to notices, so far as relates to the service thereof upon the surveyors and upon the official referees, that if the notice relate to the surveyor, then such notice must be served at the office of the surveyor; and that if the notice relate to the official referees or any of them, then such notice must be left at the office of the registrar of metropolitan buildings.

#### Consents by Incapacitated Persons.

106. And be it enacted, with regard to consents by this Act required to be given by the owner or occupier of any building or ground, so far as relates to the making thereof on behalf of incapacitated persons, that if such owner or occupier be a married female, not being a cestuque trust in regard to the property to which such consent relates, then such consent must be given by the husband of such married female; or that if such owner or occupier be an infant, idiot or lunatic, or cestuque trust, then such consent must be given by the guardian, trustee or committee of such infant, idiot or lunatic, or cestuque trust; or that if such owner or occupier, husband, trustee, guardian or committee be not known or cannot be found, then such consent must be given by the official referees.

#### Exemption from Stamp Duty.

107. And be it enacted, with regard to the following documents, so far as relates to the payment of stamp-duty in respect thereof, that every certificate and every award required to be made or signed by the surveyor or the official referee, shall be and is hereby exempted from stamp-duty.

108. And be it enacted, that this Act shall be deemed to be a public Act, and shall be judicially taken notice of as such by all judges, justices and other persons whomsoever, without specially pleading the same.

109. And be it enacted, that this Act may be amended or repealed by any Act to be passed in this present session of Parliament.

pany of the Bank of England already erected, and which now form the edifice called "The Bank of England," and any offices and buildings hereafter to be erected for the use of the said governor and company, either on the site of, or in addition to, and in connection with, the said edifice; and the warehouses of or belonging to the Saint Katharine Dock Company, and situate in the parish of Saint Botolph-without-Aldgate, and in the precinct of Saint Katharine, near the Tower of London, in the county of Middlesex; and the warehouses and buildings of or belonging to the London Dock Company, comprehended within the wall of the said company, as set forth in an Act passed in the ninth year of the reign of his late Majesty King George the Fourth: and the several warehouses and buildings of or belonging to the East and West India Dock Company, established by an Act made in the first year of the reign of her present Majesty: and the buildings erected, or to be erected, by the London and Birmingham Railway Company, established and incorporated by an Act passed in the third year of the reign of his late Majesty King William the Fourth, within and in connection with the works of their railway, by virtue of the several Acts relating thereto; and the erections and buildings authorized by an Act passed in the ninth year of the reign of his late Majesty King George the Fourth, for the purposes of a market in Covent Garden; and any other buildings exempted by any Act of Parliament from the operation of the Act passed in the reign of his late Majesty King George the Third, and hereby repealed.

**SCHEDULE (C).—PART I.—(See § 5.)—Rules for determining the Classes and Rates to which Buildings are to be deemed to belong for the purposes of this Act, and the Thicknesses of the Walls of Buildings of such Rates.**

**CLASSES OF BUILDINGS.**—For the purposes of this Act, all buildings of whatever kind, subject to the provisions thereof, are to be deemed to belong to one or other of the following three classes; that is to say,—

**First Class.**—If a building be built originally as a dwelling-house, to be occupied, or intended to be occupied, as such,—then it is to be deemed to belong to the first, or dwelling-house class.

**Second Class.**—If a building be built originally as a warehouse, storehouse, granary, brewery, distillery, manufactory, or workshop, or be occupied or intended to be occupied as such, or for a similar purpose,—then it is to be deemed to belong to the second or warehouse class.

**Third Class.**—If a building be built originally as a church, chapel, or other place of public worship, college, hall, hospital, theatre, public concert-room, public ball-room, public lecture-room, public exhibition-room, or occupied or intended to be occupied as such, or for a similar purpose, or otherwise used or intended to be used, either occasionally or constantly, for the assemblage of persons in large numbers, whether for public worship, business, instruction, debate, diversion, or resort,—then it is to be deemed to belong to the third or public building class.

**Alteration of Class.**—And if any room, whether constructed within any other building or not, and whether included in the aforesaid classes or not, be used at any time for the public or general congregation of persons,—then the building containing such room is to be deemed a building of the third or public building class. Or if a building originally built, or subsequently altered, so as to bring it within any one class, be subsequently converted into or used as a building of another class,—then it is to be deemed to belong to such other class; and, as to it, all the conditions prescribed with regard to buildings of the same rate of such other class must be fulfilled, as if it had been originally built of such class; subject, nevertheless, to such modifications as shall be sanctioned by the official referees on a special supervision thereof.

**RATES OF BUILDINGS.**—And the buildings included in the said classes are to be deemed to belong to the rates of those classes, according to the conditions of height, area, and number of stories set forth in the following tables; which conditions are to be determined according to the following rules:

**Rule for ascertaining Height.**—The height of every building is to be ascertained by measuring from the surface of the first or lowest floor of the building, up to the underside of the ceiling of the topmost story, at the highest part thereof, whether such story be within the roof or not. And if there be no ceiling made, or intended to be made to the topmost story,—then by measuring from the surface of such first or lowest floor of the building up to the underside of any tie-beam, collar-beam, or other substitute for a tie-beam of the highest roof.

**Rule for ascertaining Area.**—And the area of every building is to be determined by the number of squares contained in the surface of any floor which shall contain the greatest number of squares at or above the principal entrance to such building; including in such surface the area of all the external walls and such portions of the party-walls as belong to such building, but excluding from such surface the area of any attached office, area, balcony, or open portico.

**Rule for ascertaining Stories.**—And the stories of every building are to be counted from the foundation upwards. And if the space between the top of the footings and the level of the first floor do not exceed five feet, then the story nearest the foundation is to be considered the lowest or first story; but if such space exceed five feet, then such space is to be considered to contain the lowest or first story; and in that case the top of the footing is to be considered the level of the first floor.

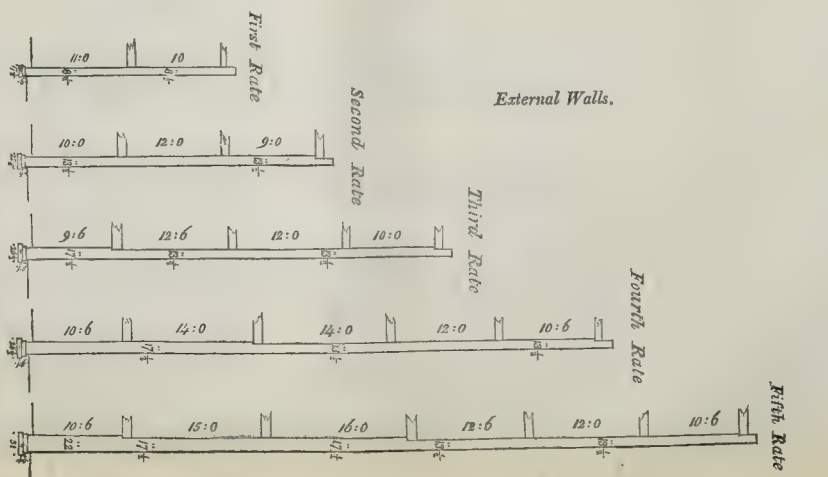
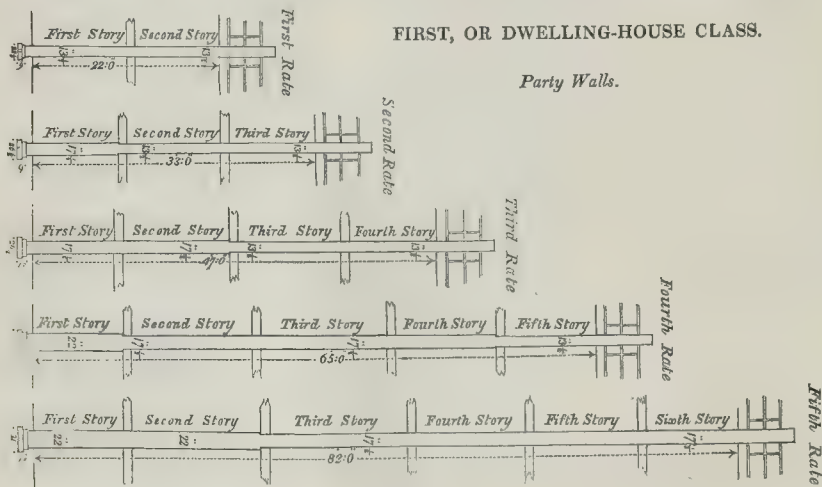
**Rule for ascertaining Thickness of Walls.**—And the thickness of every wall, and of the footing thereof, is to be ascertained by measuring only the thickness of which such walls or footings shall have been originally built,



## SCHEDULE (C).—PART II.—(See § 5.)

CONDITIONS for determining the Rates to which Buildings of the First or Dwelling-House Class are to be deemed to belong, and the Thickness of the External and of the Party Walls thereof.

In reference to Height.	In reference to Area.	In reference to Stories.	Rate of Building.	Requisite Thickness of External Walls of each Rate of the First Class.	Requisite Thickness of Party Walls of each Rate of the First Class.
1. If the building be in height not more than 22 feet,	- If the building do not cover more than 4 squares,	- If the building do not contain in height more than 2 stories,	- It is to be of the First or Lowest Rate of this Class.	- And the thickness of the external walls must be, at the least, 8½ inches from the top of the footing to the top of the wall.	- And the thickness of the party-walls must be, at the least, 13½ inches from the top of the footing to the top of the wall.
2. If more than 22, and not more than 28 feet,	- or if it cover more than 4, and less than 6 squares,	- or if it contain more than 2, and less than 3 stories,	- It is to be of the Second Rate.	- And the thickness of the external walls must be, at the least, 10½ inches from the top of the footing to the under-side of the gutter-plate; and at the least 8½ inches from the under-side of the plate to the top of the wall.	- And the thickness of the party-walls must be, at the least, 17½ inches from the top of the footing to the under-side of the second floor; and at the least 13½ inches from the under-side of the second floor to the top of the wall.
3. If more than 28, and not more than 38 feet,	- or if it cover more than 6, and less than 8 squares,	- or if it contain more than 3, and less than 4 stories,	- It is to be of the Third Rate.	- And the thickness of the external walls must be, at the least, 12½ inches from the top of the footing to the under-side of the second floor; and at the least, 13½ inches from the under-side of the second floor to the under-side of the gutter-plate, and, at the least, 8½ inches from the under-side of the gutter-plate to the top of the wall.	- And the thickness of the party-walls must be, at the least, 17½ inches from the top of the footing to the under-side of the third floor; and, at the least, 13½ inches from the under-side of the third floor to the top of the wall.
4. If more than 38, and not more than 47 feet,	- or if it cover more than 8, and less than 10 squares,	- or if it contain more than 4, and less than 5 stories,	- It is to be of the Fourth Rate.	- And the thickness of the external walls must be, at the least, 14½ inches from the top of the footing to the under-side of the third floor; and, at the least, 13½ inches from the under-side of the third floor to the under-side of the gutter-plate, and, at the least, 8½ inches from the under-side of the gutter-plate to the top of the wall.	- And the thickness of the party-walls must be, at the least, 22 inches from the top of the footing to the under-side of the second floor; and, at the least, 17½ inches from the under-side of the second floor to the under-side of the fifth floor; and at the least, 13½ inches from the under-side of the fifth floor to the top of the wall.
5. If more than 47, and not more than 65 feet,	- or if it cover more than 10, and less than 12 squares,	- or if it contain more than 5, and less than 6 stories,	- It is to be of the Fifth Rate.	- And the thickness of the external walls must be, at the least, 22 inches from the top of the footing to the under-side of the second floor; and, at the least, 17½ inches from the under-side of the second floor to the under-side of the fourth floor; and, at the least, 13½ inches from the under-side of the fourth floor to the under-side of the gutter-plate; and, at the least, 8½ inches from the under-side of the gutter-plate to the top of the wall.	- And the thickness of the party-walls must be, at the least, 22 inches from the top of the footing to the under-side of the third floor; and, at the least, 17½ inches from the under-side of the third floor to the top of the wall.
6. If more than 65 feet,	- or if it cover more than 12 squares,	- or if it contain more than 6 stories,	- It is to be of the Sixth Rate, and of the Third Class.	- And the thickness of the external walls must be, at the least, 4 inches greater than is hereby required for walls of the fifth rate.	- And the thickness of the party-walls must be, at the least, four inches greater than is hereby required for walls of the fifth rate.





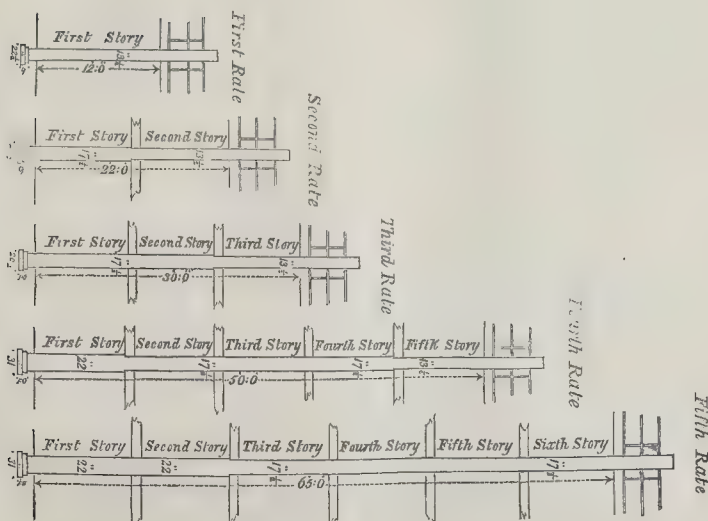
## SCHEDULE (C).—PART III.—(See § 5.)

Conditions for determining the Rates to which Buildings of the Second or Warehouse Class are to be deemed to belong, and the Thickness of the External and of the Party Walls thereof.

In reference to Height.	In reference to Area.	In reference to Stories.	Rate of Building.	Requisite Thickness of the External Walls of each Rate of the Second Class.	Requisite Thickness of the Party-Walls of each Rate of the Second Class.
1. If the building be in height not more than 12 feet,	- If the building do not cover more than 6 squares,	- If the building do not contain in height more than one story,	- It is to be of the First or Lowest Rate of this Class.	- And the thickness of the external walls must be, at the least, 8 $\frac{1}{2}$ inches from the top of the footing to the top of the wall.	- And the thickness of the party-walls must be, at the least, 13 $\frac{1}{2}$ inches from the top of the footing to the top of the wall.
2. If more than 12, and not more than 22 feet,	- or if it cover more than 6, and less than 10 squares,	- or if it contain more than one, and less than two stories,	- It is to be of the Second Rate.	- And the thickness of the external walls must be, at the least, 12 $\frac{1}{2}$ inches from the top of the footing to the under-side of the gutter-plate; and, at the least, 8 $\frac{1}{2}$ inches from the under-side of the gutter-plate to the top of the wall.	- And the thickness of the party-walls must be, at the least, 17 $\frac{1}{2}$ inches from the top of the footing to the under-side of the second floor, and 13 $\frac{1}{2}$ inches from the under-side of the second floor to the top of the wall.
3. If more than 22, and not more than 30 feet,	- or if it cover more than 10, and less than 16 squares,	- or if it contain three stories,	- It is to be of the Third Rate.	- And the thickness of the external walls must be, at the least, 17 $\frac{1}{2}$ inches from the top of the footing to the under-side of the second floor; and, at the least, 13 $\frac{1}{2}$ inches from the under-side of the second floor to the under-side of the gutter-plate; and, at the least, 8 $\frac{1}{2}$ inches from the under-side of the gutter-plate to the top of the wall.	- And the thickness of the party-walls must be, at the least, 17 $\frac{1}{2}$ inches from the top of the footing to the under-side of the third floor, and, at the least, 13 $\frac{1}{2}$ inches from the under-side of the third floor to the top of the wall.
4. If more than 30, and not more than 50 feet,	- or if it cover more than 16, and less than 26 squares,	- or if it contain five stories,	- It is to be of the Fourth Rate.	- And the thickness of the external walls must be, at the least, 17 $\frac{1}{2}$ inches from the top of the footing to the under-side of the third floor; and, at the least, 13 $\frac{1}{2}$ inches from the under-side of the third floor to the under-side of the gutter-plate; and, at the least, 8 $\frac{1}{2}$ inches from the under-side of the gutter-plate to the top of the wall.	- And the thickness of the party-walls must be, at the least, 22 inches from the top of the footing to the under-side of the second floor, and, at the least, 17 $\frac{1}{2}$ inches from the under-side of the second floor to the under-side of the fifth floor, and at the least, 13 $\frac{1}{2}$ inches from the under-side of the fifth floor to the top of the wall.
5. If more than 50, and not more than 65 feet,	- or if it cover more than 26, and less than 36 squares,	- or if it contain six stories,	- It is to be of the Fifth Rate.	- And the thickness of the external walls must be, at the least, 22 inches from the top of the footing to the under-side of the second floor; and, at the least, 17 $\frac{1}{2}$ inches from the under-side of the second floor to the under-side of the fourth floor; and, at the least, 13 $\frac{1}{2}$ inches from the under-side of the fourth floor to the under-side of the gutter-plate; and, at the least, 8 $\frac{1}{2}$ inches from the under-side of the gutter-plate to the top of the wall.	- And the thickness of the party-walls must be, at the least, 22 inches from the top of the footing to the under-side of the third floor; and, at the least, 17 $\frac{1}{2}$ inches from the under-side of the third floor to the top of the wall.
6. If more than 65 feet,	- or if it cover more than 36 squares,	- or if it contain more than six stories,	- It is to be of the Sixth Rate, and of the Third Class.	- And the thickness of the walls must be, at the least, 4 inches thicker than is hereby required for walls of the fifth rate.	- And the thickness of the party-walls must be, at the least, 4 inches thicker than is hereby required for walls of the fifth rate.

## SECOND OR WAREHOUSE CLASS.

## Party Walls.



The measurements of stories given in the accompanying illustrations are intended merely to show what heights of stories may be introduced into the height to which each rate of building is limited.







dows must be fixed in reveals at a distance from the external face of the wall of four inches at the least. And such wood and iron work as shall be required for breastsummers, girders, and story-posts (which must be only in the lowest and second stories), must be fixed at a distance from the external face of the wall of two inches at the least; and must not exceed a height of 16 feet from the public foot pavement or footway in front of the building to the underside of the breastsummer or girder. And shop-fronts must be fixed in such manner as is herein specially directed. And the tiers of door-cases to warehouse must be fixed in the openings left in such walls, at a distance from the external face of the wall of two inches at the least.

**Breastsummers.**—With regard to every breastsummer fixed to carry any front wall of a building,—if such breastsummer have a bearing at one end upon a party-wall,—then it must be laid upon a template or corbel of stone or iron, which template or corbel must be tailed through such wall at least two-thirds of the thickness thereof; and the end of such breastsummer must not be fixed into, and must not have its bearing solely on such party-wall, but must be supported by a sufficient pier built of brick or stone, or an iron column, or iron or timber story-post fixed on a solid foundation. And if any such breastsummer have its bearing at each end upon a party-wall,—then it must be supported by at least two sufficient piers built of brick or stone, or by iron columns or iron or timber story-posts fixed on solid foundations. And every such breastsummer must be of such scantlings, and fixed and supported in such manner as shall be satisfactory to the surveyor.

**Materials to be used in Repairs.**—And with regard to old external walls or other external inclosures of any building already built, in reference to materials to be used in the repair thereof: If any such wall or inclosure be not built of the materials required by this Act for external walls or other external inclosures, hereafter to be built,—then every part of such wall or other external inclosure (except the inclosure of roofs, and the flats, gutters, dormers, turrets, lantern-lights, and other erections thereon), may be at all times thereafter repaired with materials of the same sort as those of which such external wall or inclosure has been already built.

**Materials to be used in Rebuilding.**—But if any such external wall or inclosure be at any time hereafter taken down or otherwise demolished for the height of one story, or for a space equal to one-fourth of the surface thereof,—then every part thereof, not built in the manner and of the several materials by this Act directed for external walls, must be taken down; and the same must be rebuilt in such manner, and of such materials, and in all respects as by this Act directed for external walls hereafter to be built, according to the class and rate of the building to which such external wall or inclosure shall belong.

**External Wall used as a Party-wall.**—And with regard to external walls to be used as party-walls to any building adjoining thereto (except an attached building or office as is hereinbefore described): If the external wall of any building have not such footings, or be not of such heights and thicknesses, or be not built in such manner and of such materials as are herein directed for party-walls of buildings of the highest rate to which such wall shall adjoin,—then such external wall must not be used as a party-wall for any such building; but there must be a distinct external wall, built as herein described for external walls, of the rate to which it shall belong.

#### SCHEDULE (D).—PART III.—PARTY-WALLS.

**Division of Buildings.**—And with regard to walls used to divide single buildings into two or more: If it be intended to divide any building into two or more distinct parts, then every wall for that purpose must be built as a party-wall, in the manner and of the materials, and of the several heights and thicknesses for party-walls of the highest rate of building to which such party-wall shall belong or adjoin, as prescribed in reference to the thicknesses of party-walls in Schedule (D). And if any building, already built, in which such wall must not be converted, used, or occupied as two or more separate buildings, each having a separate entrance and staircase, and each being separately rated to the poor,—then every such building shall be deemed to be two or more separate houses, and must be divided from each other by a party-wall or party-arch or arches, built in the manner and of the materials required for party-walls or for party-arches for the class and rate to which the largest of the buildings so divided shall belong.

**Site of Walls.**—With regard to party-walls, in reference to the site thereof: If the buildings be of equal rate, then such party-wall must be built on the line of junction of such buildings, one-half on the ground of one owner belonging to one of such buildings, and one-half on the ground of the other owner belonging to the other of such buildings. If such buildings be of different rates, then such wall must be built on the line of junction thereof, as follows: That is to say, so much thereof as shall be required for the building of the higher rate, on the ground of the owner of such building, and so much thereof as shall be required for the building of the lower rate, on the ground of the owner of such building of the lower rate. And if such building of the lower rate be thereafter enlarged or altered, so as to become a building of a higher rate, then the owner of such first-mentioned building of the higher rate, for the time being, shall be entitled to receive from the owner of such building of the lower rate such sum of money as shall be a sufficient compensation for the ground occupied by that portion of the party-wall which, according to the rate of the building enlarged, ought to have been built by its owner on his own ground.

**Construction and Materials.**—And with regard to party-walls, in reference to the materials thereof (except the flats and the parts thereof in which it may be required to fix iron-work, and the following iron or timber, viz., the sides of story-posts, the ends of girders, and breastsummers and trimming joists, and principal timbers of roofs,

and heads and sills of partitions and wood-bricks): Every part of such party-wall must be built solid, and of good sound bricks, or good sound stone, or good sound bricks or stone, properly bonded and set in good and well-compounded mortar or cement. And as to the said timber or iron, in reference to the position thereof, the sides of story-posts, not exceeding fifteen feet in height above the pavement of the street in front thereof, the ends of girders, breastsummers, trimming joists, principal timbers of roofs, and heads and sills of partitions, the ends of such timbers and wood-bricks must be fixed at a distance of four inches at the least from the centre of such party-wall. But if the ends of timbers be carried on iron shoes or stone corbels, then such iron shoes or stone corbels may be built into the wall at least two-thirds of the thickness of such wall. And the top of every such party-wall must be finished with one course of sound stock-bricks, set on edge with good cement, or a coping of any other waterproof and fireproof covering.

**Height.**—And with regard to party-walls, in reference to the height thereof: If a party-wall adjoin to any roof,—then such party-wall must be carried up and remain one foot six inches at the least above the part where the party-wall and roof adjoin, measured at a right angle with the back of the rafters of such roof. And if any party-wall adjoin a gutter, then such party-wall must be carried up, and remain two feet at the least above the highest part of any such gutter. If there be fixed within five feet of a party-wall, upon the flat or roof of the building, any turret, dormer, lantern-light, or other erection,—then every such party-wall must be carried up next to every such turret, dormer, lantern-light, or other erection, and must extend one foot six inches higher, and one foot six inches wider than any such erection on each side thereof.

**Openings in Party-walls.**—And for the purpose of regulating the making of openings through any party-wall between one dwelling-house and another, whereby two or more dwelling-houses shall be united. With regard to any dwelling-houses which when so united will contain more than twelve squares, and the external and party-walls of which are such as are herein prescribed for buildings of the fifth rate of the first class, if such dwelling-houses shall be and continue to be in the same occupation, and if the poor-rates in respect thereof shall be paid by the same person,—then upon its being declared by the official referees that in their opinion the stability of any or either of such dwelling-houses will not be endangered by making such openings, they may be made accordingly.

**Recesses and Chases.**—And further, with regard to any party-wall, as to recesses, and to chases in such wall: In every story above the level of the floor of the third story, recesses may be formed, so that such recesses be arched over, and so that the back thereof be not nearer than seven inches to the centre of the party-wall, and so that the stability of such party-wall be not endangered thereby. If any chases be required for the insertion of ends of walls, of piers, of chimney-jambes, of wiles of flues, of metal pipes, or of iron story-posts,—then every chase for any such purpose must not be left or cut nearer than four inches at the least to the centre of a party-wall, and at the distance of nine inches at the least from any front or back wall, and at the distance of seven feet six inches at the least from each other on the same side of the wall, and must not be formed wider than nine inches. And if any hole or cavity be left or made for the insertion of templates, or of landings, or of stone steps, or of corbels, or of iron shoes, or of ends of girders, or of ends of breastsummers, or of ends of trimming joists, or of heads and sills of partitions, or of ends of principal timbers of roofs,—then such hole or cavity must not be left or cut deeper than two-thirds of the thickness of such wall; and on such insertion being made, such hole or cavity must again be made good.

#### SCHEDULE (D).—PART IV.—PARTY-WALLS AND PARTY-ARCHES BETWEEN INTERMIXED PROPERTY.

And with regard to any building already built, having rooms or floors, the property of different owners, which lie intermixed, without being separated by any party-wall or party-arch or stone floor: If either of such houses shall be altogether or in part rebuilt, to the extent of one-fourth of the cubical contents thereof,—then such intermixed properties must be separated from each other as follows:—If they adjoin vertically,—then so far as they adjoin vertically, they must be separated by a party-wall. If they adjoin horizontally,—then so far as they adjoin horizontally, they must be separated either by a floor formed of brick, tile, stone, or other proper and sufficient incombustible materials, subject to the consent of the official referees, or by a floor formed of iron girders and brick arches or stone landings, or tiles, or by a party-arch or party-arches of brick or stone, of the thickness of nine inches at the least, if the span do not exceed nine feet, and thirteen inches at the least if the span exceed nine feet; and such floor or party-arch or party-arches must be built with sufficient abutments and in a sufficient manner.

#### SCHEDULE (D).—PART V.—BUILDINGS OVER PUBLIC WAYS.

And with regard to buildings extending over any public way, as to the part thereof which extends over such way, so far as relates to the separation of such part from such public way: If such part be rebuilt,—then it must be separated from such public way, either by a floor or arch formed of brick or stone, or of other incombustible materials, subject to the consent of the official referees, or by a floor formed of iron girders and brick arches or stone landings, or by an arch formed of brick and stone; which arch, if the span thereof do not exceed nine feet, must be of the thickness of nine inches at the least, and which, if the span exceed nine feet, must be of the thickness of thirteen inches at the least. And such floor or arch, with its abutments, must be built in such manner as shall be approved of by the surveyor; but there must not be formed over such public way any ceiling of lath and plaster, or of lath and cement.

#### SCHEDULE (D).—PART VI.—PARTY FENCE-WALLS.

And with regard to party fence-walls, in reference to the thickness thereof, and to the height thereof: The footing of every party fence-wall must be six inches high at the least, and nine inches wider at the least than the wall immediately above it; and the top thereof must be in depth three inches at the least below the surface of the ground adjoining; and every such footing must be built in two courses at the least. And the thickness of every such party fence-wall must be in every part thereof one-twelfth at the least of the whole height of the wall, measured from the top of the footing to the top of the wall, and including any coping upon the wall; or if the wall be less than 8½ feet high, then such thickness thereof must be 8½ inches at the least. And every party fence-wall, less than nine feet above the ground on either side thereof, may be raised to that height by the owner of the ground, on the side on which it is less than that height; but upon condition that he do pay all the costs and charges of so raising it.

#### SCHEDULE (E).—(See § 5.)—Rules concerning External Projections.

**Projections from Walls of Buildings.**—And with regard to all buildings, in reference to projections therefrom (except the porticoes of churches, chapels, theatres, or other public buildings, but including steps, cellar-doors, and area inclosures): The walls of all such buildings must be set back, so that all projections therefrom, and also all steps, cellar-doors, and area inclosures, shall only overhang or occupy the ground of the owner of such building, without overhanging or encroaching upon any public way.

**Porticoes projected over Public Ways.**—And with regard to the porticoes of any church, chapel, theatre, or other public building of the third class: If the building of the same shall have been previously sanctioned by the official referees, by writing under their hands, and if objection be not made by any party interested within one month thereafter, and if upon such objection or appeal, her Majesty's principal Secretary of State acting for the Home department do not decide in favour thereof, then such projections may be built over the foot pavement of any street or alley which shall be fifty feet wide at the least (notwithstanding any Act heretofore passed to the contrary).

**Projections from Face-walls, &c.**—And further, with regard to buildings, in reference to projections therefrom: As to copings, parapets, cornices to overhanging roofs, cooking-courses, cornices, piers, columns, pilasters and entablatures, facias, door and window dressings, or other architectural decorations, forming part of an external wall, all such projections may project beyond the general line of fronts in any street or alley, but must be built of the same materials as are by this Act directed to be used for building the external walls to which such projections belong. And as to all balconies, verandahs, or light open iron-work, porches, porticoes, shop-fronts, open inclosures of open areas, and steps and water-pipes, and to all other projections from external walls, not forming part thereof, every such projection (except such part of shop-fronts, and the frames and sashes of the windows and doors, in reference to the necessary wood-work thereof), may project beyond the general line of fronts in any street or alley, but must be built of brick, tile, stone, artificial stone, slate, cement, or metal, or other proper and sufficient fire-proof materials.

**Projections from Insulated Buildings.**—Provided always, with regard to any insulated buildings, that if the projections be at the least 10 feet from any public way, and if they be at least 20 feet from any other building not in the same occupation, then such projections are excepted from the rules and directions of this Act.

**Wooden Shop-Fronts and Shutters.**—And with regard to shop-fronts and their entablatures, their shutters and pilasters and stall-boards, made of wood: If the street or alley in which such front is situate be of less width than 30 feet,—then no part of such shop-front must be higher, in any part thereof, than 15 feet; nor must any part, except the cornice, project more than five inches; nor must the cornice project more than 18 inches. If the street or alley be of a greater width than 30 feet,—then no part of such shop-front must be higher in any part thereof than 15 feet; nor must any part except the cornice project more than 18 inches. And the width of such street or alley must be ascertained by measuring the same, as hereinafter directed with regard to the streets and alleys. And the wood-work of such shop-front must not be fixed nearer than 4½ inches to the centre line of a party-wall. With regard to such wood-work: If it be put up at such distance of 4½ inches, then a pier or corbel built of stone or of brick or other incombustible material, and of the width of 4½ inches at the least, must be fixed against such wood-work, so as to be as high as such wood-work, and so as to project one inch at the least in front of the face thereof. And the height of every shop-front must be ascertained by measuring from the level of the public foot-pavement in front of the building. And public foot-pavement must be fixed against or upon any part of any house must be so fixed that the top shall be within 16 feet at the most above the level of the street or alley.

**Projections beyond the General Line of Buildings and from external Walls.**—And with regard to buildings already built or hereafter to be rebuilt, as to bow windows or other projections of any kind: Such projections must neither be built with nor added to any building on any face of an external wall thereof, so as to extend beyond the general line of the fronts of the houses (which general line may be determined by the surveyor), except so far as is hereinbefore provided with regard to porticoes projected over public ways, and with regard to projections from face-walls and shop-fronts;







**Fee for Additions, or Alterations, or Repairs.**—For every addition, alteration, or repair made to any building, which shall involve the execution of works subject to the regulations of this Act, the following fees; that is to say,—

	£	s.	d.
If the building be of the 1st or lowest rate	0	10	0
Ditto 2nd rate	0	15	0
Ditto 3rd ditto	1	5	0
Ditto 4th ditto	1	10	0
Ditto 5th ditto	1	15	0
Ditto 6th ditto	2	10	0

**Fees for Special Duties.**—For the following special duties performed by any surveyor, according to the enactments of this Act; that is to say,—

For attending to the cutting away of chimney-breasts for external walls,—

	£	s.	d.
If the building be of the 1st or lowest rate	1	1	0
Ditto 2nd rate	2	2	0
Ditto 3rd ditto	2	2	0
Ditto 4th ditto	2	2	0
Ditto 5th ditto	2	2	0
Ditto 6th ditto	3	3	0
For condemning party fence-walls	1	1	0
For the inspection and removal of projections, &c. in imminent danger, and ruinous buildings	0	10	0
For surveying party-walls not kept in repair, and consenting to notice of repair being served	0	10	0

	£	s.	d.
For inspecting arches or stone floors over public ways	0	10	0
For measuring widths of streets, &c.	0	10	0
For inspecting formation of openings in party-walls	0	10	0
For inspecting drains and cesspools	0	10	0
For inspecting chimney-shafts, pots, funnels, &c. above certain heights	0	10	0

**Fees for Special Services not expressly provided for.**—For any service performed by any surveyor which is required by this Act, but not comprehended under any of the foregoing heads,—

Such fee as the official referees shall, by writing under their hands, order and appoint, with the consent of the commissioners of works and buildings,

### SCHEDULE (M).—METROPOLITAN BUILDINGS ACT.

SUMMARY OF PROCEEDINGS to be taken or observed before and after Notices in relation to Buildings.

Section of the Act.	Stages of Proceeding.	Steps to be taken.	By whom taken.	With reference to whom taken.	Form of Notice to be given.	Place of Notice.	Subsequent Proceedings.
13	WORKS GENERALLY. Before commencing the operations specified in this section.	Two days' notice to be given.	By the Builder. See Definition, § 13.	To the District Surveyor.	See Form No. 1	At the District Surveyor's office.	£30 penalty for neglect. Existing buildings altered, &c. without notice, to be stated as a nuisance. £20 penalty for neglect.
"	Before resuming operations, after being suspended for a period exceeding three months.	Two days' notice to be given.	By the Builder. See Definition, § 13.	To the District Surveyor.	See Form No. 2	At the District Surveyor's office.	£30 penalty for neglect.
"	On change of Architect, Master Builder, or other Superintendent.	Two days' notice to be given.	By the Builder. See Definition, § 13.	To the District Surveyor.	See Form No. 3	At the District Surveyor's office.	£30 penalty for neglect.
14	On the occurrence of any irregularity in building operations.	48 hours' notice to be given.	By the District Surveyor.	To the Builder	See Form No. 4	At the Builder's office.	Proceedings by Surveyor or Official Referees.
36	As to openings hereafter made in external walls abutting on adjoining ground or buildings.	Notice to stop up within one month.	By adjoining Owner	To Owner of external wall.	See Form No. 5	According to § 101, &c.	To be stopped up.
15	SPECIAL SUPERVISION. On completion of the carcass of a building subject to special supervision.	Notice for inspection thereof.	By the Architect or Builder.	To the Official Referees.	See Form No. 6	At the Official Referees' office.	Survey and approval, or disapproval by Official Referees. Prohibition of use of irregular buildings of this class, and penalty of £5 to £200 per day.
"	On completion of amendments, or the entire completion of a building, subject to special supervision.	Notice relative thereto.	By the Architect or Builder.	To the Official Referees.	See Form No. 7	At the Official Referees' office.	Survey and certificate.
20, 21, 23, 24, 25	PARTY-WALLS, &c. Before survey, repair or pulling down of a party-wall, party-arch, or party fence-wall.	One month before survey, and six months' notice before operations.	By the Building Owner. See Definition, § 13.	To the adjoining Owner.	See Form No. 8	According to § 101, &c.	Inspection by Surveyor. § 23.
30	In the same case	Notice for survey	By the Building Owner. See Definition, § 13.	To the District Surveyor and Official Referees.	See Form No. 9	At the District Surveyor's and Official Referees' offices.	Inspection by Surveyor, and report to Official Referees.
"	In the same case	Appointment of surveyor.	By the District Surveyor.	To the Owners and Agents, &c.	See Form No. 10	To Building and adjoining Owners and Agents.	Inspection by Surveyor, and report to Official Referees.
32, 33	As to pulling down rooms in inter-mediate property, and repairing or rebuilding party fence-walls.	Notice of intention to build a party wall, or as directed by Official Referees.	By the Building Owner.	To the adjoining Owner and District Surveyor, § 20.	See Form No. 11	According to § 101, &c.	Erection of wall.
"	In the same case	Notice for inspection thereof.	By the Building Owner.	To the District Surveyor and the Official Referees.	See Form No. 12	At the District Surveyor's and Official Referees' offices.	Inspection by Surveyor, and report to Official Referees.
"	In the same case	Appointment of surveyor.	By the District Surveyor.	To the Owners and Agents, &c.	See Form No. 13	To Building and adjoining Owners and Agents.	Inspection by Surveyor, and report to Official Referees.
"	As to pulling down a timber partition, and erecting or raising a party-wall.	Six months' notice of intention to build or raise a party-wall.	By the Building Owner.	To the adjoining Owner.	See Form No. 14	According to § 101, &c.	Erection of wall, or raising of wall.
27	Excavation against existing party-wall for a deeper story, and for the erection of an external wall.	One month's notice of intention to cut away footings or breast or shaft of a party-wall.	By the Building Owner.	To the adjoining Owner.	See Form No. 15	According to § 101, &c.	Execution of operations.
37	Building a party-wall on line of junction of two pieces of vacant ground.	One month's notice for consent of adjoining Owner.	By the Building Owner.	To the adjoining Owner.	See Form No. 16	According to § 101, &c.	Execution of operations.
"	In the same case	Notice of consent	By the adjoining Owner.	To the Building Owner.	See Form No. 17	According to § 101, &c.	Erection of wall.
22	MODIFICATIONS. Suit of addition of intended work to suit adjoining owner.	Seven days' notice for consent.	By the adjoining Owner.	To the Building Owner.	See Form No. 18	According to § 101, &c.	If consent not given, commencement of works must be delayed for decision of Official Referees.
"	In the same case	Application for decision.	By the adjoining Owner.	To the Official Referees.	See Form No. 19	At the Official Referees' office.	Delay in commencing operations.
"	In the same case	Notice of application	By the adjoining Owner.	To the Building Owner.	See Form No. 20	According to § 101, &c.	Ditto ditto

### SCHEDULE (M).

#### FORMS OF NOTICES AS TO WORKS.

**METROPOLITAN BUILDINGS ACT, VICT., c. 3, 13, 1844.**

1.—Notice by the Builder to the District Surveyor, two days before commencing operations.

I do hereby give you notice, that I intend to (1) and that C. D., of is to be the (2) of the works to be executed; and that the said works will be begun on the day of Dated this day of (Signature.)

[\*.\* Certain penalties are attached to neglect in giving this notice.]

(1) Describing the erection or intended operation in general terms, and whether it relate to any of the following matters:—  
or, "The erection of any building;"  
or, "The making of any addition to or alteration in any building;"  
or, "The building, pulling down, rebuilding, cutting into, or altering any party-wall, external wall, chimney-stack, or flue;"  
or, "The making of any opening in any party-wall;"  
or, "The doing of any other matter or thing by this Act placed under the supervision of the surveyor."

(2) Insert "architect," or "builder," or other superintendent to have charge of the works.

**METROPOLITAN BUILDINGS ACT, VICT., c. 3, 13, 1844.**

2.—Notice by the Builder to the District Surveyor, two days before resuming operations.

I do hereby give you notice, that I intend to re-commence the (1) and that C. D., of is to be the (2) of the works to be resumed; and that the said works will be continued on the day of Dated this day of (Signature.)

[\*.\* Certain penalties are attached to neglect in giving this notice.]

**METROPOLITAN BUILDINGS ACT, VICT., c. 3, 13, 1844.**

3.—Notice by the Builder to the District Surveyor, as to Change of Builder.

I do hereby give you notice, that, with reference to the works specified in my notice of last R. F. (2) is to be placed in charge of the said works, instead of C. D., the (2) mentioned in the said notice. Dated this day of (Signature.)

(1) Describing in general terms the works referred to in notice No. 1, and which works may have been suspended three months.  
(2) Insert "architect," or "builder," or other superintendent to have charge of the works.

**METROPOLITAN BUILDINGS ACT, VICT., c. 3, 14, 1844.**

4.—Notice by the District Surveyor to the Builder, as to any thing done in the Erection of any Building not conformably to the Act.

I do hereby give you notice, that the (1) now in progress (2) situate in (3) is not conformable to the statute in the portions thereof under mentioned; and I require you, within forty-eight hours from the date hereof, to amend the same. Dated this day of at the hour of by the clock.

Note.—Irregularities referred to. (Signature.)

**METROPOLITAN BUILDINGS ACT, VICT., c. 3, 36, 1844.**

5.—Notice by an Owner or Occupier to an adjoining Owner or Occupier, to stop up an Opening in an External Wall abutting on his Premises.

I do hereby give you notice, That if within one month from the date hereof you do not stop up the opening

(1) Insert "building," or "alterations," or "building operations," as the case may be.  
(2) Insert "under your superintendence," or "in the building belonging to you," as the case may be.  
(3) Insert the situation, as the case may be.



made in the external wall of your premises situate in (1) and which abuts on my (2)  
I shall, at your expense, cause the same to be stopped up, conformably to the statute.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

### FORMS OF NOTICES AS TO SPECIAL SUPERVISION.

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 15, 1844.

6.—*Notice by an Architect or Builder to the Official Referees, as to Completion of the Carcase of a Building subject to special Supervision.*

I do hereby give you notice, that the building now erecting under my superintendence in (1) and being a building of the (3) and having been completed to the full height of the walls thereof, and the timbers, floors, roofs, and partitions being fixed, I require you, in accordance with the statute, should you be of opinion that the building is subject to special supervision, to survey the same, and to certify accordingly.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

[\*.\* Penalties, varying from £5 to £500 per day, attach to the use of any such building without its being certified subsequent to notice as above and following.]

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 15, 1844.

7.—*Notice by an Architect or Builder to the Official Referees, as to Completion of Amendments, and of Buildings subject to special Supervision.*

I do hereby give you notice, that the building now erecting under my superintendence in (1) and being a building of the (3) and having been completed in pursuance of your survey and notice subsequent, I require you, in accordance with the statute, to survey the same, and to certify accordingly.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

[\*.\* This notice will be used both with reference to the completion of amendments and to the entire completion of a building.]

### FORMS OF NOTICES AS TO PARTY-WALLS, &c.

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 20, 21, 23, 24, 25, 1844.

8.—*Notice to be given (one month before survey, and six months before commencing operations) by an Owner or Occupier, to an adjoining Owner or Occupier, that the Party-wall, or Party-arch, or Party-fence-wall is out of Repair.*

I do hereby give you notice, that I apprehend that the (4), or some part thereof, on the line of junction between my (5) situate, &c., and the (5) side thereof, is so far out of repair (6) as to render it necessary to (7) such wall or some part thereof; and that I intend to have such wall surveyed, pursuant to the statute; and also, that I have given notice to the surveyor of the district, and to the official referees, to survey the premises, for the purpose of certifying the condition of such wall, and whether the whole or any part thereof ought to be repaired or pulled down and rebuilt, and to certify accordingly.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 20, 1844.

9.—*Notice in the same case, to the Surveyor and Official Referees.*

I do hereby give you notice, that I apprehend that the (4) or some part thereof, on the line of junction between my (5) situate in (1) and the (5) side thereof adjoining, situate on the (6) side thereof, is so far out of repair (6) as to render it necessary to repair or pull down and rebuild such wall, or some part thereof; and that I require a survey thereof to be made, pursuant to the statute, and that in presence of such one or more surveyors or agents appointed by me, as undermentioned, or by C.D., the owner of the adjoining property, for the purpose of certifying the condition of such wall, and whether the whole or any part thereof ought to be repaired, or pulled down and rebuilt; and I do hereby also intimate that I have served a notice on C.D. to the like effect.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

Names and Addresses of one or more Surveyors or Agents of a Building Owner.

- (1) Specify the situation.
- (2) Insert "ground" or "building adjoining."
- (3) Insert "sixth rate of first class," or "sixth rate of second class," or "of the third class," as the case may be.
- (4) Insert "party-wall" or "party-arch," or "party-fence-wall," as the case may be.
- (5) Insert "house," or "building," or "ground," as the case may be.
- (6) Insert when required "or has been rendered dangerous and ruinous by cutting away footings," or "breasts," or "chimney-shafts."
- (7) Insert "repair," or "pull down and rebuild," as the case may be.

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 20 and 23, 1844.

10.—*Notice, in the same case, by the District Surveyor to the Building Owner and adjoining Owner, and such one or more Surveyors and Agents by them appointed.*

I, \_\_\_\_\_ surveyor of the district, do hereby give you notice, that, in pursuance of an application made to the official referees and to me in that behalf, it is my intention to proceed to view the premises (1) situate in \_\_\_\_\_ for the purpose of certifying the condition of the (2) and whether any part thereof is so far out of repair as to require to be either wholly or in part repaired, or pulled down and rebuilt; and such survey I do intend to make on the \_\_\_\_\_ day of \_\_\_\_\_ next, at \_\_\_\_\_ by the clock in the \_\_\_\_\_ noon, in the presence of any one or more surveyors or agents, on behalf of the building owner and the adjoining owner.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 32, 33, 1844.

11.—*Notice to be given, one month before survey, and six months before commencing operations, by an Owner to an adjoining Owner.*

I do hereby give you notice, that I intend to (3) \_\_\_\_\_ and that I intend to have such (3) surveyed conformably to the statute; and that I have given notice to the district surveyor, and to the official referees, to survey the premises, and to certify accordingly.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 32, 33, 1844.

12.—*Notice in the same case to the Surveyor and Official Referees.*

I do hereby give you notice, that I intend to (3) \_\_\_\_\_ and that I require a survey thereof to be made, pursuant to the statute, and that in presence of such one or more surveyors or agents appointed by me as undermentioned, or by C.D., the owner of the adjoining property, for the purpose of certifying whether the whole or any part (5) ought to be pulled down and rebuilt; and I do hereby also intimate that I have served a notice on C.D. to the like effect.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

Names and Addresses of one or more Surveyors or Agents for Building Owner.

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 32, 33, 1844.

13.—*Notice in the same case by the District Surveyor to the Building Owner and adjoining Owner, and such one or more Surveyors and Agents by them appointed.*

I, \_\_\_\_\_ surveyor of the district, do hereby give you notice, that, in pursuance of an application made to the official referees and to me in that behalf, it is my intention to proceed to view the premises (1) situate in \_\_\_\_\_ for the purpose of certifying whether any part of such (5) require to be (6) \_\_\_\_\_; and such survey I do intend to make on the \_\_\_\_\_ day of \_\_\_\_\_ next, at \_\_\_\_\_ by the clock in the \_\_\_\_\_ noon, in the presence of any one or more surveyors or agents whom the parties concerned shall appoint for that purpose.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 32, 1844.

14.—*Notice to be given six months before commencing operations by an Owner to an adjoining Owner.*

I do hereby give you notice, that I intend to (7) \_\_\_\_\_ pursuant to the statute.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 27, 1844.

15.—*Notice of Intention to build an external Wall against an existing Party-wall, and for that purpose to cut away Footings, Breast, and Shaft of an existing Party-wall.*

I do hereby give you notice, that it is my intention, one month after the date hereof, to build an external wall

- (1) Designated by number or other name.
- (2) Insert "party-wall," or "party-arch," or "party fence-wall," as the case may be.
- (3) Specify the kind of operation, as to whether it be intended—  
"To raise a party fence-wall,"  
or, "To repair or rebuild a party fence-wall,"  
or, "To pull down and rebuild rooms in intermixed property, &c.,"  
and specifying the situation, &c.
- (4) Insert "party fence-wall," or, "rooms in intermixed property."
- (5) Specify the kind of operation intended.
- (6) Insert "raised," or "repaired," or "pulled down and rebuilt," as the case may be.
- (7) Specify the kind of operation, as to whether it be intended—  
"To pull down a timber partition, and instead thereof to build a party-wall," where no survey is required;  
or, "To raise a party-wall."

against the existing party-wall by which our premises are parted, situate \_\_\_\_\_, and to cut away such portion of the footings, or chimney-breast, or shaft, in such party-wall as will be necessary for that purpose.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 37, 1844.

16.—*Notice of Desire to build a Party-wall on the Line of Junction of Two Pieces of vacant Ground.*  
I do hereby give you notice, that I desire to build party on my land or ground, adjoining your vacant ground, and partly on your vacant ground, on the line of junction of the said premises (1) \_\_\_\_\_, which will be of the under-noted thicknesses and dimensions; and should you consent thereto, I require you to signify such consent in writing on or before the \_\_\_\_\_ day of \_\_\_\_\_ next.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

Note of the Thickness and Dimensions.

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 37, 1844.

17.—*Notice of Consent to the building of a Party wall on the Line of Junction of Two Pieces of vacant Ground.*

I do hereby give you notice, that I consent to the building of a (1) \_\_\_\_\_ party on my land or ground, adjoining your vacant ground, on the line of junction of the said premises, which I require to be of the undermentioned thicknesses and dimensions, and other particulars.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

Note of the Thickness and Dimensions, and other Particulars.

### FORMS OF NOTICES AS TO MODIFICATION OF INTENDED BUILDING OPERATIONS.

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 22, 1844.

18.—*Requisition to a Building Owner by an adjoining Owner, as to Modification of intended Work on his behalf.*

I do hereby give you notice, that I require you to (2) the works specified in your notice of the \_\_\_\_\_ day of \_\_\_\_\_ in consequence of the inconvenience and loss that would arise to me if the same were executed at the time proposed by you; and if you do not consent hereto, or dissent therefrom, within \_\_\_\_\_ days, then, in pursuance of the statute, you are hereby required to delay your intended operations until the official referees shall have determined thereon.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

Note of Modifications.

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 22, 1844.

19.—*Notice by an adjoining Owner to the Official Referees as to the Modification of intended Works of a Building Owner.*

I do hereby give you notice, that C.D., of \_\_\_\_\_ day of \_\_\_\_\_, having specified in his notice of the \_\_\_\_\_ day of \_\_\_\_\_ certain works to be executed subsequent to the \_\_\_\_\_ day of \_\_\_\_\_ next; and I having served upon him requisition in reference to the (3) of the works so intended by him, in consequence of the inconvenience and loss that would arise to me if the same were executed at the time proposed by him, and he not having attended thereto; it is my desire that a survey be made in pursuance of the statute, with reference to such works, and the notices referred to.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

Note of Modifications.

METROPOLITAN BUILDINGS ACT, VICT. c. , s. 22, 1844.

20.—*Notice by an adjoining Owner to a Building Owner as to Application to the Official Referees for Survey of intended Works with reference to the Modification or Delay thereof.*

I do hereby give you notice, that, in consequence of your not consenting to the (5) of the works intended by you, as specified in my requisition of the \_\_\_\_\_ day of \_\_\_\_\_ last, I have applied to the official referees for a survey of the premises, pursuant to the statute.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ (Signature.)

- (1) Insert "party-wall," or "party fence-wall," or "external wall," as the case may be.
- (2) Insert "modify as under-noted," or "delay until the \_\_\_\_\_ day of \_\_\_\_\_," as the case may be.
- (3) Insert "modification as under-noted," or "delay until the \_\_\_\_\_ day of \_\_\_\_\_," as the case may be.
- (4) Within seven days after the previous requisition.
- (5) Insert "modification" or "delay," as the case may be.
- (6) Within seven days after the previous requisition.

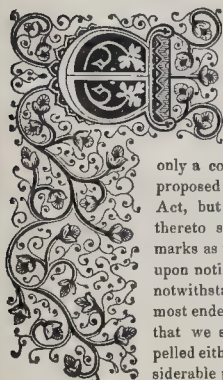
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# The Builder.

NO. LIX.

SATURDAY, MARCH 23, 1844.



VERY exertion was made by us last week to circulate among our subscribers, not

only a copy entire of the proposed new Building-Act, but also to append thereto such critical remarks as we could obtain upon notice so short; but notwithstanding our utmost endeavours we found that we should be compelled either to reset a considerable part of the work

(including the schedules of the Bill), already in type, which would have occasioned a whole day's delay, or otherwise that we should publish with the omission of the notes prepared for us relative to the schedules. We in this number give all those notes, with some additions which the increased time has enabled us to procure; and we trust that, although they are not set against the text of the Bill, such precise explanations have been added to them, that no person will find any difficulty in understanding clearly how they relate to the parts of the Bill of which they treat. We have ourselves had opportunity in the interval from our last publication of reviewing the measure generally: we therefore ask the attention of our readers while we make a few observations upon the chief differences which are contemplated between the proposed Building-Act and the present statute.

1st. Power to be given to the COUNCIL to extend the operation of the proposed Act "TO ANY PLACE WITHIN TWELVE MILES OF CHARING-CROSS."

Some clear definition ought to be given how ad-measurement would be made, whether by the roads or by the compasses upon a map; also, if this be carried, whether a town or other place, partly within the twelve miles, is to be wholly included or wholly excluded.

No provision whatever is made for the counties of Essex and Hertford to bear any portion of the expense of the Official Referees and Registrar of metropolitan buildings, nor for increasing, according to extent of land, the number of Official Referees, nor for altering the scale of contribution according to the increase in some counties.

2nd. The extending of the powers of the Act "TO ALL PLACES LYING WITHIN TWO HUNDRED YARDS FROM THE DISTRICT HEREBY DEFINED."

In this case the district-surveyors should be sworn in accordingly, otherwise they might be required to perform duty in parishes for which they have not been sworn in to act.

3rd. The dividing public places into the two ranks of streets and alleys.

Commissioners for Paving having the power of making public places either foot-ways or carriage-ways, the restriction in this case would rest with them.

4th. The appointment of a REGISTRAR - OF METROPOLITAN BUILDINGS, besides Official Referees.

We do not think the Bill contains sufficient definition as to what kind of person the Registrar should be; and we have heard some fears expressed that if an architect be appointed, he will often be wrong in legal points; and if a barrister be selected for the office, he will improperly have the power of defeating the wisest decisions of the Referees.

We doubt whether less than seven Referees could by any possibility execute the multitudinous duties which are projected for them; and we think unless something could be done to lessen the frequency of appeal to them, grievous delays must arise from the impossibility of two persons exercising such onerous duties, and having to attend to such a multitude of applications. We should envy not the District-surveyors under such appeals, nor the Referees in being so often applied to. The giving these latter officers fixed salaries would be most dignified, but would open them to a frightfully voluminous correspondence and official labour through which few men could go.

5th. The giving powers to dispense on certain occasions with the strict letter of the proposed Act.

This might effect much good, but would raise with some persons an infinitude of expectations that the wholesome provisions of the Act may be evaded by petition, favouritism, or adroit shewing; and to the present vulgar idea, that a guinea may go a great way in rendering an irregular building strictly conformable to statute, would be added less favourable opinions.

6th. Final appeal to the Commissioners of Works and Buildings.

We think such a provision would burthen that body with duties which it would not be able to perform.

7th. Giving power to the Official Referees to assess the liabilities of all persons interested in party-walls.

We think that rules might be drawn up under the sanction of the Official Referees and registrar, by which the district-surveyors might settle the liabilities of all persons concerned in the expense of party-walls, they being allowed certain fees for that purpose.

8th. Dividing buildings into three classes, viz.:—Dwelling-houses, Warehouses, and Public buildings—the subdivision of each class into six rates.

We refer in these matters to Mr. Bartholomew's Notes.

9th. The forbidding of projections of any kind over public ways.

We think this would be extremely vexatious, and would have the effect, it is true, of preserving many antiquities, but would also prevent improvements being made, by proprietors giving to their buildings a doom-time duration in order to preserve their rights acquired often before a place became public.

10th. Some restrictions as to drainage.

These are generally wholesome. We refer to Mr. Bartholomew's notes on the subject. We

think in certain cases drains larger than mentioned in the Bill should be required.

11th. The forbidding District-Surveyors to survey officially any buildings erected by themselves.

This would tend to make the District-Surveyors in some sort the creatures of the Referees, by their being induced to court employment in other districts.

12th. The requiring of open areas behind buildings.

13th. Altering the mode of procedure in matters relating to party-walls.

We think more exact definitions ought to be made as to the liability of tenants, whether they are to escape repairing dilapidations upon party walls; and whether a ground-landlord, who is to receive benefit from the building of a new party-wall near the end of a lease, should not contribute the greater portion of the expense. We lately had a case wherein the ground-landlord, three years before the end of a lease, rebuilt the nest house, which caused the condemnation of the party-wall; and although the house had been well and constantly kept repaired, all the remaining improved rent of 34l. per annum was absorbed by the expense of the new party-wall, which was required for the landlord's benefit when he rebuilt the adjoining house.

14th. Altering the fees of the District-Surveyors to a scale rather lower than the present fees settled seventy years ago, but the granting of some extra fees.

We have some doubt as to the efficient operation of the proposed office of Registrar-of-Metropolitan-Buildings; and this brings us to put forth some ideas which we have long cherished, viz. the urgent necessity for the relief of the other courts by the establishment of

## A Court of Architecture.

Whoever has had any thing to do as a witness, a plaintiff, a defendant, an attorney, or in any other capacity, with any case at law connected with building, knows how grievous is such an affair in an ordinary court. It is true some of the judges and some barristers have turned their attention to, and have studied a little of, the subject; but the proceedings are usually such as to disgust nearly all parties concerned, while the virtual denial of justice, through the enormity of expenses, causes the bitterest regret, however grievous may have been a case, that it was not abandoned rather than have followed proceedings, which soon caused the amount of the original matter of dispute to become a mere "Vanishing-point," compared to the expense which the costs subtend in the "Line-of-heights."

Most of such cases, after witnesses and all other parties have waited several days in court, are after all put off to arbitration, because their technicalities are so indistinctly understood that judges, jury, barristers, and all, desire to have them REFERRED. Now, this reference is usually to a barrister, who is attended by two other barristers, all of whom are nearly equally uninformed on the technicalities of the question in dispute, and who, after hammering away for many days or nights at an enormous expense, for witnesses and attorneys summoned to teach



and give them a slight elementary glimmering of the case, in due time an award is made which we have continually observed is pretty nearly as though the vulgar method of "toss-up" were resorted to, unless, indeed, the more equitable mode of halving the difference have been chosen. In the meanwhile each respectable witness of nice conscience has been proved by the brazen perverter of truth, hired to make wrong prevail, to be a very questionable person, a mere hireling who will say anything. Hence it is commonly said that a surveyor, to be a good witness, must be a hard swearer, and if he be also a hard drinker, whose courage can be alcoholized above proof so as to resist attack, he is the man to employ.

At first, for judges, should be chosen those who, however ill-educated to the subject they may be, are still the best acquainted with it that could be selected from the bar, and who have a good knowledge of general law; in a few years a set of barristers would arise who would have become intimately acquainted with architectural jurisprudence, and then judges of the requisite information could be chosen.

Disputes relative to dilapidations, questions of price, whether upon contracts, or with master and man, or in whatever other way, could be discussed; all matters under the Building-Act could be justly, and with due solemnity, adjudicated at a moderate expense. At present many of the most respectable and conscientious professional men have great unwillingness to appear as witnesses in court, and if they be consulted upon valuations or other matters, make a stipulation that they shall not be called to give evidence in court; hence, with some exceptions, the court-business is done by the dregs of the profession; and it is not always without truth that the pure barrister, who has been hired for five guineas to make falsehood prevail in court (as in the case of the Swiss ruffian who murdered Lord William Russell, when knowing who was the guilty party, a fee caused the advocate to endeavour to fix the guilt upon a person whom he knew to be innocent), charges six surveyors with being easily procured to outswear six others, the very six having been, by his own advice, sought out for that purpose, twelve others not being produced because of their own conscience they would have sworn the reverse.

In disputes between master-builders, the jury should be composed wholly of master-builders; if between master-builders and ordinary persons, the jury might be composed of half builders and half respectable housekeepers of another class. In disputes between workman and master, the jury should be one-third masters and one-third workmen of the same trade, and the remainder of another class. In disputes between workman and workman, the jury should be half men of the same trade, the remainder indifferent persons not of the same trade. In all instances a majority of two-thirds might decide the case.

A certain number of experienced surveyors should also be attached as officers to the court, who simply by a judge's order should tax and allow definitively the amount of any bill for Builder's-work performed in any part of the empire.

bepplea.

#### PROPOSED NEW BUILDING-ACT.

THE COMMITTEE of the MASTER CARPENTERS will again meet upon the above at the Freemasons' Tavern, on Monday next, at 4 o'clock.

#### CRITICAL NOTES UPON THE SCHEDULES OF THE PROPOSED NEW BUILDING-ACT.

BY ALFRED BARTHOLOMEW, ESQ.

SCHEDULE (C) p. 143.—There does not appear to be any provision for measuring the heights of buildings, in case they have no ceiling, or no tie-beam or collar-beam or other substitute for a tie-beam.

Any additional depth to which it may be necessary to carry down the walls of a building in order to arrive at a secure foundation, ought to be clearly excluded from the admeasurement of stories, and if the party-walls and other walls be carried down to different levels, as is sometimes necessary, clear definition ought to be provided for such cases.

We think the official referees ought to have a discretionary power relative to permitting addition to the thickness of walls, otherwise cases of excessive hardship and vexation will arise.

We think the Bill is by no means clear as to the mode of determining the thickness of buildings. The present Act is much more definite. The Bill does not appear to state if a particular rate is to be restricted by height, area, and number of stories, or by only one or two of such conditions; in stating the number of stories, the words "and no more" seem to be omitted.

We think all party-walls would be more efficient against fire, more durable, and far superior in every way, if allowed to be built half a brick thinner than set down in the Bill, but rigidly exacted to be of hard stock brick-work, and with no board and plates of wood on any account allowed thereon. A wall so built has a far greater provision of incombustible material; chains of vat-hooping and screw-iron may be carried close to flues without danger; the work is thus at first tied together better than if by timber, the ruin of walls by rot is avoided, and walls so constructed remain little injured, though the rest of a fabric be consumed; whereas, party-walls as at present formed often have to be rebuilt, in consequence of their bond-timber and wooden plates being consumed; and with all possible care on the part of the district-surveyor, still there may often be casts in which a party-wall a brick and a half thick will only have four inches of brick-work between timber and timber, which, in case of rot or fire, would leave a party-wall standing in part or wholly upon only one-third of its thickness.

The term gutter-plate as applied to buildings is very indefinite, such an article being rarely found in a good building; the wretched modern mode of forming valley-roofs set upon internal gutter-plates ought to be discouraged in all possible ways.

We think the requiring parapets 12½ inches thick to buildings of the sixth rate, would be vexatious. The true art of rendering buildings secure does not lie in thickening their upper work, but in increasing the strength of the lower work in proportion to altitude; hence, in ancient buildings, as the spire of Salisbury Cathedral, the thickness of the work for many feet down is not equal to one brick. All buildings should, have their gutters not lying within the compass of the walls, but if possible without them, so that defective gutters may not rot any timber; the thicker the parapet, the more difficulty exists in effecting this wholesome caution.

We do not approve of the new method of denominating the smallest buildings of the first rate, but in this we would desire the old method of calling the largest buildings the first rate, and so prevent the confusion of ideas which must for a long time otherwise result.

PAGES 144, 145, 146.—The sections of the walls we consider are drawn to too small a scale; the dimensions upon them have, in no case, the clear and necessary expression of "feet" and "inches," the marks ' and ' in some cases placed over the dimensions, we hold to be indefinite, and in the manner here used ought to be entirely abolished, for which there are certain mathematical reasons.

We think the height of openings in party-walls ought not to be confined to 8 feet, and that sills or paving of iron and some other substances ought to be allowed.

Whether piers must be on one or both faces of a party-wall does not appear. Piers ought not to be required to be wider than 13 ins. or 13½ ins., on account of making sound work with ordinary stock bricks; in every case throughout the Bill where brickwork is required to be 14 inches wide or thick, the same amendment ought to be made.

In all cases where stone lintels are used, the weight above ought to be discharged from the lintel, to prevent inevitable fracture, as is to be seen to a horrible extent in modern buildings. The falling into this debased practice is one reason why expensive modern buildings are in so fractured a state, while from the pursuit of an opposite course, cheap ancient buildings of Pointed Architecture are often so sound, however light they may be.

We think the use of limestone-masonry in connection with iron doors should be forbidden except in fire-proof buildings, since such masonry is far less secure than common brickwork.

We think the relaxation in favour of fire-proof second-class buildings ought to be extended to all fire-proof buildings whatever.

We think it would be grossly vexatious to prevent a gentleman from building a stable-building containing more than twenty-five squares.

Buildings and Offices.—We think the words "or such buildings" too indefinite. It is not clear whether the party-walls are to be suitable for the rate inclusive or exclusive of such additions, thus

leaving the old ambiguity or loophole of the present Act.

The words "one-third of its height" are not so clearly expressed with regard to the context, as to prevent doubt.

Toll-houses, &c.—We do not think the terms "one and a half squares" particularly elegant; we never heard of a man being "one and a half rogues."

SCHEDULE (D).—We think that provided there be below ground and below floors the statute quantity of footing, an architect or builder ought to be allowed to form the remainder of the footings as plinths, or in any manner which he may desire, otherwise useless oppression may arise.

We object to the requirement to lay the two courses of brickwork in cement as here stated; if a quickly crisping cement be intended, the motives which we suppose have led to this proposed requirement, we believe to be fallacies. Parker's cement, which we suppose to be intended, does not prevent the rise of damp, while it is frequently not half so good as stone lime-mortar, being drier before it is used, and rotten when used; and, if quick and good, fractures from its unbending nature immediately with the slightest settlement. We therefore deem its use in foundations and for setting arches to be altogether erroneous and against cautious and truthful practice; ancient buildings of very inferior materials, by their science, hold statically together unfractured, while modern edifices are very frequently fractured in spite of such practice and the use of superior materials. Very many of the fractured modern arches are set in Parker's cement; no sound ancient arch is set in any such material.

We think as in doubtful foundations the base of a wall cannot be spread too much, that footings should be allowed to spread in any way the architect or builder may choose, provided such be not less than prescribed by statute; this wholesome discretion would in many cases be interfered with if the footings "must" be "double;" and it would be ridiculous to prevent an architect from making a footing in one course of masonry a foot thick if he so desire.

Wood and Iron.—We think that no plate or bond of wood ought to be allowed to extend into a wall so much as half the thickness of such wall, and that in walls not exceeding 12 inches thickness, the wooden plates and bond inserted therein ought to be restricted to 4 ins.

We think that more exact definitions are required respecting the ranges of windows of printing-offices and workshops.

PAGE 147.—Breast-summers.—The compound term Breast-summer is here restored to its correct orthography, but ought to be separated into its elements and to be re-united only by a hyphen.

After the words "solely on such party-wall," and also after the words "story-posts fixed on solid foundations," should follow the words, "UNLESS THE PORTIONS OF SUCH PARTY-WALL, WHICH SHALL BEAR THE SAID BREAST-SUMMER BE OF STONE-MASONRY SATISFACTORY TO THE SURVEYOR."

We should like to see timber breast-summers superseded by arches and work of wrought-iron, which would render buildings handsomer and more secure. The two huge ruinous cracks which are found over most shop-fronts, like the deep lines in an aged man's



face, and the opening and dropping of the parapet, which are like the wrinkles in a man's forehead, result from the shrinkage and giving way of timber breast-summers. There is no security against damage by fire from the use of cast-iron breast-summers, since by fire and water cast-iron almost invariably breaks and ruins all above, while walls built upon timber breast-summers remain little damaged by fire. We think, for uniformity of practice, some scale of scantlings ought to be fixed in proportion to length of bearing and weight to be supported.

Materials to be used in Repair.—We think pitch and other inflammable materials ought to be forbidden.

Materials to be used in Rebuilding.—The words "one-fourth of the surface THEREOF" do not clearly express whether of one story or if the whole inclosure be intended.

External Walls used as Party-walls.—We think that permission ought to be allowed for

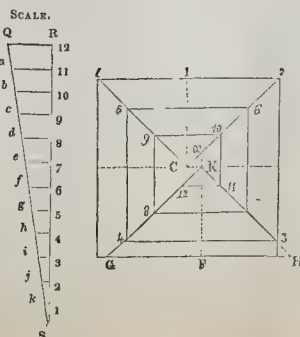
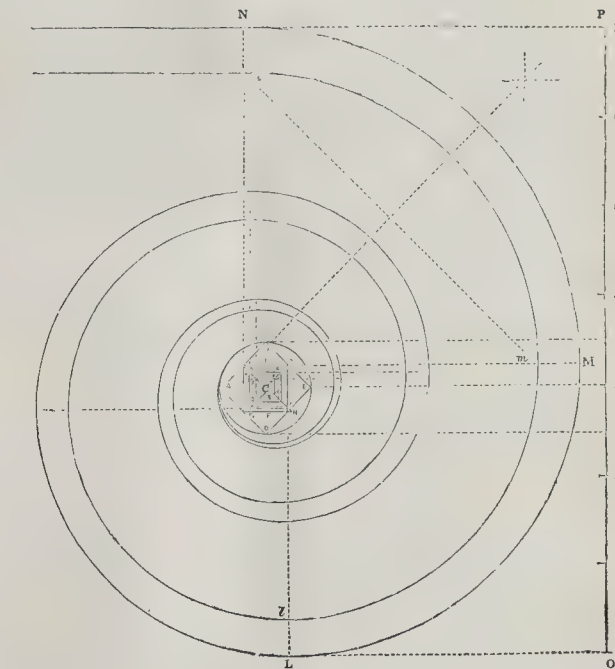


*Backs*.—The word "*story*" ought to be substituted

*Smoke Pipes.*—"Fourteen inches" FROM "any timbers."

We do not know how it will be possible to carry forward the provisions of this schedule relative to the dimensions of back-yards, and think they must be confined to building-sites not already covered. In all other cases we think open space must be purchased at the public expense. The parable of Nathan and the ewe lamb should be remembered.

two equal parts at  $x$ , if the volute is to be on the right hand side (but if on the left, divide C 9), from  $x$ , draw the perpendicular line, cutting the side of the inner square at F; from F make F G and F H each equal to 17, or 12; join G K and H K, draw 5, 4, 9, 8, 10, 11, and 6, 7, parallel to the perpendicular side of the square, cutting G K and H K at 4, 8, 3, 7, 11; then 1, 2, 3, 4, &c., and on to



12, are the centres. Begin at N with the radius 1 N describe the quadrant N M of the volute; on 2, with the radius 2 M, describe the quadrant M L, and so on in this manner with all 4 quadrants until you touch the eye at B, and it will be one side of the fillet. Divide the thickness of the list N n at the top into twelve equal parts by means of the scale Q R S; begin at S, and with any opening of the compass run in twelve times from S to R, make R Q equal to the thickness of the list at N join Q S, draw a 11, b 10, &c. &c. parallel to Q R, make the thickness of the list at M equal to a 11, and L l, equal to b 10, &c., at the beginning of every quadrant join n, m, and bisect it by a perpendicular meeting the eye at u, a little within the first centre; set the same small distance within all the other centres and describe the inside of the list, it will end in a point with the outside at B.



## RAILWAY BUSINESS IN THE HOUSE OF COMMONS.

THURSDAY, MARCH 14.

**Leeds and Bradford Railway Bill.**—Petitions against, from John Gott, Esq., George Hirst, George Baron, Esq.; Sir Sandford Graham, Bart., inhabitants of Adwalton, Armley, Thornton, Pudsey, Gildersome, Southwram, Leicester Dyke, Low Moor, Bramley, Bowling, Shebden, Leeds, Queen's Head, Drighlington, Bradford, Holbeck, Booth Town, East Burley, Ovendon, Great Horton, Northwram, Benjamin Gaskell, Esq.; Thomas Haigh, Rev. Godfrey Wright, trustees of the Brandling estates, Clayton, Wortley, Farnley, Robert Pemberton Milnes, Esq., and Leeds Waterworks Company; referred to the committee on the bill; counsel ordered.

**York and Scarborough Railway Bill.**—Petitions in favour, from Scarborough and Filey; to lie on the table.

**South-Eastern Railway Bill.**—"To enable the South-Eastern Railway Company to complete and maintain a branch railway and approach to the harbour of Folkestone, and to construct other works in connection with the said harbour; and also to effect certain alterations and extensions of the works of the Maidstone Branch of the said South-Eastern Railway, and to amend the acts relating to the said company;" presented and read the first time; to be read a second time.

**Leeds and Selby Railway Purchase (No. 2) Bill.**—"For vesting the Leeds and Selby Railway in the York and North Midland Railway Company, and for enabling that company to raise a further sum of money to complete the purchase of such railway;" presented and read a first time; to be read a second time.

**Edinburgh and Glasgow Railway Bill.**—Petitions against, from Edinburgh, Leith, and Newhaven Railway Company; Edinburgh and Glasgow Union Canal Company; provost, magistrates, and town council of Linlithgow; and Thomas Sprut; referred to the committee on the bill; counsel ordered.

**Lancaster and Carlisle Railway Bill.**—Reported; report to lie on the table, and to be printed.

**Slamannan Junction Railway Bill.**—Petition of the Edinburgh and Glasgow Union Canal Company, against; referred to the committee on the bill; counsel ordered.

**Maryport and Carlisle Railway Bill.**—"To amend the acts relating to the Maryport and Carlisle Railway, and for making certain extensions and branches connected therewith." Presented and read a first time; to be read a second time.

**Salisbury Branch Railway Bill.**—Petition from Blandford, in favour; to lie on the table.

**Chester and Holyhead Railway Bill.**—"For making a railway from Chester to Holyhead," presented and read a first time; to be read a second time.

**Manchester and Leeds (Bury Branch) Railway Bill.**—Petition of the Earl of Derby, the Earl of Wilton, and others, against; referred to the committee on the bill; counsel ordered.

**Railways.**—Petition of Pickford and Co., and others interested in the conveyance of goods by railway, for securing a free competition in the carriage of goods; referred to the select committee on railways.

**London Bridge Railways.**—Petition of the London and Greenwich Railway Company, complaining of the arrangements and charges of the South-Eastern and the Croydon Railway Companies; referred to the select committee on railways.

**Blackburn and Preston Railway.**—Report (13th March) from select committee on standing orders, read; bill ordered to be brought in by Mr. Wilson Patten, Mr. William Feilden, and Sir Hesketh Fleetwood.

**North British Railway Bill.**—Petitions against, from the Edinburgh and Dalkeith Railway Company, and William Henry Miller, Esq.; referred to the committee on the bill; counsel ordered.

**Eastern Union Railway Bill.**—"For making a railway from Colchester to Ipswich;" pre-

sented and read a first time; to be read a second time.

**Garnkirk, Glasgow, and Coatbridge Railway Bill.**—Petitions complaining of non-compliance with the standing orders, from Rosina Smith and George Smith, and John Leadbetter; referred to the select committee on petitions for private bills.

FRIDAY, MARCH 15.

**South-Eastern and Hastings Railway Bill.**—Motion made and question proposed, "That the bill be now read a second time." Amendment proposed to leave out the word "now," and at the end of the question to add the words "upon this day six months." Question proposed, "that the word 'now' stand part of the question." Amendment, by leave, withdrawn; main question put, and agreed to. Bill read a second time and committed, and referred to the committee of selection.

**Leeds and Bradford Railway Bill.**—Petitions against.—Of the Bradford Gas Light Company; owners, lessees, or occupiers of property on the line; Bradford Waterworks Company; Leeds Gas Light Company; company of proprietors of the canal navigation from Leeds to Liverpool; Mary Ann Duffield; Ellis Cunliffe Lister Kaye, Esq.; Thomas Wilcock and others, owners, lessees, or occupiers of lands, tenements, and property on the line; inhabitants of Sowerby; Skircoat; Staningley; Warley; Birkenhead; Oakenshaw; Tong; Cleckheaton; Batley; Shelf; Wibsey; Clayton-heights; Liversedge; Gomersal; Birstal; Heckmondwike; Calverley and Farsley; Burley; Yeadon; Armley; Rawdon; Eccleshill; Horsforth; Guiseley; Bramley; Edward Lambert; Joshua Bower and others, owners, lessees, or occupiers of lands, tenements, and property on the line; occupiers of mills, manufactories, and other works; George Heaps, sen., and others, owners, lessees, or occupiers of lands, tenements, and property on the line; subscribers to a company for forming a direct line of railway communication between Leeds and Bradford; and company of proprietors of the Bradford Canal Navigation; referred to the committee on the bill; counsel ordered.

**York and Scarborough Railway Bill.**—Petitions against.—Of Earl Fitzwilliam; and William St. Quintin; referred to the committee on the bill; counsel ordered.

**Manchester, Bury, and Rossendale Railway Bill.**—Petition against.—Of William Cooper; trustees of Radcliffe turnpike-roads; inhabitants of Bolton; and, company of proprietors of the Manchester, Bolton, and Bury Canal Navigation and Railway; referred to the committee on the bill; counsel ordered.

**Blackburn and Preston Railway Bill.**—"For making a railway from the town of Blackburn to the North Union Railway, in the township of Farrington, all in the county of Lancaster," presented, and read first time; to be read a second time.

**Midland Railways Consolidation Bill.**—Petitions against.—Of Charles Collins Blane, Esq.; John Edward Phillips, and Francis Sherrieff; owners of coal mines in the valley of the Erewash; William Jessop, Esq.; Charles Frederick Younge, and John Newton Mappin; and shareholders in the Midland Counties Railway Company; referred to the committee on the bill; counsel ordered.

**Manchester and Leeds Railway (Bury Branch) Bill.**—Petitions against.—Of the company of proprietors of the Rochdale Canal; trustees of the road from Castleton to Great Heaton; and company of proprietors of the Manchester, Bolton, and Bury Canal Navigation and Railway; referred to the committee on the bill; counsel ordered.

**Ashton, Staleybridge, and Liverpool Junction Railway Bill.**—Read second time, and committed, and referred to the committee of selection.

**Standing Orders Committee—Resolutions reported:—**

"1. That, in the case of the Delabole and Rock Railway petition, the standing orders ought to be dispensed with; that the parties be permitted to proceed with their bill, and that they produce and prove the original contract before the committee on the bill, and that the said committee do report to the House

how far such order has been complied with, on the report of the bill.

"2. That, in the case of the Barnsley Junction Railway, the standing orders ought to be dispensed with.

"3. That in the case of the Gravesend, Rochester, and Chatham Railway petition, the standing orders ought not to be dispensed with.

"4. That, in the case of the Gravesend Railway petition, the standing orders ought not to be dispensed with.

First resolution agreed to. Report to lie on the table.

**Delabole and Rock Railway.**—Report from select committee on standing orders (this day) read; bill ordered to be brought in by Sir John Yarde Buller, Mr. Pendarves, and Mr. Tre-lawny.

**London and South-Western Railway (No. 1.)**—Report from select committee on standing orders (13th March) read; bill ordered to be brought in by Mr. Kemble and Sir John Easthope.

**Great Western Railway Bill.**—Reported; report to lie on the table, and to be printed.

**Defeat of the Barnsley Junction Railway.**—In the House of Commons' committee, on Thursday, the Barnsley Junction Railway Bill was thrown out on the standing orders. This will be severe blow to the Manchester and Sheffield Railway Company, the chairman of which had boasted that the Barnsley Junction would enable the Manchester and Sheffield Company to divert the traffic from Manchester and Leeds Railway, and to make the Sheffield line the true Manchester and Leeds. Of course, in proportion to the defeat on the part of the Manchester and Sheffield is the triumph to the Manchester and Leeds. It is said that the Sheffield Company are not likely to be more successful with their Coasterfield branch, in opposition to the North Midland.—*Herald*, March 18.

**Whitehaven and Maryport Railway Bill.**—"for making a railway from the town and port of Whitehaven to the town and port of Maryport, in the county of Cumberland," presented and read a first time.

**Northern and Eastern Railway (Newport Deviations) Bill.**—"to enable the Northern and Eastern Railway Company to make certain deviations in the line of their railway, between Bishops Stortford and Newport, and to alter and amend the Acts relating to the said railway," presented, and read a first time.

**Brighton and Chichester Railway.**—Petition for Bill reported, and Bill ordered to be brought in by Mr. John Abel Smith and Captain Peckell.

**Colchester and Harwich Railway (No. 2.)**—Petition for Bill reported, and Bill ordered to be brought in by Sir Henry Smyth and Major Beresford.

**Harrogate and Knaresborough Railway.**—Petition for bill reported, and bill ordered to be brought in by Mr. Lawson and Mr. Ferrand.

**Newbury, Basingstoke, London and Southampton Railway Bill.**—Read a second time, and committed, and referred to the committee of selection.

**Sheffield, Ashton-under-Lyme, and Manchester Railway Bill.**—Read a second time, and committed, and referred to the committee of selection.

**Eastern Counties Railway (Brandon and Peterborough Extension) Bill.**—"To enable the Eastern Counties Railway Company to make a railway from the Northern and Eastern Railway at Newport, by Cambridge to Ely, and from thence eastward to Brandon and westward to Peterborough," presented and read a first time.

**Newbury and Great Western Railway Bill.**—Read a second time and committed, and referred to the committee of selection.

**Slamannan Junction Railway Bill.**—Read a second time and committed, and referred to the committee of selection.

**North British Railway Bill.**—Read a second time and committed, and referred to the committee of selection.

**Brighton, Lewes, and Hastings Railway.**—Petition for bill reported, and bill ordered to be brought in by Mr. Darby and Lord Alfred Hervey.



## LECTURE ON ARTIFICIAL LIGHT.

A VERY interesting and instructive lecture upon artificial light was delivered, on the 11th inst., by Dr. Ryan, at the Polytechnic Institution, to a numerous and highly respectable auditory. The lecturer introduced the subject by pointing out the importance of artificial light, and endeavouring to trace its probable origin to the observation of the inflammable nature of the fatty portions of animals sacrificed on the altars of the ancients. The attention of the audience was next directed to the nature of common coal-gas, burnt under ordinary circumstances, as well as to the sources from which the gas is obtained. The mode of obtaining and purifying it was simply yet comprehensively explained by Dr. Ryan, and very clearly illustrated by some cleverly-executed models. He next adverted to the theory of combustion, as exemplified in the common candle, and thence glanced at the recent introduction into more general use of turpentine-naphtha, or what is becoming known to the public under the name of "camphine." Turpentine-naphtha and coal-tar naphtha have not hitherto been brought into general use from the great difficulty of producing a perfect combustion of these highly inflammable hydrocarbons, and the danger to be apprehended from the employment of them as a means of artificial light. Various means have been devised and patented for their perfect combustion. A few years since a mode of burning them, by a strong pressure of atmospheric air through the centre of the flame, as well as by throwing atmospheric air, previously heated in its passage, near the flame of the lamp, upon the material used, and which air became mixed with and supported the combustion of the vapour by which the flame of the lamp was fed. This invention was rather cumbersome, as it required apparatus for supplying the air. It was, however, deemed a very valuable one, and was sold for 20,000*l*. Since such sale the public have not heard any thing of the invention. Another mode recently patented of burning these oils is, by allowing them to flow from a small perpendicular tube and fall upon a cone which is made red-hot by the flame which proceeds from the orifices at its mouth. The practicability of this lamp does not appear to have been made apparent to the public. The two lamps alluded to were of course wickless. The one alluded to by Dr. Ryan, and burning a camphorated turpentine-naphtha under the name of "camphine," is a wick lamp, in which proper combustion is obtained by preventing, as far as possible, the production of vapour, both from the wick and the turpentine, and by placing immediately over the flame what is called a "breaker." This is a circular piece of copper or brass, and causes the air drawn up the centre to impinge upon the latter, and gives it the form of a cup or daisy. This "breaker" is an old invention, and was, we believe, applied to gas and oil some years ago; nor is its application to the turpentine lamp altogether novel. It has been for a considerable time past, it is stated, in use in the United States. The production of vapour is prevented in the "camphine" lamp by the use of wood or cork as a non-conductor of heat, and the cutting off the communication between the wick and air-tube and the reservoir of turpentine. But with this "button" or "breaker," the camphine lamp gives a flame of only an inch and a half, or at the utmost two inches in height; and it is doubted whether coal-tar naphtha, a much more inflammable material, could be continuously burned for several hours without smoke by any of the lamps known under the name of camphine lamps. The use of these hydro-carbons is yet in its infancy, but we have seen both of them burned in a common portable lamp, with an Argand flame of eight and ten inches in height, and with perfect combustion. Another lamp noticed by Dr. Ryan was a French one, called, as we understood, the hydrogen water lamp, which burns the vapour of water and naphtha. This is a small portable lamp, and when once lighted the heat of the burner raises sufficient vapour to sustain the flame. A mode of artificial illumination on a larger scale, after the mode of the little lamp just noticed, was next explained to the auditory; it was that patented by M. Pelletan. This gentleman employs turpentine-naphtha and water as his agents for the pro-

duction of carburetted hydrogen, and by a simple and extremely ingenious apparatus conveys the vapour to any part of a building exactly in the same manner as gas is distributed. A number of large Argand burners and two Bude or Boccus burners (we did not notice which), for the purpose of shewing the Pelletan light, were fitted up in the theatre in which the lecture was delivered; the light produced from this peculiar mode of combining turpentine and water is very cheap, but on the other hand it is extremely low in illuminating power. The second portion of the lecture was devoted to the various conditions which are necessary to the complete combustion of carburetted hydrogen. The necessity of having solid matter in contact with the flame was explained—first, by the experiment of burning hydrogen in its pure state, when we have flame merely without light; secondly, by introducing a piece of lime into the flame of hydrogen in combination with oxygen, and producing the beautiful light known as the Drummond or lime light; and, thirdly, by burning phosphorus in a confined vessel filled with oxygen gas, and the consequent incandescence of a portion of phosphoric acid. The precipitation of carbon in light-giving flames was also pointed out. It was observed by the lecturer that the carbon being immediately burned to whiteness by the heat of the flame, produces the same conditions as those resulting from the incandescence of lime or phosphoric acid, as shewn in the preceding experiments. The lecturer touched upon the difference between the lamps of the ancients and moderns, and pointed out the improvements resulting from the experiments of Gurney—first, in the production of the "Bude" light, properly so called; and secondly, in that of the atmospheric Bude light. He also explained the nature of the Boccus light, and observed that the arrangement both of the atmospheric "Bude" and of the "Boccus" lights are in some degree similar, the burners being simply rings of metal perforated, and these become so heated as to produce exactly the proper amount of temperature necessary for the complete combustion of the gas. The absence of light when the charcoal is not precipitated was shewn by burning common coal gas, first in an ordinary Argand burner, and next by mixing it in a copper chimney with a quantity of atmospheric air, owing to which admixture the charcoal was burned without being precipitated. The lecture, of which the preceding is a mere outline, was extremely and deservedly well received.

## SOCIETY OF ARTS.

MARCH 20.—Benjamin Bond Cabbell, Esq., V.P., in the chair.

The Secretary read a paper on "Messrs. Forrester's improved double cylinder direct action marine engine," as fitted in the Helen MacGregor Hull and Hamburg steamer. The subject was illustrated by models and diagrams.

The collective power of the engines is of 220 horses, and her tonnage 573. The cylinders are each of 42 inches diameter; length of stroke 54 inches; diameter of air pump 33 inches; length of stroke 28½ inches; capacity of condenser, including passage to air-pump, 44 cubic feet; ditto of hot-well, 36 cubic feet; paddle-wheel 23½ feet diameter to outside of floats; number of revolutions 23½ per minute; average pressure of steam in cylinder 3½ lb.

The engine consists of two inverted cylinders placed "athwart ships," with their stuffing boxes below them; the whole being supported upon wrought-iron columns resting on the foundation-plate, and passing through suitable bosses on the sides of the cylinders to the entablature plate and crank pedestals.

The advantages of this arrangement are, that all the working parts are within the reach of the engineer from the lower floor of the engine, whereby the expense of attendance is materially reduced.

The elevated position of the cylinders obviates the danger sometimes arising from water running over into the cylinders as ordinarily placed.

All the moving parts are below the water-line, so that they are out of the reach of shot. And lastly, the reduction of weight and space is very considerable, a saving in length of 25

feet for the engine and boiler-room (the tubular boiler) having been effected.

The Secretary next read a paper on "Wright's Improved Barometer," which consists of a straight inverted tube with the cistern at the bottom, and the scale and vernier at top, so far similar to the ordinary pediment barometer. The area of the cistern is 50 times that of the tube, so that a fall of one inch in the tube will give a rise of  $\frac{1}{50}$ th inch in the cistern; the divisions on the scale are, accordingly, made  $\frac{1}{50}$ th less than an inch, and the 10th each  $\frac{1}{50}$ th less than a tenth. Thus a large tube may be used, and the sliding scale dispensed with, and a more accurate result obtained by one observation only.

As mercury is found to expand for every degree of Fahrenheit the  $\frac{1}{1000}$ th part of its volume at 32°, the expansion of a column 30 inches long from 32° to 100° will at this rate amount to .205 inch. If the horizontal line opposite 30 inches in the scale of the ordinary barometer be raised .205 inch at one end, it will form an inclined line, representing the expansion of a column of mercury 30 inches long from 32° to 100°, the lower point being that at 32° and the upper that at 100°, this line being divided in 68 parts, or intersecting lines (being the number between 32° and 100°), which lines will indicate the expansion of a 30-inch column for all the degrees between 32° and 100°. This inclined line is transferred to the scale, and all the other inches and tenths are calculated in the same manner.

Models and drawings of Edge's Water Meter were next introduced to the notice of the society, and an account of one of these machines was read by the secretary.

The meter consists of a rectangular box 14 inches long, 13 inches wide, and 12 inches high, divided into two chambers by a partition, in the top of which is an aperture, which forms a communication between the two chambers. A four-way cock is fixed in the partition, the larger end of which opens into one chamber and the smaller end into the other; the water is conducted to and from this cock by means of tubes passing through one of the chambers. Parallel with the centre of the cock is a spindle working in upright standards. The spindle carries a driver which acts upon projections on the plug of the cock; and also carries a metal cylinder hermetically sealed, in which is a heavy ball, less in diameter than the cylinder itself, so that it may freely roll within it.

In the upper part of one of the chambers there is a float working upon an axis, which carries a pendent arm, having upon its end a friction-pulley.

As the float rises and falls by the action of the water, the arm vibrates, and, acting alternately on the inner sides of two teeth of the spindle, causes the lower end of the cylinder to be raised, and thus the bar rolls to the opposite end of the cylinder, which by its weight moves the spindle suddenly round, and causes a change of inlet and outlet by the motion communicated to the plug of the cock. Upon the axis are two teeth working into a crown wheel, so that the vibration of the axis gives rotary motion to the upright spindle, which is connected with a counting apparatus also of an improved description.

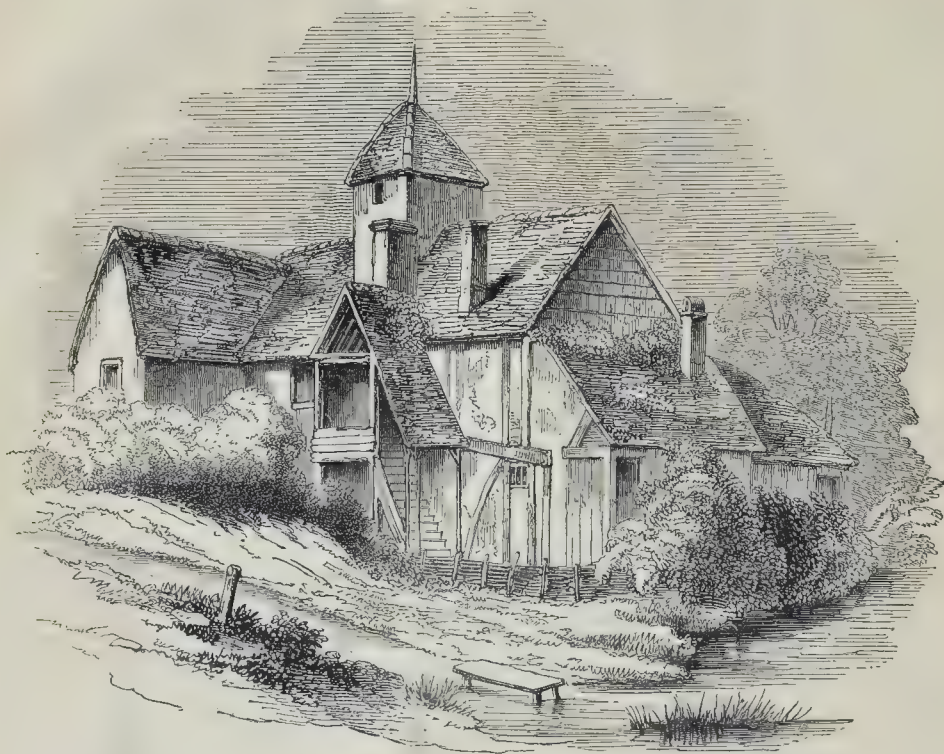
The secretary read a short paper on his proposition for rendering paper-hangings intellectually useful, by introducing historical, biographical, chronological and other information, in such way as to form part of the pattern, or where required especially for use, without regard to ornament, the writing to be inserted in panelled patterns. Several designs were hung up in the society's meeting-room to illustrate the subject.

Mr. Whishaw proposes three different ways of effecting this desirable object: first, by cutting the inscriptions (likely to be extensively used) on wooden blocks, as the ordinary patterns; secondly, by introducing movable types introduced into a frame so arranged as to form a substitute for one of the numerous blocks usually required; thirdly, to print all the pattern in the ordinary way, excepting such spaces as are required for the inscriptions, which may be inserted by hand, to suit the particular taste of individuals.

This latter method is much less troublesome than persons unacquainted with the process might be led to suppose.



## FLAUDEN OLD CHURCH, HERTS.



## TO THE EDITOR OF THE BUILDER.

SIR,—Your kindness in giving place to my former communication (the Priory) in your most valuable paper (*THE BUILDER*), has induced me to send you the inclosed sketch and description of an old church, which, until within a few months back, was standing near the little village of Flauden in this county; should you deem them worthy to be recorded in your paper, I beg your acceptance of them, and with hearty wishes for the welfare of *THE BUILDER*, Believe me, &c. A SUBSCRIBER.

King's Langley, Herts, March 9th, 1844.

The village (to which the old church above delineated belonged, and of which but a very small portion now remains to mark its spot, the greater portion of it having been taken down shortly after the erection of the present new church, a neat early Gothic building, situated at an easy distance from the village), lies at the south-west extremity of the parish of Hemel Hempsted, in this county, of which it is a hamlet. The church stood at about a mile from the village, in a beautiful valley, watered by a fine trout-stream, called the Chesham River. The interior of the church contained no monuments of the dead, consequently afforded but little or nothing to gratify the curiosity of the antiquary; yet, when considered as a feature of a landscape, in combination with the beautifully wooded country by which it was surrounded, it had a most picturesque effect. For many years it was inhabited by three or four poor families. It was dedicated to St. Mary Magdalen, and was an appendant to the church of Hemel Hempsted, by the vicar of which the cure was con-

stantly supplied. In the year 1477, the inhabitants of this ville were empowered by bull of Pope Sixtus the Fourth to bury their dead within the precincts of this church, by reason of its distance from the mother-church of Hempested.

## KING'S COLLEGE VAULTING.

## TO THE EDITOR OF THE BUILDER.

SIR,—I must respectfully beg to dissent from the statement urged by your correspondent, Mr. Hutt, relative to the vaulting of King's College Chapel, although a much clearer and mathematically deduced supposition is to be found in "Pratt's Mechanical Philosophy."

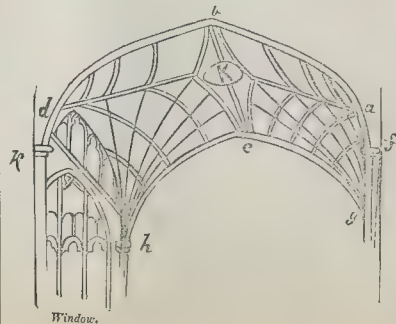
The annexed perspective sketch of one "severey" will shew that the rib *d Ka* is not a row of key-stones, but rather an abutment similar to *f*; that the key-stones (?), if any, would be in the placed marked by the middle

or lower cross-band. We are also well aware how stonework can be coved, or made to overhang, as in the early cyclopæan arches, and the internal crowning members of a few of the Greek hypethral temples; probably a better known illustration would be a geometrical staircase, the under side of the winders of which may not unfrequently be found of the same contour as the roof of King's Chapel, which tends to the conjecture that this fan-vaulting is constructed on the same principle, the thickness of wall and weight of parapet and pinacles preventing the fall.

If we take a "retrospective review" of the introduction of stone-vaulting, we find that it was formed by arches, springing from corbels in the side walls between the windows, and composed of plain ribs called "cross-springers," with a key-stone in the centre; the interstices were filled up with some lighter materials.

That the principle of their construction became better known and practised about the reign of Edward III., is apparent, by their being formed of pendant semi-cones, covered with foliated panel work, called *fan-tracery*, from the design resembling a fan spread open.

What architect ever considered that an arch or vault consisted of a series of key-stones? Many voussoirs, but one key-stone, as its name seems to im-



Window.



ply, which having been inserted in a circular aperture, could be removed as stated in your number of December 9. For instance, we see shafts and holes for various purposes left in parts of



vaults in nearly every street in our crowded towns, still the pavement is not rendered insecure; and as frequently does an aperture (to use a bull) form the apex of a dome.

Yours respectfully, W. W.

[We do not believe that the vaulting of King's College Chapel is formed in any such manner as our correspondent imagines; if it had been so formed, it would long since have fallen, from the pressure in every joint of the work being false. Admirable as is the work of King's College vaulting, with the pressure operating at right-angles to each of its component stones, still the soffit of the vaulting has in places opened at its keel-rib or summit by the dropping of the work, so as to hold at the upper angles of the voussoirs. A work so thin as the King's College Chapel vaulting, if it had been only corbelled over throughout the work, would on the removal of the scaffolding immediately after its erection, have pulverized itself in every part: the pressure being askew in every joint, all the angles of the stones would have "spaulched" off, and their total ruin would have ensued. Our correspondent is entirely mistaken on the subject of the corbels, for these were formed in early times in order to increase the weight of the abutment, and preserve it from being cut into (and weakened) for receiving the vaulting,—to diminish the span,—and to lighten the work in jeopardy. Many architects and mathematicians consider an arch to consist of a series of key-stones, and the term so applied is not worth questioning; an arch is finally locked by what is vulgarly termed "the key-stone," yet removal of any one voussoir would sufficiently unlock an arch to cause its ruin. We are certain (although now the work is old perhaps the great bosses of King's College Chapel vaulting might be removed without the vaulting falling into immediate ruin), that ultimately such would be the case, and that if the vaulting had been originally built without them, the work would have become crippled instantly on the removal of the centering. Holes left in ordinary coal-vaults in no way apply to the case, for these have usually circular ribs worked round them; and leaving out the crown of a dome, which is the mischievous part of the work, is the mode which has been practised by the most skilful artists. Study, observation, mathematics, and practical experience will cause our correspondent to reverse most of his present opinions. THE MATERIALS OF NO VAULTED EDIFICE WILL STAND AS THE ARCHITECT DESIRES THEY SHOULD, UNLESS, IF THEY WERE ALL SUSPENDED IN AN INVERTED POSITION, THEY WOULD RETAIN EVERY CURVATURE, FORM, AND POSITION UNALTERED (MERE INVERSION EXCEPTED). Of this, however, more hereafter. —Ed.]

#### DESCRIPTION OF A WROUGHT-IRON LATTICE BRIDGE, LATELY ERECTED ON THE LINE OF THE DUBLIN AND DROGHEDA RAILWAY.

BY G. W. HEMANS.  
(Read before the Institution of Civil Engineers, January 9.)

This kind of bridge is stated to have been first used in America, where timber being so abundant, the lattice sides are formed of that material, and consist simply of planks three inches thick, crossed so as to form deep beams, and secured with oak trenails at all the intersections.

The bridge described in this communication, is situated about three miles from Dublin, over an excavation of 36 feet in depth; its span is 84 feet in the clear, and the two lattice beams are set on edge parallel to each other, resting at either end on plain stone abutments built in the slope. These beams are 10 feet in depth, and are formed by a series of flat bars of wrought-iron, 2½ inches wide and ¾ inch thick, crossing each other at an angle of 45°. At a height of 5 feet 6 inches above the bottom edge, transverse bearers are placed, formed of ¾ inch angle-iron, 6 inches deep, and set 2 feet apart, similar to the cross-ties now used for the decks of iron steam-vessels, and upon these the planking for the roadway is fastened.

The account of the mode of construction, and of the raising and fixing the lattice-beams, by Messrs. Perry, of Dublin, the contractors, is given in detail.

The author states that some deflection or sagging of the lattices was expected, and was provided for by constructing each of

them with a camber or gradual curve from the ends, amounting to 12 inches in the centre; but that far from such being the case, they did not sink even when heavy weights passed over them.

The total cost of the bridge, including the masonry of the abutments, was 510*l*.

The paper is illustrated by a drawing (No. 3408), shewing the elevation and the details of the construction of the bridge.

Major-General Pasley had seen and approved of the bridge; it appeared to be on a good principle, and was well constructed. He understood that it had been Mr. Macneill's intention to have a model made of a viaduct of 230 feet in length, with a central span of 140 feet, which he had designed for carrying the Dublin and Drogheda Railway across the Royal Canal in an oblique direction, but he now considered that the bridge which had been described was better than a model; and as it had borne, with only a slight deflection, a loaded wagon weighing 22 tons, and all other tests to which it had been submitted, he had decided upon building the larger bridge upon the same principle.

Captain Moorsom thought that the bridge was too expensive, and that if the lattice sides had been 8 feet 6 inches in depth, they would have been quite strong enough. In the timber bridges of the same construction in America, any tendency to either flexibility or buckling was obviated by placing several ranges of lattices side by side, and the custom of roofing the timber bridges of that country also gave additional strength laterally. The timber bridges on this principle which he had constructed on the Birmingham and Gloucester Railway (one of which was 160 feet span, and the others between 90 and 120 feet span), varied in cost from 4*l*. to nearly 6*l*. per running foot, according to the span, the larger spans being proportionally less expensive than the smaller. Materials and labour were dear at the time of constructing the bridges alluded to.

It was stated that the original inventor of the lattice bridge was the late Mr. Smart, by whom it was patented. It is mentioned in Dr. Gregory's "Mathematics for Practical Men," p. 231.

#### NARROW WINDOWS.

TO THE EDITOR OF THE BUILDER.

SIR,—I send you the annexed sketch of a window designed for a small church, the form of the upper light, and the way the stone sill terminates, being, I believe, without a precedent.

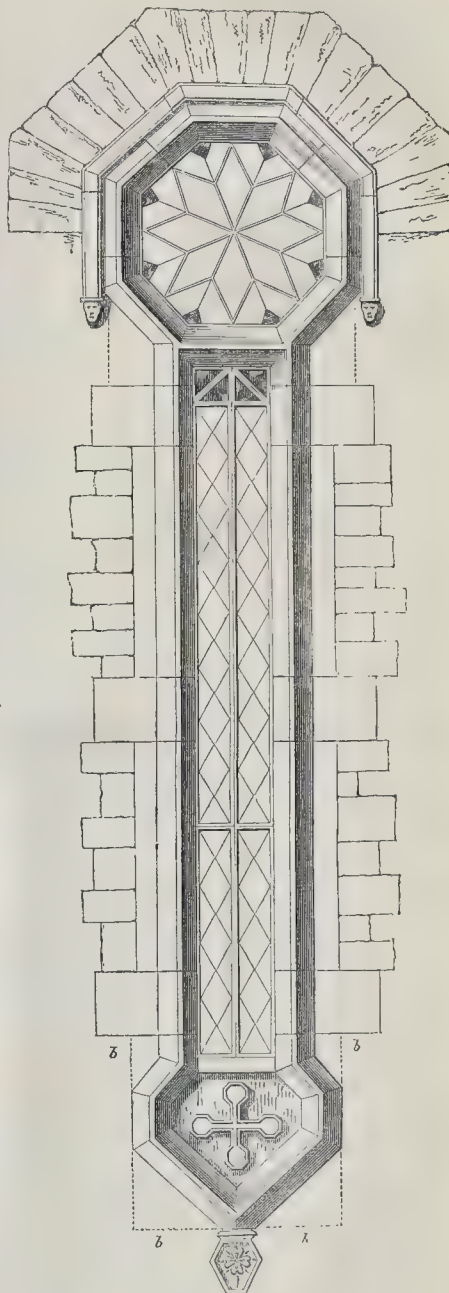
The part *b, b, b, b*, is one solid stone checked, so as to be on a line with the face of the wall; the cross is formed in a panel, the centre narrow space being cut through and communicating with a flue ending at the window-board or flag in the interior, for the purpose of ventilation. The admission of air is regulated by means of a lid fixed in the window-flag inside.)

The hood-moulding projects before the face of the octagonal chamfered head (same as jambs), see *x x*, about 5 inches.

Your obedient, J. K. L. Gorey, 3rd February, 1844.

[We think this window would better suit a lodge than a church. —Ed.]

#### DESIGN FOR A NARROW WINDOW.



ELEVATION.



PLAN.

SCALE. 12 in. 0 1 2 3 4 5 FEET.



## INSTITUTION OF CIVIL ENGINEERS.

MARCH 12.—The President in the chair.

The discussion upon the knowledge of the properties of the arch possessed by the ancients was renewed on the presentation by Mr. Page of drawings of two arches standing near some cyclopæan remains at Cape Crio (Cnidus). There was no positive evidence of the date of these arches; but from their being built without mortar, and the massiveness of their construction, it was agreed that they were probably of the same period as the cyclopæan works among which they were situated.

The failure of the Pont de Boverie at Liège, which sunk so much and cracked on the piers to such an extent as to oblige it to be taken down, was fully explained by Mr. Rennie, who presented a drawing of it.

Mr. B. Green also exhibited a design for the proposed stone bridge of eight circular arches for connecting Guteshead with Newcastle-upon-Tyne at a high level. He also exhibited some beautiful specimens of ornamental bricks made by Mr. Burnes, of Newcastle.

The first paper read was an "Account of the harbour of Pulteney Town" (Wick, Caithness, N. B.)

This harbour was designed by Mr. Telford for the British Fisheries Society in 1803, and the first part of the works executed between 1805 and 1811 by Mr. Burn, at the expense of 16,400*l*. The success of the herring-fishery, and the consequent increase of the shipping frequenting the port, rendered a more extensive harbour essential, and in 1823 other plans, which received the approval of Mr. Telford, were carried into effect by Mr. Bremner.

The various extensions of the works were given in great detail, with the ingenious methods employed in their execution; as also the account of the devastation caused by the sudden inroad of the sea upon the unfinished work of the pier, when 100 feet in length of the pier-head was swept away in one tide, besides the occurrence of much damage to the other parts of the works. The ruined works were secured for the remainder of that year by binding them together with chain-cables, and in the succeeding summer the works were completed and have stood securely ever since. Some interesting observations were made as to the relative action of the waves upon long and short slopes of the sea faces of piers, and the author's experience evidently leads him to prefer a slope of about one to one for works which are exposed to a heavy sea.

The various ingenious methods adopted by the author for conquering the difficulties before him excited great interest, which was kept up by the next paper, also by Mr. Bremner. It was a description of casks used in floating large stones for building sea-walls in deep water.

These casks, which were strongly built of fir staves hooped externally with iron and supported inside by radiating bars like the spokes of a wheel, were used instead of crane-barges for conveying stones of from 30 to 40 tons weight for securing the foot of the sea-walls of Banff harbour, which had failed.

Two of these casks, of 445 feet cube each, were used to convey stones of 30 tons weight, by passing the two chain-cables which were wound round them through the eyes of the lewis, which were fixed in the stone at low water; at which time the chains being hauled down tight, when the tide flowed, the buoyancy of the casks floated the stones, and they were towed by a boat over the place where the stone was intended to be deposited; the lashing being cut away the casks were let go, and the stone fell into its seat. This method was found to succeed perfectly in weather that would have destroyed any crane barges, and the works of Banff harbour were thus secured from further degradation, and were subsequently entirely restored at a comparatively small cost.

A model of Farum's railway switch was exhibited, and its self acting motion in guiding the carriages into the sidings or on the main lines, as required, was shown by the inventor. These switches were stated to have been used on the Grand Junction Railway for some considerable time. The drawings and enlarged diagrams gave fully the details of the method of working.

MARCH 19.—The President in the chair.

In the recapitulation of the conversation of the meeting of March 12, there were read some interesting remarks by Colonel Leafe on the knowledge possessed by the Greeks of the properties of the arch. He contended that numerous examples still existed of their having used it; but from the solidity of their construction, the nature of the materials they employed, and the architectural character of the edifices, which were chiefly temples, the arch was evidently less employed than among the Romans, who used different and less solid materials.

A description was then read of "The Formation of the Town-lands of Mussellburgh, on the Frith of Forth," by Mr. James Hay. This was a curious instance of an extensive tract, of nearly four hundred acres of land, being formed by an alluvial deposit in about three hundred years. The river Esk, when swollen by rain, is stated to bring down quantities of the detritus from the hills, which with the soil washed from the banks of the low lands is arrested when it meets the tide, and is thrown upon the beach: this being mingled with large boulder-stones, becomes fixed, and the sand is blown over it by the heavy north winds to which the shore is exposed, and thus this large tract has been formed. The diagrams shewed the several lines of high water at various dates, and that nearly the entire town is built upon land thus recovered from the sea without the aid of art.

The next paper read was a description of an hydraulic traversing-frame at the Bristol terminus of the Great Western Railway, by Mr. A. J. Dodson, Assoc. Inst. C.E. The action of this machine, the object of which is to transport the railway carriages from the arrival side of the terminus to the departure side, or to any one of several intermediate lines, was thus described:—An opening being made in the train, the apparatus is pushed on to the line of rails, and the carriage required to be moved is run over it, when the frame is quite down, it being then sufficiently low to allow the carriages to pass freely over. As soon as the carriage is brought directly over the apparatus, a man works a pump acting upon four hydraulic presses, which raise the frame until both sides are in contact with the axles of the carriage-wheels, and raise the flanges of the wheels clear of the rails: the whole apparatus, with the carriage suspended upon it, is then easily transported to any of the lines of rails, when by unscrewing a stopper which allows the water to flow back from the presses into its cistern, the carriage is lowered on to the rails, and the apparatus is rolled over ready for recommencing the operation, the whole transit not having occupied more than one minute and a half. The action of the apparatus, which was made by Mr. Napier, York-road, was stated to be very satisfactory, and its cost to have been about 220*l*.

An account was then read of the landslide in the Ashley cutting on the Great Western Railway, by Mr. J. G. Thomson, Grad. Inst. C.E.

The cutting, which was described, is situated about five miles on the London side of Bath; it was made through a mass of detritus from the neighbouring high lands, consisting of sand, oolitic gravel, vegetable matter, and stones of the great oolite, lying upon the blue lias clay and marl. The whole district was extraordinarily full of water, and appeared to have defied all attempts to drain it. This accumulation of water softened the clay, turning portions into soft silt, and when, by cutting away a portion of the foot, which was situated on a slope, the support was taken away, the whole mass was set in motion, and every attempt to arrest it was fruitless. The details of the attempts at driving water-headings, sinking pits, which collapsed, and were obliged to be filled up with stones and faggots, and all the other engineering devices which were adopted, were given with great minuteness, and being aided by some well-executed drawings, gave an interesting account of a good specimen of one of the difficulties to be encountered by the railway engineer in the ordinary course of his labours. The paper was an example of that which has been so frequently insisted upon at the meetings of the Institution, viz. the advantage to the civil engineer of a knowledge of geology, by which his progress would be safely made under such circumstances.

The following papers were announced to be read at the meeting of March 26:—

No. 668. "On Railway Cuttings and Embankments, with an account of some slips in the London clay," by C. H. Gregory, Grad. Inst. C.E.

No. 661. "Account of the Railway from Amsterdam to Rotterdam, and of the principal works upon it," by Le Chevalier F. W. Conrad, M. Inst. C.E., translated from the French by the Secretary.

## LECTURES ON ARCHITECTURE AND ANTIQUITIES.\*

## Lecture II.

TYRE.—There are few cities more celebrated in history than Tyre, and seldom has any one place excited so much controversy concerning its situation. Of its antiquity and greatness there is, however, no doubt. Bishop Newton says—"It was, as is well known, the most celebrated place in the world for its trade and navigation, the seat of commerce, and the centre of riches." The prophet Isaiah says—"Is this your joyous city, whose antiquity is of ancient days?" (xxiii. 7.) And in the Book of Joshua we find it spoken of as "the strong city Tyre" (ch. xix. v. 29). Tyre was a colony or offshoot of Sidon, the ancient capital of the Canaanites, which probably owed its origin as well as its name to Sidon, the eldest son of Canaan. (Gen. x. 15.) By its position on the sea-coast, its capability of becoming a leading maritime nation was evident. The soil around it was not inviting for the purposes of agriculture, but near at hand were the inexhaustible forests of Lebanon, from which the Tyrians built their vessels; and the daring and hardy sailors soon pushed their discoveries beyond the pillars of Hercules, founding colonies as they traversed the seas—in particular, Carthage and Cadiz may be mentioned. Quintus Curtius says of Tyre—"Colonias certe ejus pene orbe toto diffuse sunt." By this adventurous spirit, the Tyrians became the carriers of the world; they made Tyre the depot for the merchandise of every quarter of the globe: her ships increased in number; her harbour was excellent, formed by an island in front; and wealth continued to pour in upon her.

The description in Ezekiel conveys a high notion of the prosperity of this great commercial people:—"O thou that art situate at the entry of the sea, which art a merchant of the people for many isles, Thus saith the Lord God: O Tyrus, thou hast said, I am of perfect beauty. Thy borders are in the midst of the seas, thy builders have perfected thy beauty. They have made all thy ship-boards of fir-trees of Senir; they have taken cedars from Lebanon to make masts for thee. Of the oaks of Bashan have they made thine oars, the company of the Ashurites have made thy benches of ivory, brought out of the isles of Chittim. Fine linen with brodered work from Egypt was that which thou spreadest forth to be thy sail." (ch. xxvii. v. 3 to 7.) The prophet next describes the mercenary troops which they employed to protect their city, because the natives were all engaged in maritime pursuits, and then he continues—"Tarshish was thy merchant by reason of the multitude of all kind of riches; with silver, iron, tin, and lead, they traded in thy fairs." (v. 12.)

If we admit Cadiz to be the Scripture Tarshish, the Tartessus and Gades of the ancients, we shall perceive how well situated it was for the purpose of facilitating the trade of Tyre with the countries of the north, abounding with the articles enumerated in the verse just quoted. "There is every reason to believe that the tin was supplied from our Cornwall."

The prophet then proceeds to mention places which trafficked with Tyre in their respective products, as in slaves, ("persons of men,") brass, ivory and ebony, horses and mules; Syria supplied fine linen, emeralds, coral, and agate; the land of Judah contributed wheat, honey, oil, and balm; Damascus sent wine and wool; Arabia traded in sheep and goats, spices, gold, and precious stones. The prophet Zechariah, speaking of this city, says—"And Tyrus did build herself a strong hold, and heaped up silver as the dust, and fine gold

\* Continued from p. 113.



as the mire of the streets." (ch. ix. v. 3.) But her riches only served to make her proud and to exult in the misfortunes of her neighbours; accordingly we find the prophet Ezekiel thus instructed:—"Son of man, because that Tyrus hath said against Jerusalem, Aha, she is broken that was the gates of the people; she is turned unto me: I shall be replenished, now she is laid waste: Therefore thus saith the Lord God, Behold, I am against thee, O Tyrus, and will cause many nations to come up against thee, as the sea causeth his waves to come up." ("This," says Archbishop Newcome, "is one of the most beautiful and expressive images which occur in the magnificent prophecy here recorded.") "And they shall destroy the walls of Tyrus, and break down her towers, I will also scrape her dust from her, and make her like the top of a rock." (ch. xxvi. v. 2, 3, 4.) And again, "I will make thee like the top of a rock, thou shalt be a place to spread nets upon, thou shalt be built no more." (v. 14.) It is then expressly foretold that Nebuchadnezzar, King of Babylon, should come up against it with a large army. This prediction was fulfilled; but the place was so strong, and the besieged defended their city with such skill, that the Babylonian army lay encamped before it for thirteen years. St. Jerome states that when the Tyrians said that the city was about to be taken, they conveyed away all their valuable property on board their ships and sailed away, so that Nebuchadnezzar found nothing in the deserted city to reward him for his long siege. This disappointment is expressly alluded to in Ezekiel:—"Son of man, Nebuchadnezzar, King of Babylon, caused his army to serve a great service against Tyrus; every head was made bald and every shoulder was peeled; yet had he no wages, nor his army for Tyrus, for the service that he had served against it." (ch. xxix. v. 18.) His recompense was Egypt. Tyre was taken 573 B.C.; and some writers, and among them St. Jerome, imagine that the inhabitants fled to Carthage, which they had founded, while Dean Prideaux supposes that they took refuge on the island close at hand, and built the new city which was afterwards destroyed by Alexander the Great. It must soon have exhibited signs of activity, as it appears to have risen rapidly into a flourishing city. Its situation was more favourable than the ancient city, from its insular position, and from its being also well fortified. The sea between the island and the continent formed two capacious harbours.

When the Macedonian hero came before the city, he found that it was likely to withstand all his efforts to take it so long as it maintained its insular form, and was supported by a numerous fleet. He, therefore, formed and carried into effect the vast idea of uniting the island to the mainland by means of a mole. Quintus Curtius calls the sea a very deep one, but Arrian says its depth was only three fathoms. Alexander formed his mole with incredible labour and diligence, notwithstanding the desperate opposition of the Tyrians, and for the materials he employed the stones of old Tyre ("magna vis saxorum ad munus erat, Tyro vetere præbente." Qu. Cur.) and with these he built a causeway 200 feet wide, extending from the continent to the city. A passage in Ezekiel appears to foretell this remarkable fact. "And they shall break down thy walls and destroy thy pleasant houses, and they shall lay thy stones and thy timber and thy dust in the midst of the water." (ch. xxvi. v. 12.)

Alexander captured the city, employing fire, after seven months' resistance. (332 B.C.) Zechariah, at chapter ix. v. 4, had predicted, "Behold the Lord will cast her out, and he will smite her power in the sea, and she shall be devoured with fire." The prophet Amos also thus foretells, "I will send a fire on the wall of Tyrus, which shall devour the palaces thereof." (ch. i. v. 10.) The conqueror behaved with great cruelty to the inhabitants, slew 8,000 in the storming, crucified 2,000 of them, and sold 30,000 into slavery; which was a retribution; since the Tyrians had sold some of the captive Israelites; and the prophet Joel had foretold that their recompense should return upon their own head. (ch. iii. v. 7.) "Because ye have taken my silver and my gold, and have carried into your temples my goodly pleasant things. The children also of Judah and the children of Jerusalem have ye sold unto the Grecians, that ye might remove them far from their border." The 28th chapter of

Ezekiel gives a glowing description of the magnificence of Tyre, and Strabo and Arrian speak of the beauty and prodigious height of the houses; the walls were 150 cubits high; here were two famous temples to Jupiter and Hercules.

Its present forlorn appearance is a sad contrast to its ancient splendour. Bruce says, "Passing by Tyre, from curiosity only, I came to be a sorrowful witness of the truth of that prophecy, that Tyre, the queen of nations, should be a rock for fishers to dry their nets on,—two wretched fishermen with miserable nets had just given over their occupation." All modern travellers agree in their account of its desolate state.

G. R. F.

(To be concluded in our next.)

#### THE NEW ROYAL EXCHANGE.

At the meeting of the Corporation of London for improving the approaches to London-bridge, held on the 12th instant, the deputation appointed to confer with the Commissioners of Metropolitan Improvements, on the question of obtaining further space at the east end of the New Royal Exchange, made their report.

The deputation consisted of Mr. R. L. Jones, the chairman of the Royal Exchange Committee; Mr. W. Lawrence, and Mr. R. Taylor, attended by Mr. Tyrrell, the Remembrancer; and Mr. Tite, the architect of the new building.

It appeared that the deputation had had several interviews with the Commissioners, and that they submitted their plans or suggestions for these improvements.

The first suggestion was to make an opening into Finch-lane, the same in character as that which was made in Fleet-street, called St. Bride's-passage, but wider, the width of the Finch-lane opening being proposed at 60 feet from house to house, and 30 feet between the shops.

The second suggestion proposed the same opening, but included the widening of the main street at the east end of the Exchange to 60 feet, instead of 46 feet 6 inches as at present.

The third plan proposed the taking down of Finch-lane altogether, and the construction of a new street 70 feet wide at the east end of the Exchange in its place. All the plans contained a suggestion for widening Threadneedle-street from the Royal Exchange up to Merchant Tailors' Hall.

The application on the part of the Corporation was supported by a memorial from the merchants, bankers, brokers, and traders of the city. This memorial was signed by all the first names in the city.

In opposition to further improvements in this quarter, Magdalen College appeared by their steward, Mr. Blagrove, and Mr. Sheriff Moon, their tenant.

The Commissioners, it appeared, determined that a more extended space at the east end of the New Royal Exchange would greatly conduce to the effect of the building, and the convenience of those who are to frequent it; but that, looking to the numerous and important claims upon any funds which might be provided by the Legislature for improvements in the metropolis, they could not feel justified in recommending to her Majesty or to Parliament that any advance of money from public resources, or from local taxation, should be made for this purpose.

#### SINGULAR DISCOVERY OF COPPER ORE.

It is a well-known fact that copper mining in Cornwall is of comparatively recent origin, and that the mines in this county were, at no very remote period, worked only for tin, the copper ore being considered as useless, and, consequently, thrown aside. A singular confirmation of this lately occurred in widening the road in the neighbourhood of Chacewater. Captain Davies, the contractor, in removing the old hedges, perceived among the stones of which they were composed a considerable number that contained copper, and has actually selected from them several tons of copper ore. These stones had, no doubt, been raised by miners in search of tin, at a period when their value was not known, and used as materials for constructing the hedges in which they were found. Capt. Davies, in contracting for the job, had been so fortunate as to secure the stones of the old hedges, and is, consequently, a considerable gainer by the discovery.—*West Briton*.

#### ANDREW CROSSE, THE ELECTRICIAN.

IF, when you come to the village of Kingston, about three miles and a half from Taunton, you turn upon your right into a dark and narrow lane, you will soon find yourself climbing with toil a difficult and very steep hill; the road is rough, and the edges meeting overhead give it an aspect of profound gloom. But by day, in the summer time, it is deliciously cool and shady, and a very wilderness of wild-flowers—the foxglove, the woodbine, the dog-rose, the ragged-robin, decorate the banks and make the hedges fragrant. By night—for many times have we dared the descent when the outline of the hand could not be traced if held before the eyes—this lane is enlivened by the songs of many nightingales, and the glow-worms light up their love-torches on every green slope. Having conquered this hill, a turn off the road on your left conducts you to a park adorned with fine beeches, on one side of which you behold a sheet of water, with a shrubbery in the back ground, whose very aspect invites you to trespass in it. All this you see as you walk under boughs that overshadow the road; and if you are a stranger to the place and its owner, you will wonder what can be the meaning of the mast-like poles fixed at the top of the very loftiest of the trees, by which a line (so it appears) is carried round the park till it is lost in the shrubbery. A little further onward and you see a small village green, with a very old tree in the centre, surrounded by a few cottages; before you the road winds about the shoulder of a steep, amid a bit of gorse brake; the breeze blows upon you from a distant channel, which you smell, though you cannot see it from the spot, and you have the light buoyant feeling of being upon a high hill. Step boldly over the mossy lawn, you will scarcely disturb the rabbits that are feeding and sporting there in conscious security. Knock fearlessly at the door; the votaries of science are always welcome there. Your name? your station? your calling? your property? Trouble not yourself about any of these things, nor hope thus to commend yourselves to the inmates. You are a *man*, you have a *mind*, you venerate *science*, even if you know little of it; these are your passports into that mansion. Are you a stranger? You will not long be so:

"One touch of nature makes the whole world kin."

In ten minutes you feel as if you had been acquainted with your kind and generous host for twenty years. Have you walked thither? he sets before you a profuse luncheon and his choicest cider. Such cider! bright, sparkling, luscious! The gods would have preferred it to their nectar, especially if they had toiled up that steep hill on a hot summer day.

Your generous entertainer attracts you to gaze as much as you politely may. Probably you have seen his portrait in the Polytechnic Institution, and you recognize the likeness.

He is now in his velvet jacket, his laboratory costume; his frame is made for activity; light, but muscular, having not an ounce of superfluous fat, with a trifling stoop at the shoulders; his face, too, is thin and long, with a fine forehead, grey eyes, bushy brows, a well-shaped nose, and a pointed chin. Its expression is highly intellectual, with an air of seeming melancholy, which is in fact one of thought; but a lengthened gaze discovers in it a lurking propensity for fun, which continually peeps out at the corners of his eyes and in the curls of his lips. His hair is brown, partially silvered by age, which is betrayed only there, for his gait and countenance have all the liveliness and energy of youth; his step is springy, his voice cheerful, his aspect that of one who enjoys good health and its attendant good spirits. Such, dimly outlined we must confess, is the personal appearance of Andrew Crosse.

Had you never before heard that name, or if you had not known that you were about to visit one who had distinguished himself in the pursuits of science, you would then discover, if you had the eye of an observer, that you are in the company of a man of genius; that you are conversing with one who has thought for himself, and refused to subject his mind to the chains of authority, and to bow before the dicta of schools.

The presence of genius you discover in Andrew Crosse, before you have conversed with him a quarter of an hour. The talk of most men, even of those who are reputed wise



or witty, is merely a repetition of that which you have heard in substance, if not in form, from other men fifty times before, and read as often. But Mr. Crosse's talk is his own.

You may differ from his opinions, you may question his accuracy, you may contest his arguments, you may smile sometimes at views that may seem to you visionary and wild, because they are different from your habitual trains of thinking, and therefore startle you; but you cannot complain that they are common-place; they are not echoes of the voices of others, not gems in a new setting, stolen from books old or new. Fools may deride them as being strange; wise men know their worth; fools have laughed before, when the better taught have struck the hill-side, asserting that rich ore was hidden in the stones the fools had called rubbish, and scarcely have they ceased their gibes when they have beheld the metal elaborated and glittering in their hands.

Every man has his hobby; the saying is an old one, but it means nothing more than this, that every man has some preponderating taste which governs its pursuits, and the gratification of which engrosses the largest share of its attention. Happy it is when that hobby is not only a harmless one, but ennobles the rider, and brings with it blessings to mankind. Mr. Crosse's hobby is the science of electricity; to that he has directed the studious reflection and the industrious labours of a life. No branch of science is unknown to him, but electricity has been his especial pursuit; and if he has not spun so many pretty theories about it as other philosophers, he has advanced the practical, experimental investigation of it much further than ever it was carried before. As this is the theme on which his thoughts most dwell, it is that of which his mind is the most full. Touch that chord and see how he will discourse! As he describes to you all those wonders, not imaginations of a dreamer, but realities, which he has himself seen, and proved by producing, his face is lighted up; his eyes are fixed upon the ceiling; present things seem to have disappeared from him, lost in the greater vividness of the ideas which his full mind throngs before him; he pours out his words in an unfeeling stream; but, though he has a command of epithets, he finds language inadequate to express his conceptions of the might of that mysterious element which, though so very mighty that it could annihilate a world as easily as it lifts a feather, he has summoned from its throne, compelled into his presence, guided with his hand, and made to do his bidding!—thus surpassing the fabled feats of the enchanters of old.

Before you visit the hall where this mighty power is at work night and day, obedient to his command, and daily shewing itself in some new shape (a very Proteus), yet unable to escape from the potent spell of the magician by whom it is compelled, you would like to stroll with your distinguished host into the plantations and gardens. Step through the window into the lawn, and follow him.

But, beware!—you are no longer in the company of a sage philosopher, but of a man (we might almost say of a boy) full of fun and frolic, and laugh and joke! That roguish twinkle of the eye, and half-suppressed curl of the lip, betoken mischief. Look at him!—there is not a trace of the student in his manner or in his talk. Can this be he whom we heard but two minutes since discoursing, with the rapture almost of inspiration, of the mysteries of science? He is as merry now as a child at play. What a glorious laugh—a real, honest, hearty laugh—not a stifled titter, as if he were ashamed to be natural. What a step and jump, as though age had been worsted in wrestling with him, and had succeeded only in frosting his hair with its breath in the struggle! It is an almost universal notion that wise men must be grave, and a philosopher is always associated in our thoughts with a solemn phiz, a staid demeanour, eyes that cannot twinkle, a mouth never wreathed with smiles, a chest never convulsed with laughter,—as a jestless, dull, phlegmatic mortal, who deems fun a sin, and votes frolic a degradation. But this is a very great mistake indeed, as all who have read the biographies of dead philosophers, and all who have had the pleasure of knowing any living ones, will testify. It is your false philosopher, your would-be sage, your fellow of "shame," as

Carlyle terms them, who cannot afford to be unwise.

Not such is Andrew Crosse, as you will find ere you have walked with him in his grounds for five minutes. What buoyancy of spirits! what light, cheerful, pleasant talk about field sports, country rambles, rifle-shots, planting, pruning, farming, trees, flowers! He will lead you a pretty dance when once he has got you fairly under his guidance, his bright eye all the while twinkling merry malice. He will shew you banks were wild strawberries ripen, in such multitudes, and so large and richly flavoured, that you may feast as in a garden, and you are startled by the whirr of a pheasant rising from between your very feet, and almost making you roll down the slope in your sudden fright; you will visit his well-stocked and well-trained gardens, and, if you please, pass an hour at the fish-ponds, with certainty of something better than a nibble, for the perch there are abundant and greedy, and you are sure of sport; or taking your gun, or his, for you are heartily welcome to any thing he can supply, you may walk round the park and shoot the rabbits as they run from their feeding places to their holes, and soon bag as many as you can conveniently carry. And if you are a good shot, you may venture a small wager with your host which shall bag the most from an equal number of shots; but be warned by us, and let the bet be a small one, for he is a capital shot and the chances are against you.

Nor will this walk be without profit to your mind as well as to your body. You will not only have breathed fresh pure air, and healthily used your limbs, though at the expense of a hole or two in your fine town-made coat, but you will have gathered a vast deal of information from your companion, who is intimately versed in all rural subjects. It is the prerogative of intellect to find in every thing, however humble or common, food for meditation, and a theme for intelligent discourse. Whatever attracts your attention is sure to elicit from Mr. Crosse some instructive remark; and it is worthy of note that his remarks are almost entirely the result, not of his reading, but of his observation. He is not a bookworm; he is essentially an observer; he is not stored with the ideas of other men, but he is rich in ideas of his own. Like all who have looked closely into nature, he is an humble-minded man; you discover it in every thing he says and does. He has learned by years of study the last, most difficult of all lessons, *not to know*. He rates himself much lower than any other person rates him—a rare phenomenon! nor is this humility of mind assumed; he has not a spark of affectation; the conviction is in him, and it shews itself.—*The Critic*.

#### BUILDINGS' REGULATIONS BILL.

HOUSE OF LORDS, March 12.—The Marquis of Normanby said, he observed that a Bill had been introduced into the other House for the better regulation of new buildings. It was, however, entirely confined to the metropolitan districts. He could not see any good reason for thus circumscribing its operation. He thought that it ought to be extended to other places; and he would put it to his noble friend opposite whether it was not desirable that its provisions should be so extended? There was one part of the Bill which would be of very great use to the metropolis. He alluded to the formation of cellars, except under certain regulations. But, looking to different parts of the country, that provision might be introduced with even greater advantage in a variety of places. He could name towns where actually one-half of the inhabitants lived in these miserable cellars. He wished to know whether his noble friend was prepared to extend the provisions of the Bill to other localities, or would merely confine it to the metropolis? There was another point connected with this subject on which he wished for information. Many propositions had been made for the construction of parks for the health and recreation of the working classes. For the benefit of the great mass of the people in the east end of the metropolis a tract of land, denominated Victoria Park, had been selected. He understood that the works there were suspended. Perhaps his noble friend was not able at that moment to state the cause of the suspension, but would be prepared to do so at a future day. All he should now ask was, what

progress had been made in the formation of that park?

The Duke of Buccleuch said, that he was not at present prepared to answer the last question of the noble marquis. Respecting his first question he wished to observe, that in many of the large towns throughout the country there were local acts for regulating buildings which it might not be judicious to interfere with by any general measure, without at least very great consideration. It was proposed that the present measure should be passed this session, after having been well considered in both Houses, and the true meaning of the several clauses made plain. The small towns would then have an opportunity of considering it, and of seeing what portions of it could be made applicable to them, with a view to further legislation on the subject next session. For these reasons the government were not prepared to recommend that the present Bill should be extended.

The Marquis of Normanby put it to the government whether it would not be desirable to extend the provisions of that part of the Bill which referred to cellars now actually occupied to the suburbs of the metropolis, and other parts of the country. The parties occupying them were charged enormous rents, which they were obliged to pay, in order that they might reside in the district where their occupation called them.

The Marquis of Salisbury admitted the evil of having persons huddled together, but did not think the suggestion of the noble marquis would diminish the expense to those parties, as they would have to pay still higher rents perhaps for new abodes.

#### RAILWAY INTELLIGENCE.

*Manchester and Sheffield Railway.*—Parties have been employed during the past week for the purpose of ascertaining the number of population in the townships through which the above line of railway passes from Manchester to Staleybridge; the following is the result:—From Manchester to Staleybridge, exclusive of both towns, 65,361; inclusive of both, 384,692; population of the township through which the branch line will pass from the railway to Staleybridge, including Ashton-town, and exclusive of Staleybridge, 58,205. The town of Staleybridge contains a population of 21,000, and the town of Ashton-under-Lyne 22,656.

*Warwick and Leamington Railway.*—The branch railway between Warwick and Coventry, it is now stated, will certainly not be opened before the end of the year; but we are assured, upon good authority, that the division contracted for nearest Leamington, extending to Kenilworth-common, will be completed in May next, and that the portion of the line nearest Coventry will also be perfected by the same early period.

*Ayrshire, Dumfries, and Carlisle Railway.*—We are rejoiced to find that at length a promising movement is being made to have a communication from the south with the western metropolis of Scotland, by a railway *via* Carlisle, Dumfries, and Ayr, which cannot fail to secure very great advantage, provided that connection takes place upon the coast, thus taking advantage of the rich mineral resources of the interior, and also of traffic on the entire line from Ayr to Glasgow.—*Ayr Advertiser*.

*The Cornwall Railway.*—Our readers will have observed last week, with much satisfaction, that the question of a railway through Cornwall is so seriously entertained by the Great Western Railway Company, that it was mentioned by the chairman, in very encouraging terms, at the general half-yearly meeting of the proprietors. Such a notice is practically an announcement of the undertaking to capitalists, and a recommendation of it to their consideration and support. With such a sanction, the Cornwall Railway is no longer a project, but a fact; and as such it will be contemplated by those on whose assistance we must in a great measure depend. At the same time, our friends in Cornwall must remember that it is their own concern; and though it is true that they will require help from beyond the Tamar, yet the more they do for themselves, the more independent will be the position they will be able to assume in meeting of the great companies. The railway will come through Cornwall; of that we have no doubt; but if we do what we can and ought, we shall be able



to make terms—if we go to sleep, we shall have to submit to terms dictated by others. Therefore, instead of regarding the declaration of the chairman of the Great Western as a motive for relaxing our exertions, it ought rather to be received as a stimulus to renewed efforts, that in the zeal we display, and the capital we raise, we may give to the companies and capitalists to the eastward a just sense of the importance of the county, and entitle ourselves to that due share of influence which it is desirable that the Cornish directors and shareholders should possess.—*Cornwall Gazette*.

**Bristol and Exeter Railway.**—At the general meeting of the proprietors of the Bristol and Exeter Railway Company, held at the White Hart, Bristol.—Mr. Ricketts, the Chairman of the Directors, presiding, supported by Mr. Divett, M.P., Mr. Brunel, C.E., and a large number of proprietors from the West of England.—Mr. Badham, the secretary, read the Directors' Report, which announced that the amount of fixed rent and share of toll which the Great Western Railway Company had stated to be due to the Bristol and Exeter Railway Company for the past half-year was 25,555*l.*; the share of toll on 197,030 passengers, conveyed 5,023,370 miles being 5,232*l.*; and 462*l.* on 14,060 tons of goods, conveyed 443,714 miles; making a total of 31,249*l.* The gross earnings on the line for the half-year, as far as Beamsbridge, had been 56,543*l.* The further claims of the Company on the Great Western Company had been referred to arbitration. The state of the works was exceedingly satisfactory, and the whole line to Exeter might be confidently expected to be ready for public traffic in the month of May next.

**Newcastle-upon-Tyne and Carlisle Railway.**—We understand that the directors of the Newcastle-upon-Tyne and Carlisle Railway Company have contracted for 1,000 tons of malleable iron rails at the low rate of 5*l.* 7*s.* per ton, to enable them to double the remainder of their line. This great improvement is to be completed before the 1st of July next, at which time it is intended the railway from Darlington to Gateshead will be opened, and which will join the Newcastle and Carlisle Railway at Redheugh, a little to the west of Gateshead. An uninterrupted railway communication will thus be formed from London to the city of Carlisle, a distance of about 350 miles, which, it is expected, will be performed in sixteen hours. To meet the additional traffic which this communication will bring upon the Newcastle and Carlisle Railway, and to prevent the least interruption in the regular running of the trains, renders it absolutely necessary to make the line double throughout. We also learn that the spirited coach proprietors, Messrs. Dunn, Croal, and Co., have advertised to start on the 6th of July two additional coaches between Carlisle and Glasgow for the accommodation of the increased number of passengers, and which coaches will arrive and depart so as to suit the trains of the Newcastle and Carlisle Railway Company.—*Newcastle Advertiser*.

**Wakefield and Lincoln Railway.**—We understand that the share list of this line is fast approaching its completion, 13,000 shares having been already applied for, the total number being only 15,000, and the project has not yet been twenty-one days before the public. The people of Lincolnshire are eager in their support of this line, both the corn-merchant and wool-dealer perceiving the importance of connecting themselves with their best markets—viz., Wakefield, Bradford, Halifax, Huddersfield, and Rochdale. We observe our contemporary of the *Leeds Mercury* is taking infinite pains to bolster up the project of a branch from Gainsborough to Swinton. This scheme, if ever carried out (of which by the way there are very great doubts), can have no possible chance of competing with the Wakefield line, even for the Manchester traffic from Lincolnshire; for, although in actual distance a few miles nearer, from the miserable gradients on the Sheffield line, it has been declared by the engineer appointed to report upon the subject, to be seven miles further from Manchester, on account of those gradients, than by the Wakefield line.—*Wakefield Journal*.

**The Sussex Railways.**—The Hastings Railway Bill has passed the standing orders; and as there is no opposition to the Chichester Bill,

it will pass on Friday, to which day it has been adjourned, in consequence of the unavoidable absence of one of the witnesses, all the others having been examined. We shall, when these railways are made, have a continuous line of railway extending upwards of 60 miles along the coast. Chichester, Worthing, and all the towns along the coast of western Sussex, have sent petitions to the House of Commons, very numerous and respectfully signed, in favour of the Chichester Railway; and we suppose that Brighton, Lewes, and the towns in East Sussex, will follow the laudable example which has been set them. The government must, we presume, be desirous of seeing these railways made; but we have not heard whether any application has been made to the Board of Trade upon the subject.—*Brighton Gazette*.

**Merchant Company.**—A special meeting, at the request of the Edinburgh and Glasgow Railway Company, was held to consider the propriety of petitioning Parliament in favour of the extension of the railway from the present terminus to the North Bridge. A petition, which had been prepared by the master and assistants, was laid on the table, and its adoption moved by Mr. Robert Cadell, who, at the same time, urged the propriety of the company, at an early day, also petitioning in favour of the proposed railway to Berwick. Mr. Philip moved as an amendment, that unless the running of Sabbath trains were prohibited, the company should not petition in favour of the bill. The amendment was negatived, and the original motion carried.—*Edinburgh Witness*.

**French Railways.**—The following are the principal conditions of the bills for establishing railroads from Paris to the Belgian frontier, with a branch line to the coast opposite England; and for executing another from Orleans to Vierzon, both of which were presented on Thursday week by the Minister of Public Works in the Chamber of Deputies. The English lines are to run by Calais, Dunkirk, and Boulogne. Those to Calais and Dunkirk are to join the Belgian line between Douai and Lille, passing in the former case by Hazebrouk and St. Omer; and, in the other, by Hazebrouk and the west of Cassel. The branch line to Boulogne will quit the main line at Amiens, and run by Abbeville and Etaples. A sum of 15,000,000*fr.* is granted for the Calais and Dunkirk lines, 2,000,000*fr.* of which is to be paid from the estimates of 1844; and 6,000,000*fr.* from those of 1845. The Minister of Public Works is to grant a lease not exceeding twenty-eight years for the Belgian line, and the branch lines by Calais and Dunkirk; and a lease not exceeding thirty-five years for the Orleans and Vierzon line. Should the companies, accepted by the Minister, fail to comply with the conditions and clauses of the bill within the space of two months, he is authorized to get the lines executed himself at the cost of the state, 44,000,000*fr.* being allowed for such works, of which 10,000,000*fr.* are to be paid out of the estimates of 1844, and 20,000,000*fr.* out of those of 1845. In case the lines are made by companies, the Minister is authorized to lease out the working of the lines, for a period not exceeding twelve years, the lines falling gratuitously into the possession of the state at the end of that period. An article stipulates, that after taking off 6 per cent. interest, and 2 per cent. for the sinking fund, the profits are to be divided equally between the companies and the state. There are to be three classes of carriages on the Belgian line; the first at 10*c.*, the second at 7*c.* 0. 005, and the third, which are to be covered and curtained, 5*c.* 0. 005, per kilometre, or quarter of a league. The state is to have the faculty of redeeming the lease of twelve years; the purchase to be made according to the conditions established for the Orleans railroad, with this difference, that the premiums which are to be added to the net dividend declared to compose the annuity, which in such cases are to be paid to the company, are to be reduced to half.

**ROYAL SOCIETY.**—The lucrative and honourable appointment of Assistant Secretary, vacant by the death of the late Mr. Robertson, has been filled up by Mr. Weld, the late Secretary of the Statistical Society. This latter situation has been filled by the appointment of Dr. Richard King, the celebrated Polar traveller.

## Correspondence.

## PROPOSED NEW BUILDING-ACT.

SIR,—As you are reviewing the new Building-Act, I send you the following hints for your consideration.

That the gully-holes and sink-stones to drains in houses and also in yards should be properly trapped to prevent the stench rising out of them, as it will be useless to make drains perfect if stench be allowed to escape from these places. With regard to houses already erected, I think the district-surveyor should have power also to order all existing sink-stones to be trapped, on receiving a written complaint from the tenant that they are an annoyance.

That privies should not be allowed in any dwelling at all, nor in any yards within, say at least, 10 feet from the external wall of a house.

Yours obediently, B.

P.S.—Sign-boards are only limited as to height, so that they may be continued the whole length of a street, from house to house, without any space between them.

## FONT IN ST. MARY'S CHURCH, BRECON.

SIR,—The exquisitely beautiful font in St. Mary's Church, Brecon, the drawings of which you published last week, I think must certainly have been "a *Piscina*," which opinion, I think, is confirmed by the minute particulars of your correspondent "J. L. T.," who describes the want of an original shaft of stone, the appearance of the bowl, only wrought half round, having been originally fixed in a wall, the wall itself having appearances of "a moulding in the background," which I should think is the arch usually above "a *Piscina*." I have little doubt that a water-drain is covered over by the metal lining of the bowl, which being only 8 inches deep, is too shallow for immersion. I should like very much to see a drawing of one of the crockets, also sections of the arch-moulds and of the tablings of the small pinnacles; I think then workmen might reproduce this beautiful example. I should indeed like to possess a cast of one side of the bowl, as I think the half-figures, arches, and other decorations exceedingly fine.

I am, Sir, your very humble servant,  
Capequary, March 18, 1844. a F.A.S.

## SMALL HOUSE PORTICO.

SIR,—Will any of your numerous correspondents favour me with a plan for a portico? Something neat is required, with square columns, to rise about five steps; the width of the hall about five feet.

Your obedient servant,

A WORKING MAN.

## MEETINGS OF SCIENTIFIC BODIES.

To-day and during the ensuing week.

SATURDAY, MARCH 23.—*Royal Botanic*, Regent's-park, 4 P.M.; *Westminster Medical*, 32, Sackville-street, 8 P.M.

MONDAY, 25.—*Geographical*, 3, Waterloo-place, 8½ P.M.; *Medical*, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 26.—*Medical and Chirurgical*, 53, Berners-street, 8½ P.M.; *Zoological*, 57, Pall Mall, P.M.; *Civil Engineers*, 25, Great George-street, 8 P.M.

WEDNESDAY, 27.—*Society of Arts*, Adelphi, 8 P.M.; *Pharmaceutical*, 17, Bloomsbury-square, 9 P.M.

THURSDAY, 28.—*Royal*, Somerset House, 8½ P.M.; *Antiquaries*, Somerset House, 8 P.M.; *Royal Society of Literature*, 4, St. Martin's-place, 4 P.M.; *Medico-Botanical*, 32, Sackville-street, 8 P.M.; *Numismatic*, 41, Tavistock-street, Covent Garden, 7 P.M.

FRIDAY, 29.—*Royal Institution*, Albemarle-street, 8½ P.M.

SATURDAY, 30.—*Free-Masons of the Church*, Adjournment of Our Lady's Chapter for delivery of the inaugural address upon the foundation, 8 P.M.; *Westminster Medical*, 32, Sackville-street, 8 P.M.; *Chemical*, Society of Arts, Adelphi, 8 P.M. (anniversary).

**SOCIETY OF ARTS.**—Open every week-day except Wednesday, between 10 and 2. Admission by members' tickets.

The meetings of the following Societies are continued throughout the year, on the regular days:—**HORTICULTURAL**, **ZOOLOGICAL**, **ENTOMOLOGICAL**, **BOTANICAL**, **ROYAL BOTANIC**, and **PHARMACEUTICAL**.



## Current Prices of Metals.

London, March 8, 1844.

	£	s.	d.	£	s.	d.
SPELTER.—Foreign ton ..	0	0	0	23	0	0
" For delivery ..	0	0	0	21	0	0
ZINC.—English sheet ....	0	0	0	30	0	0
QUICKSILVER.....	per lb.	0	4	6		
IRON.—English bar, &c.....	per ton.	5	0	0		
" Nail rods.....	5	15	0	6	0	0
" Hoops.....	7	5	0	7	10	0
" Sheets.....	0	0	0	8	0	0
" Cargo in Wales ..	0	0	0	4	10	0
" Pig, No. 1, Wales ..	3	0	0	3	10	0
" No. 1, Clyde ..	2	6	0	2	0	0
" For., Swedish ..	1	0	0	10	10	0
" Russian, CCND.....				16	10	0
" PSI .....						
STEEL.—Swedish keg .....	p. ton	18	0	0		
" Fagot.....	0	0	0	18	10	0
COPPER.—English sheathing, per lb.	0	0	0	9	4	
" Old.....	ditto.	0	0	8	4	
" Cake p. ton.....	87	0	0	88	0	0
" Tile.....	80	0	0	85	0	0
" S. American ..	76	0	0	78	0	0
TIN.—English, blocks, &c. cwt.....				3	13	0
" bars.....	0	0	0	3	14	0
" Foreign, Banca.....	3	8	0	3	10	0
" Straits.....	3	5	0	3	6	0
" Peruvian.....	0	0	0	3	0	0
Tin plates, No. 1C. p. box ..	1	5	0	1	9	0
" No. IX.....	1	11	0	1	15	0
" wasters 3s. p. box less						
LEAD.—Sheet milled .....	per ton	17	15	0		
" Shot, patent .....	0	0	0	19	15	0
" Red .....				21	10	0
" White .....				23	10	0
Pig-LEAD.—English.....	0	0	0	17	0	0
" Spanish .....	0	0	0	16	10	0
" American ..	16	5	0	16	10	0

The market for metals is without material change, but the quotation of bar-iron is 5s. per ton higher from Wales.—*Midland Counties Herald.*

March 15, 1844.

	£	s.	d.	£	s.	d.
SPELTER.—Foreign, ton ..	0	0	0	23	0	0
" For delivery ..	0	0	0	21	0	0
ZINC.—English sheet ....	0	0	0	30	0	0
QUICKSILVER.....	per lb.	0	4	6		
IRON.—English bar, &c.....	per ton.	5	0	0		
" Nail rods.....	0	0	0	5	15	0
" Hoops.....	7	5	0	7	10	0
" Sheets.....	0	0	0	8	0	0
IRON.—Cargo in Wales ..	0	0	0	4	10	0
" Pig, No. 1, Wales ..	3	0	0	3	10	0
" No. 1, Clyde ..	0	0	0	2	10	0
" For., Swedish ..	0	0	0	10	5	0
" Russian, CCND.....				16	10	0
" PSI .....						
" Gouricff.....						
STEEL.—Swedish keg .....	per ton	18	10	0		
" Fagot.....	0	0	0	18	10	0
COPPER.—English sheathing, per lb.	0	0	0	9	4	
" Old.....	ditto.	0	0	8	4	
" Cake p. ton.....	85	0	0	86	0	0
" Tile.....	83	0	0	84	0	0
" S. American ..	0	0	0	77	0	0
TIN.—English, blocks, &c. cwt.....				3	13	0
" bars.....	0	0	0	3	14	0
" Foreign, Banca.....	3	6	0	3	8	0
" Straits.....	0	0	0	3	4	0
" Peruvian.....	0	0	0	3	0	0
Tin plates, No. 1C. per box 1 ..	1	5	0	1	9	0
" No. IX.....	1	11	0	1	15	0
" wasters 3s. per box less.						
LEAD.—Sheet milled .....	per ton	17	15	0		
" Shot, patent .....	0	0	0	19	15	0
" Red .....				21	10	0
" White .....				23	10	0
Pig-LEAD.—English.....	0	0	0	17	0	0
" Spanish .....	0	0	0	16	10	0
" American ..	16	5	0	16	10	0

The market for metals is advancing—British copper, Spanish lead, and spelter, being all advancing in price. The public sales of East India tin realised an advance of about 5 per cent. Bar-iron is now quoted at the advanced price of 4l. 15s. per ton for cargoes in Wales; but this price is not yet freely paid, the stocks being not yet sufficiently reduced.—*Midland Counties Herald.*

## ERRATA.

Page 109, 3rd col. 10th line, for House of Lords read House of Commons.

Page 115, 2nd col. 4th line from bottom, for effectation read effectuation.

Page 126, 3rd col. 6th line from bottom, for Bosse read Bosses.

Page 115, 3rd col. 1st line, for examplars read exemplars.

Page 150, col. 4, Tenders, for "Each party taken their own quantities," read "The parties having taken their own quantities."

## NOTICES OF CONTRACTS.

CONTRACT for the Execution of the several Works necessary to be done in the Rebuilding of Brent Bridge, and repairing Finchley Bridge, Hendon.—Clerk of the Peace, Sessions House, Clerkenwell-green. March 26.

For the Erection of a Lock-up House, at Bridlington, in the East Riding of the county of York.—Mr. G. Leeman, Clerk of the Peace, Beverley. April 6.

For the Erection of a Lock-up House, at Howden, in the East Riding of the County of York.—Mr. G. Leeman, Clerk of the Peace, Beverley. April 6.

CAMBRIDGE.—For the several works to be executed at the corner of St. John's and Bridge-streets. Mr. Clemence, Surveyor, Chesterton-road. The day for receiving Tenders not fixed.

COVENTRY.—For making Drains in South St. Nicholas-street, King-street, and Town Wall-street. Mr. T. H. Prosser, Surveyor. March 27.

COVENTRY.—For taking down several tenements and apartments in Cook-street College, Cook-street, and erecting five messuages and tenements on the site.—Dewes and Sons, Coventry. April 2.

ERECTING A NEW SCHOOL-HOUSE AND BUILDINGS, ST. AUGUSTINE, BRISTOL.—Plans, &c., at Messrs. T. Foster and Son, Architects, Park-street, Bristol. April 8, 1844.

For Concreting the Foundations of Buildings to be erected for Messrs Moses and Son, Aldgate.—Mr. J. D. Hopkins, Architect, 25, Bedford-square. March 26.

For purchase of the old brick building, situate on the west side of Bethnal-green, used as a Station-house.—R. Burlton, 18, Bethnal-green. March 25.

For putting up Pipes, Boilers, &c., for heating the new Prison, Belfast, and for supplying 700 locks.—Plans, &c., at the Office of Mr. Lanyon, Belfast; John Costes, Carrickfergus. April 10.

For works required in the enlargement of the Liverpool Workhouse.—N. Litherland, Secretary. April 16.

## PREMIUM.

£150 for the best design, plans, and estimates for a Pauper Lunatic Asylum, Derby (unless the person furnishing the same be employed to superintend the execution of the works); £100 for the second best design, and £50 for that which may be considered next in merit.—Mr. Barber, Derby. April 20.

## TO OUR CORRESPONDENTS.

"AN AUCTIONEER'S CLERK DESIROUS OF IMPROVING HIMSELF."—We are not aware of the existence of any one work published containing explanations of the different manners in which builders' work is usually done, the trade names, &c., the close study of "which would enable a person possessing a knowledge of mensuration, &c., but without any practical knowledge of building, to survey, and with the assistance only of a builder's price-book, to value any repairs or building-work, whether bricklaying, carpentry, painting, &c." This knowledge requires articles or apprenticeship and long study. Nicholson's, Goult's, and Bartholomew's works will acquaint our correspondent with some of the information required by him; and in the latter two he will find catalogues of books, some of which he may like to see, which he can do at the British Museum. If our correspondent read French, he may consult Rondelet's work with advantage.

"A LOVER OF ANTIQUITIES."—The method of taking reversed fac-similes from monumental brasses is by procuring large paper and laying it over the work, then rubbing it all over with cord-wainer's heel-ball; the paper yielding at the engraved depths leaves those parts of the subject light, and the pressure upon the broad flat parts of the metal causes them to be dark.

"A WORKING-BRICKLAYER."—To the patterns for chimney-shafts, relative to which our opinion is asked, we see no objection, whether they be executed in brick or stone. The designs sent to us marked A and B are conformable to existing examples; the others have been less frequently executed, and requiring sharp curves, would lead to more work and be less durable. We see no objection to all the four patterns being used in the same building.

A subscriber wishes to know whether any one of our correspondents has a perfect copy of "Goult's Encyclopedia of Architecture" to dispose of at a reduced price, and the price required for the same.

We should be happy to receive from our correspondent any good illustrations of "the gradations of the styles in Gothic Architecture in and about Cambridge."

We have received the letter of a Constant Subscriber, "X."

We have received the communication of "P. A. R." relative to cutting tapered planks.

## ADVERTISEMENTS.

## PUBLICATION.

TO RAILWAY CONTRACTORS.—The First Number of THE RAILWAY CHRONICLE will appear on the 20th of April. A detailed Prospectus will be ready on the 30th instant, and will be sent free, by post, to all who furnish their address to the Office, 14, Wellington-street North, Strand, London.

## SALES BY AUCTION.

TO BUILDERS, HOUSE-DECORATORS, PAPER-HANGERS, AND OTHERS.

MESSRS. CAFE & SON have received directions from Messrs. Harwood and Co. to SELL by AUCTION on their premises, No. 50, St. Martin's Lane, on Wednesday, March 27th, and following day, at 12 o'clock each day, the well manufactured, modern, and elegant STOCK of PAPER HANGINGS, comprising about 5,000 pieces, may be viewed on Sunday, preceding the sale. Catalogues may be had on the premises and of Messrs. Cafe & Son, Great Marlborough-street.

TO TIMBER MERCHANTS, CABINET-MAKERS, COACH-BUILDERS, CARPENTERS, BUILDERS, &c. On the Premises, York-street, Blackfriars-road, by order of the Proprietor, Messrs. Moxon and Sons, the following stock, which will be sold, WITH-OUT RESERVE, by SKEEN and LEARY, on Tuesday, April 2, at 12 o'clock precisely. This very excellent and well-seasoned stock, consists of SPANISH and FENDURAS MAHOGANY, in logs, planks, boards, and veneers; African-wood, Rosewood, Zebra-wood, Sash-wood; New South Wales Cedar, Rosewood, Satin-wood, Tulip-wood, and Holly veneers; Ebony, Kingwood, American ash, prime dry Panel-board, Pit and Frame Saws, Screws, and Crow-bars, Transoms, Copper and Settings, Breeding Implements, Turning Lathes, and all utensils in trade. To be viewed two days previous to, and on the morning of sale. Catalogues to be had on the premises, and of Skeen and Leary, brokers, 75, Old Broad-street.

## MORTGAGE AND ANNUITY OFFICE.

No. 123, CHANCERY LANE.—Persons requiring LOANS, by way of Mortgage or otherwise upon any available security, may at all times procure an advance to the extent of from 100l. to 200,000l., or so much as the property will bear, by applying to Mr. Bray, Surveyor, Land and Estate Agents, in the Office, as above, where a registry for the Sale of Estates, Houses, Land, Life Interests, and Reversions, is kept for inspection.

Particulars and Plans of Property intended for Sale are requested to be forwarded.

All communications for Money are considered strictly confidential.—Letters pre-paid.

## SEYSSSEL ASPHALTE COMPANY.

## "CLARIDGE'S PATENT."

ESTABLISHED 1838. This ASPHALTE is a Bituminous Limestone, obtained from an inexhaustible Mine at Pyrmont, in the Jura Mountains.

Previously to its introduction into this country, in 1838, the Material had been used for many years in France, and from its great utility was extensively patronized by the Government of that Country.

Among the various uses to which it can be applied, the following may be enumerated:—For Foot-Pavements, public and other; in the Curriage Approach to Mansions, Gardens, walks, and Terraces; the flooring of Kitchens and other basement offices; also of Coach Houses and Stables, Dog Kennels, Barn Floors, Cow Houses, Piggeries, Poultry Houses, Tun Rooms, and Maltings. For Roofing, Covering of Railroad and other Aches, the Lining of underground Cellars near Rivers to prevent the ingress of the Tides; also in covering the ground-line of Walls, to prevent damp rising, (this application of the Asphalt of Seyssel is particularly recommended by the Commissioners on the Fine Arts, thereby rendering the basement stories in the worst situations both dry and warm. It is an excellent Cement, as applied to Docks, Breakwaters, or Walls built for resistance to the encroachments of the Sea. For lining of Tanks, Fish-Ponds, and other Hydraulic purposes.

I. FARRELL, Secretary, Seyssel Asphalt Company's Works, "Claridge's Patent," Stangate Depot, London.

TO MERCHANTS, SHIPPERS, AND COLONIAL AGENTS.—The DIRECTORS of the SEYSSSEL ASPHALTE COMPANY are prepared to execute orders for the immediate Shipment of this Material, which for the convenience of transport is manufactured in blocks weighing each about 1 cwt. of two kinds, viz. the one (impervious to damp and vermin) for pavement and floors, generally, the other for covering of roofs, terraces, vaults, and arches, where it is desirable to keep wet from percolating or damp from rising, as a cement for brickwork, for lining of tanks, reservoirs, &c.

The material is perfectly free from smell, and unaffected by change of temperature. Unlike gas tar, bitumen, and other spurious compositions, it does not injure the general cargo of the vessel by the unpleasant effluvia arising from those compositions, nor does it become heated and adhere to the vessel or cargo.

Testimonials of its efficacy, full instructions for use, and samples of the material as it should appear when laid down are sent with each order to guide the workman in its application.

Country Architects and Builders continued to be appointed for the Sale and application of the Asphalt of Seyssel Mastic. Applications to be addressed to the Secretary as above.



# The Builder.

NO. LX.

SATURDAY, MARCH 30, 1844.



N pursuance  
of our  
intention  
to follow  
the  
considera-  
tion of the

Metropolitan Building-  
Act by that of the pro-  
posed general Act rela-  
tive to the Health of  
Towns throughout the  
three kingdoms, or Eng-  
land and Wales at large,  
we this week enter a little  
into that subject.

In the propounding of  
any such extensive mea-  
sure, fears are apt to be

generated in the minds of many persons, of  
the enactment of unnecessary interferences  
leading to great vexation, trouble, delay, ex-  
pense, and private inconvenience: and cer-  
tainly statutes purporting to be merely sani-  
tary are too apt to be afflicted by some one  
at least of such drawbacks upon their useful-  
ness. Very great caution, therefore, ought to  
be used in the framing of any legislative mea-  
sure of the kind, that when enacted, a fair  
chance may be provided of the long exist-  
ence of such measure; and so do away with  
one of the curses of modern legislation, con-  
stant wavering—hasty and perpetual altera-  
tion—uncertainty, by the leaving of cramp-corners  
—and which faults are sure to produce a violent  
desire for change before better schemes are  
provided; the end of which is, that English  
law, which each English subject is supposed,  
and that penalty, to understand, vexes the most  
astute juriconsults; and after a man of inces-  
sant industry and shrewdness has passed the  
greater part of his life in becoming learned  
upon one branch of English law, he finds sud-  
denly all his lore, all his industry, all the  
cramping down of his mind to the contracted  
subtleties of technical language, profit nothing,  
and that his occupation has gone; the traps  
which he had mastered are withdrawn; and  
the legal pit-falls he had learned to avoid no  
longer require the pilotage of the black-letter-  
mind of the wrinkle-browed civilian.

Many persons will think no measure of the  
kind is indeed necessary; perhaps with most  
small English towns which are clean and  
healthy, no such statutory interference would  
be of any value, were not some other measures  
of good account to be united with such general  
enactment.

But turning to the statistics of any great  
town, such as instance as Liverpool, few per-  
sons would for a moment hesitate in admitting  
such a measure to be most imperatively called  
for by the exigencies of the case.

The following quotations are from a pamphlet  
“On the Physical Causes of the high rate of  
Mortality in Liverpool, read before the Literary  
and Philosophical Society of Liverpool, by

W. H. Duncan, M.D.,” and some time since  
published by that society.

“Table of the relative Mortality of Seven of  
the principal Towns, calculated on the ave-  
rage of 1838-39-40.

Towns.	Population in 1841.	Deaths.
Metropolis.....	1,970,727	1 in 37-38
Birmingham.....	138,187	“ 36-79
Leeds.....	108,487	“ 36-73
Sheffield.....	85,293	“ 32-92
Bristol.....	64,298	“ 32-48
Manchester (Union).....	192,408	“ 29-64
Liverpool (Parish).....	223,054	“ 28-75

“This table makes Liverpool the most un-  
healthy town of the series.

“Table shewing the average Age of Deaths.

Towns.	Average Age at Death.
Metropolis, i. e., Kensington, Strand, Whitechapel, and Bethnal Unions.....	26½ years.
Leeds.....	21 “
Manchester.....	20 “
Bolton.....	19 “
Liverpool.....	17 “

The average duration of life in London,  
as taken from these examples, is therefore 56  
per cent. more than in Liverpool.

“Table of average Age of Death in Profes-  
sions and Trades.

Towns.	Gentry and professional men.	Tradesmen.	Labourers, &c.	General average.
Kendal ..	45 years.	37 years.	34 years.	36 years.
Bath.....	55 “	37 “	25 “	31 “
Four Me- tropolitan Unions.....	44 “	28 “	22 “	26 “
Leeds.....	44 “	27 “	19 “	21 “
Bolton.....	34 “	33 “	18 “	19 “
Manchester ..	30 “	29 “	17 “	18½ “
Liverpool ..	35 “	22 “	15 “	17 “

“The population of the parish of Liverpool,  
by the census of 1841, amounted to 223,054;  
of whom about 160,000 may be estimated to  
belong to the working classes; and of these, it  
is well known that a large proportion inhabit  
courts and cellars, and the remainder live in  
houses or rooms to the front of the street. As  
some members present may not be acquainted  
with the character and construction of the  
courts in which so many of their townsmen  
reside, I may state shortly that they consist  
usually of two rows of houses placed opposite  
to each other, with an intervening space of  
from 9 to 15 feet, and having two to six or  
eight houses in each row. The court commu-  
nicates with the street by a passage or archway  
about 3 feet wide—in the older courts built up  
overhead; and the further end being also in  
many instances closed by a high wall, or by the  
back or side of an adjoining building; the  
court forms, in fact, a *cul de sac* with a narrow  
opening. Such an arrangement almost bids  
defiance to the entrance of air, and renders its  
free circulation through a court a matter of  
impossibility. \* \* The houses themselves  
are three stories high, contain three rooms of  
about 10 or 11 feet square, and being built back  
to back with the houses of adjoining courts,  
there is of course no thorough draught. An  
enumeration of the court and cellar popula-  
tion of the borough was made two years ago,  
under the authority of the Town Council,  
when it appeared that there were in the parish  
of Liverpool, 1,982 courts containing 10,692  
houses, and 55,534 inhabitants. That is to say,  
more than one-fourth of the whole parochial  
population, or more than one-third of the work-  
ing classes, were resident in courts. With re-  
gard to the character of these courts, it ap-  
pears from the report of the Corporation sur-  
veyors, that 629, or nearly one-third, were  
closed at both ends; 875, or less than one-half,  
were open at one end; and only 478, or less  
than one-fourth, open at both ends.

“The cellars are 10 or 12 feet square;  
generally flagged, but frequently having only  
the bare earth for a floor, and sometimes less  
than 6 feet high. There is frequently no  
window, so that the light and air can gain  
access to the cellar only by the door, the top of  
which is often not higher than the level of the  
street. In such cellars ventilation is out of the  
question. They are of course dark; and from  
the defective drainage they are also very gene-  
rally damp. There is sometimes a back  
cellar used as a sleeping apartment—having no

\* Mr. Chadwick gives 20 as the average for Manchester,  
as in the preceding Table, but the data only give 18.

direct communication with the external atmo-  
sphere, and deriving its scanty supply of light  
and air solely from the front apartment.

“The enumeration already alluded to shewed  
that there were in the twelve wards forming  
the parish of Liverpool, 6,294 inhabited  
cellars, containing 20,168 inhabitants, exclu-  
sive of the inhabited cellars in courts (of which  
there were 621, containing probably 2,000 in-  
habitants.) \* \* Of the entire number of cellars,  
1,617 have the back apartment 1 have men-  
tioned, while of 5,297, whose measurements are  
given, 1,771, or one-third, are 5 to 6 feet deep;  
2,324 are from 4 to 5 feet, and 1,202, from  
3 to 4 feet below the level of the street; 5,273,  
or more than five-sixths, have no windows to  
the front; and 2,429, or about 44 per cent.,  
are reported as being either damp or wet.

“The streets inhabited chiefly by the work-  
ing classes are on an average perhaps about  
8 yards in width; they seldom exceed 10, and  
sometimes are not more 5 yards across. Each  
house is usually occupied by two or more  
families, exclusive of the cellar, and most of  
the densely peopled lodging-houses are situated  
in the streets. As a general rule, the houses  
have no thorough draught, from being fre-  
quently built up against the houses in the  
courts behind.

Upon this subject a writer in the *Polytechnic  
Magazine* of January last declares—

“These disclosures have astounded us. If  
they had been brought from amongst the  
savage tribes of America, we should not have  
given them credit, because we have the evi-  
dence of witnesses to prove that the un-  
civilized man has often a very quick perception  
of what is unhealthy, and avoids it; but to  
think that the surveyors of the Corporation of  
Liverpool, the second town in the empire,  
should in the 19th century have had it in their  
power to lay before the public a catalogue of  
such hideous elements of misery, is indeed  
startling;—there must be an end put to the  
“*laissez faire*” system, and that right soon.

“The average density of the population of  
England and Wales is 275 inhabitants to the  
square mile, while that of the twenty-one prin-  
cipal towns is 5,045 inhabitants to the square  
mile. The following table exhibits the com-  
parative density both over the whole area, and  
the area actually built upon of our five most  
populous towns.

Towns.	Inhabitants to the square mile.	
	Of the total area.	Of the built area.
Leeds.....	20,892	87,256
Metropolis.....	27,433	50,000
Birmingham.....	33,669	40,000
Manchester (township).....	83,224	100,000
Liverpool (parish).....	106,599	138,224

“We learn from this table that when com-  
pared with London, the population of Liver-  
pool is nearly four times denser, if we take  
the whole area built and unbuilt into account,  
and that the actual built area of Liverpool has  
a population two and a half times more crowded  
than the corresponding area of the metropolis.  
This is no doubt a strange fact, but when we  
come to examine the comparative density of  
the population in different districts of Liver-  
pool, we shall find cause for more surprise.

“Dr. Duncan states that there is a district  
containing about 12,000 inhabitants crowded  
together upon a surface of 105,000 square  
yards, which gives a ratio of 460,000 inhabitants  
to the square mile. This occurs in Exchange  
Ward, in the immediate vicinity of the Town  
Hall, the Exchange, and the splendid offices  
of the Liverpool merchants; and he further  
states that that portion of the district bounded  
by Addison-street and Great Crosshall-street  
contained, in 1841, 811 houses, and 7,938 in-  
habitants on an area of about 49,000 square  
yards, giving a ratio of 657,963 inhabitants to  
the square mile!—a proportion, perhaps, un-  
paralleled in the world for its density. In order  
to enable our readers to form an estimate  
of what the condition of the poor in this  
district must be, we shall compare it with  
London. The present population of the metro-  
polis is about 1,900,000, and every square mile  
of building contains 50,000 people. Those  
who are accustomed to walk our streets see no  
evidence of under-population, but the con-  
trary. Now, by the census of 1841, the popu-  
lation of Great Britain and Ireland amounted  
to above 26 millions and a half, and if we  
could suppose 25 millions of these crowded  
into the present houses of London, we should



have our whole population reduced to a similar condition to that of the inhabitants of the district in Liverpool alluded to.

"In certain localities the crowding of the population is even greater than this. One instance out of a number of others is given of a court in Crosbie-street, containing 118 inhabitants on an area of 150 square yards, or about one square yard and a quarter to each. The average of inhabitants is nearly seven to each house, while in the court alluded to it is fifteen to each, and Dr. Duncan states that there are entire streets where the average is nearly as high. If we descend into these abodes of all wretchedness, the cellars, we find that when the families are shut up for the night, thirty individuals are furnished with a supply of air sufficient only for the wants of seven. This part of the subject might be illustrated to a greater extent had we space for the purpose.

"The whole of the cellar population of the parish (upwards of 20,000) are absolutely without any place of deposit for their refuse matter. Of the front houses inhabited by the working classes, a large proportion are in a similar predicament. 'In 26 streets, containing 1,200 houses, not less than 804 or two-thirds, were without either yard, privy, or ash-pit.' Even where such conveniences exist, they are said to be 'in an abominably filthy and ruinous condition.' They are generally so full before they are emptied, that the filth 'is deposited in the corners of the court, in the entries or back passages adjoining it, or in the street itself.' Dr. Duncan further states: 'I do not know of a single court in Liverpool, which communicates with the street or sewer by a covered drain,' the consequence of which is, that the fluid contents of the overflowing ash-pits and privies, 'spread a layer of abomination over the entire surface of the court.' In some instances the same filthy fluid 'oozes through into the neighbouring cellars (inhabited remember), filling them with its pestilential vapours, and rendering it necessary to dig wells to receive it.' One of these wells four feet deep, filled with this stinking fluid, was found in one cellar under the bed where the family slept."

Out of 57½ miles of streets, Dr. Duncan calculates that not more than 25½ miles are sewered wholly or partially, there being still 32 miles without drainage of any kind. Let us see how these 25½ miles of sewers are divided. There are 20 miles of streets inhabited by the working classes, and of these only 4 miles are drained by sewers; while of the 37½ miles of streets inhabited by other classes, 21½ miles are so drained. The element of deficient drainage also bears most heavily on the poorer classes. Such details as these shew the value of statistical inquiries, and that sanitary legislation is imperiously called for. We shall recur again to this important subject.

Impe.

#### NEW BUILDINGS BILL.

A COMMITTEE of the MASTER CARPENTERS will meet at the Freemasons' Tavern, on Wednesday next, to take into further consideration the several enactments in the above-mentioned Bill.

#### INSTITUTE OF BRITISH ARCHITECTS.

MARCH 18.—E. B. Lamb in the chair.

A communication was read from C. Parker, containing some observations connected with Hampton Court Bridge, and the adjacent parts of the river Thames. It appears, that as late as the year 1750 there was no communication between Hampton Court and the opposite bank except by a ferry; for we learn, by an Act of Parliament about that date, that J. Clark, who possessed the manor of East Moulsey (from the reign of Charles the Second), was empowered to erect a bridge across the river, from East Moulsey to Hampton Court. The bridge was erected from the designs of S. Stephens, by B. Ludgator, and was opened in December, 1753. That bridge, however; did not remain up long, for having been built too slight to stand, or to resist the concussion of the passing craft, it was subsequently taken down. On its removal, the present bridge was erected, and although it has been repaired several times, the original

form of its construction is still preserved. It is built of oak, supported by ten piers of the same material; the length is about 350 feet, and the breadth 18 feet. In 1841, it appeared that material alterations had been made in the current of the river, by the construction of Moulsey Lock, about the year 1817, and subsequently (about 1833) the construction of two wooden embankments, projecting from the north bank of the river, by which the width of the stream was reduced one-half. These obstructions had caused such an alteration in the direction of the current and the rapidity of the stream, as to occasion not only a disruption of the banks and the bed of the river, but likewise much injury to the bridge itself, from the craft being frequently driven with violence against the piers. Extensive repairs were in consequence found necessary. The main piles were strengthened with additional ones, the decayed portions being removed, and the whole bound together with wrought-iron chain-bars. Proper precautions were taken to render the chalk in the piers, and the gravel of the platform was reduced in thickness 18 inches, in order to lighten the superincumbent weight; and the structure, though still presenting a somewhat disjointed and sunken appearance, is now firm and compact.

A paper was likewise read by Mr. F. J. Francis, "On the Chancel of Ringwood Church, Hants."—This chancel, fifty feet long and twenty-two feet broad, is (as appeared from the drawings exhibited) a fine specimen of the early Pointed style; and although, like the rest of the church, it has suffered from continued neglect, spoliation, and bad taste, enough remains to prove that the ancient builders had bestowed on it no ordinary portion of ingenuity and skill. The peculiar feature is the number of windows which it contains, there being a series of eight lofty, narrow lancet windows on each side, with deep splay, some of which bear traces of painted decorations, with a fine triple lancet at the east end, making a total of nineteen. The peculiar features of the style are well carried out in all the details. The capitals and bases of the slender Purbeck pillars, which separate the splay of the window at the east end are in the purest taste; indications of similar pillars are to be found between the windows on the north and south sides.

#### INSTITUTE OF CIVIL ENGINEERS.

MARCH 26.—The President in the chair.

The paper read was by Mr. C. H. Gregory, engineer of the London and Croydon Railway; it treated of "Railway cuttings and embankments, with an account of some 'slips' in the London clay." An outline was given of the general principles which regulate the formation of railway cuttings and embankments, illustrating the manner in which these works are affected by the geological character of the earths employed, or that were cut through. The paper then gave a detailed history of some heavy slips in the London clay, which had occurred, under the observation of the author, on the London and Croydon Railway, and described the means adopted for clearing the railway from the immense masses of clay with which it was covered, to a depth of from ten to twelve feet, and for enabling the passenger-trains to run without hindrance, during the time of repairing the damage.

The cause of these slips was then fully considered, and it appeared evident that in nearly every case they proceeded from the combined action of air and water; the latter entering, in the rainy seasons, by the cracks formed by the drying action of the former, until the mass of upper yellow clay being detached, moved by its own weight, and sliding upon the blue clay, the surface of which was rendered semi-fluid by the percolated water, was precipitated into the cutting.

The means adopted for preventing the recurrence of such events were fully considered, particularly the introduction of gravel buttresses and revetments through and at the foot of the slips, a system which had been perfectly successful.

In the discussion which ensued, the means adopted were generally approved of; many instances were given of the use of similar gravel buttresses on other railways; the importance of extensive surface-drainage, and of freeing

from water the slopes and embankments, was insisted on; the interesting question of the "creep," or presumed rising of the floor of old mines, was examined, and it was contended that, in almost all cases, it was the roof, or upper rocks, that sunk down. The case of the village of Wallsend was instanced, which place had been sunk vertically between sixteen and twenty-four inches, in consequence of the excavation of the coal from beneath it, by the mines under the direction of the late Mr. Buddle.

The further discussion of the question was adjourned until the next meeting, April 2nd, when the monthly ballot for members was announced to take place, and the following papers will be read:—

No. 661. "Account of the Railway from Amsterdam to Rotterdam, and of the principal works upon it," by Le Chevalier F. W. Conrad, M. Inst. C. E., translated from the French by C. Manby, secretary.

No. 660. "Description of the Piling Machine, used at Montrose Harbour Works," by G. T. Page, Assoc. Inst. C. E.

No. 673. "Account of a series of experiments on the comparative strength of solid and hollow axes," by C. Geach.

#### THE ROYAL INSTITUTION.

MARCH 15.—Lord Prudhoe, president, in the chair.

Mr. Cowper "On Signals and Telegraphs." The object of his communication was to exhibit the method of holding intercourse at a distance, by means of conventional symbols, whether on land or at sea. The lecturer distinguished telegraphs (consisting of machinery, more or less complicated) from signals, which are simple constructions, as beacons, flags, &c. Having noticed the allusions to beacons by the sacred writers, many centuries before the Christian era, Mr. Cowper proceeded to describe the present improved state of the methods of distant communication. Signals—These comprise, 1st. The method, now brought to great perfection, of signalling letters, words, or sentences, &c., by means of a series of flags of different patterns, as used by the Royal Navy or by merchant vessels; 2nd. Homographs, or manual telegraphs, consisting of discs of basket-work, held in different positions, or, as is practised on railroads, the human arm extended in various attitudes; 3rd. A plan invented by Mr. Cowper's son to give notice to the driver of a locomotive engine of his approach to a station, or an accident in foggy weather; this consists of a small case of gunpowder in which is inserted a kind of lucifer match; this is fastened to the rail at the spot where the alarm is to be given, and as the wheel of the engine goes over it, it explodes, and the driver instantly shuts off the steam. The lecturer noticed that the explosion, though not loud when compared with the noise of the train, attracted attention by the difference of the sound. Mechanical Telegraphs—Mr. Cowper gave a history of these curious arrangements, beginning with the telegraph invented by Hook in the seventeenth century, and then proceeded to exhibit models of the construction of Mr. R. L. Edgeworth—of the shuttle telegraph, used by the government for many years, till superseded by the invention of Sir H. Popham, the present Semaphore. This instrument was compared with the T telegraph, long used by the French. Electrical Telegraphs—Mr. Cowper concluded by exhibiting working models of the forms of these instruments, now used on the different railroads—and a magnetic electric machine, superseding the necessity of a galvanic battery; and lastly, a machine by Professor Wheatstone, for making the telegraph print on paper the message which it delivers.

ABERDEEN HARBOUR.—We understand that the working plans of the Harbour improvements, with the relative specifications and other documents, are now in a state of great forwardness. From the extent and variety of the contemplated works, much time and labour have been expended in making out the necessary details; and we are happy to learn that matters are now so far advanced, that there is every prospect of contracts being advertised for in the course of the ensuing month.—*Aberdeen Herald*.



## STATISTICAL SOCIETY.

MARCH 18.—Thomas Tooke, Esq., V.P., in the chair.

The subject of the evening was "The Metropolis, its Boundaries, Extent, and Divisions for Social Government, with especial reference to its means of Sewerage;" being a continuation of the paper read at the ordinary meeting of the 19th of February, by J. Fletcher, Esq., Hon. Sec. &c.—According to Mr. Fletcher, the objects of municipal government in London, as elsewhere in England, are, 1. Police and justice; 2. Public works and buildings; and 3. Public instruction and charity.

1. The criminal justice and police of the metropolis are virtually in the hands of the central government, which issues the commission for holding the Central Criminal Court, and the commissions of the peace for Westminster, the Tower, Middlesex, Surrey, and Kent, appoints the police magistrates, and has the direct management of the police force, through the agency of the commissioners in Whitehall-place. The only exception is the City, which has the management of its own police, and an elective magistracy, who take an inferior part in the business of the Central Criminal Court. The jurisdiction of the Central Criminal Court comprises the whole of the metropolis, as now defined, together with the remainder of Middlesex, the parishes of Richmond and Mortlake, in Surrey, and a considerable tract in Essex; that of the several courts of general or quarter sessions is continuous with the counties or liberties for which they are held; and that of the several police courts extends through the districts hereafter described, which have been severally assigned to them; in the City by the Court of Aldermen, and without its limit by the Queen in Council. For administrative purposes of police, the metropolis is subdivided into districts, indicated by the letters of the alphabet; in the City by the commissioners under the Court of Aldermen, and elsewhere by the commissioners under the Secretary of State for the Home Department. The courts at Westminster are the courts of civil jurisdiction most resorted to; those of the City have no authority beyond its limits; the several small debt courts are likewise confined, by their several Acts of Parliament, within specific bounds; but the county courts have a more general application, and those of Middlesex are now held in several places, with an enlarged jurisdiction, and improved process.

2. Nearly the whole of the public works are in the hands of local, if not of representative, authorities. The drainage is divided among commissions of sewers, issued by the Crown, like commissions of the peace; the streets and roads are in the charge of the parish vestries, local boards and trusts, and the commissioners of the metropolitan roads; the supply of water and of gas by the several companies is also a matter of territorial division under monopoly conventions; districts for the inspection of buildings in course of erection are appointed by the magistrates; but such works as markets, exchanges, approaches, bridges, cemeteries, the river navigation, &c., in the hands of the corporation, of companies, and of large proprietors, have, of course, no reference to municipal divisions.

3. Public instruction, except of paupers, is not a matter of municipal provision; but the division of the metropolis for poor-law administration, with which that for the registration of births, deaths, and marriages coincides, is one of paramount importance. Its largest charitable endowments are irrespective of locality; but a great amount of gifts is devoted to the relief of the poor in particular parishes and places. Owing to the number of parishes having local Acts for the management of their poor, and other causes, however, the metropolitan system of parochial relief is on no general and well-organized plan, and the districts in use are irregular in the extreme.

For the purposes of drainage, the metropolis is placed under the jurisdiction of seven different Sewer Commissions. The sums expended give the nearest approximation to the yearly income of these commissions, which generally make their levies at intervals of several years, so that the returns of any one year afford but very imperfect data for estimating their average income. The direct

taxation for sewers thus appears to be little if any thing short of 100,000*l.* per annum.

Every portion of the metropolis is necessarily included under some trust for the purposes of paving, lighting, and cleansing; but of the limits assigned to such trusts as are not parochial, we are without any information whatever. Their income and expenditure are equally unknown. Some idea of the vast sums which annually pass through their hands may be formed from the cost of paving, cleansing, and lighting in the city alone, for which the sum raised by rates in the year ended September, 1842, was 35,098*l.* 2*s.* 6*d.*; and the sum expended 41,945*l.* 6*s.* 7*d.* Supposing that the average expenditure on these objects in the rest of the metropolis were only one-half what it is in the city, in proportion to the population, it would amount to no less than 329,500*l.*, making a total in the metropolis of about 371,500*l.*; and it may safely be estimated at 400,000*l.*

The subject of drainage occupied a large portion of the paper, but we can only record the following—"The whole of the ancient statutes of sewers provide merely an open surface drainage, and until lately there were still some doubts whether these statutes give to the Commissioners power to make even a new open drain. But with regard to the covered sewers which are now a necessary part of the economy of all large towns, as they were in the civilized ages of antiquity, they give no express powers whatever; and local acts having but partially supplied the deficiency, the Commissioners of Sewers in the greater part of the metropolis have to the present day no power whatever to make a new covered sewer. Incredible as it may appear, it is not to the present day a recognized purpose of several of the principal Boards of Commissioners to protect the public health by the covering of the sewers, from the noisome effluvia of a city's drainage, but only to effect the mechanical transmission of the surplus fluids to the Thames."

The metropolis is supplied with water by nine principal and two smaller companies. By supposing the water rental in 1843 to bear the same proportion to the population of the metropolis in 1841, that the water rental of 1833 did to its population in 1831, Mr. Fletcher finds the probable amount of last year's water rental to have been 344,238*l.*

## THE IRON AND METAL TRADES' PENSION SOCIETY.

THE celebration of the first festival in commemoration of this useful and benevolent institution took place on the 19th instant at the London Tavern, Bishopsgate-street. The chair was taken by Mr. R. W. Kennard, one of the Vice-Presidents, who was supported by nearly a hundred of the most opulent and influential members of the trades. Every thing was in the best style. The entertainment supplied was more than ordinarily liberal, and the amount of subscriptions and donations more than usually large for a society in a state of creation, and certainly not yet matured. The chairman was a contributor of 100*l.* to the funds, and by his impressive and business-like address to the company on proposing the toast, "Success to the Institution," caused many of his auditors to subscribe largely. One feature of independence distinguishes this society: it can support itself, and it intends to support itself, solely by the contributions of members of the trades for the benefit of the aged and decayed of which it is instituted, and will not accept contributions from strangers. Last evening several checks from benevolent persons not connected with the trades of iron, hardware, and metal, were returned. This is, perhaps, as it should be, and it calls imperatively on all members of these trades to become subscribers, and shews their sense of independence, benevolence, and honour. The usual loyal and appropriate toasts were drunk with cheers, and the health of the chairman with more than usual demonstrations of good feeling. Mr. Toole assisted as toast-master, Messrs. Hobbs, Chapman, and Hawkins, added their vocal talents to the festivity, which was kept up till a late hour.

## WELBY PUGIN AND THE "BRISTOL AND WEST OF ENGLAND ARCHÆOLOGICAL MAGAZINE."

"MR. WELBY PUGIN has made his name pretty generally known, by becoming a convert to the Romish church, and thereby obtaining the lucrative position of architect in ordinary to the Romish superstition in these islands. Possessed of much cleverness, and assisted into notice by the reputation of his father, he has contrived to escape the evil consequences that, in worldly matters, so often attend those who make change in their religious creed; and cannot, however sincere he may be in his new religious professions, adduce in proof of his sincerity the worldly sacrifices to which, for conscience' sake, he has submitted.

"But with his religious opinions we have nothing to do, and shall content ourselves by supposing him sincere, and leaving his adopted mother to rejoice over the son she has acquired. What we have to consider, is, the amount of value to be attached to his writings; and here we must observe, that he possesses the reputation, among Protestants as well as Romanists, of having originated a new and consistent theory respecting "The true principles of Pointed or Christian architecture;" he thus entitles it, though the theory is equally applicable to every congruous and fully developed style.

"The two great rules for design," he says, "are these: 1st. That there should be no features about a building which are not necessary for convenience, construction, or propriety; 2nd. That all ornament should consist of enrichment of the essential construction of the building." This we quote from the opening paragraph of the first lecture; the following is from the concluding paragraph of the last. "Truth is only gradually developed in the mind, and is the result of long experience and deep investigation. Having, as I conceive, discovered the true principles of Pointed architecture, I am anxious to explain to others the errors and misconceptions into which I have fallen,"—he admits having, in the early period of his professional career, fallen into most of the faults he reprobates,—that they, profiting by my experience, may henceforward strive to revive the glorious works of Christian art in all the ancient and consistent principles."

"In the first of the passages quoted he explains the discovery of the true principles of architectural design, and in the last he claims the discovery as *his own*. The correctness of the principles he lays down we do not wish to dispute; but to the honour of having been the first to promulgate them, we shall soon shew that he has no claim. The perception of the truth, as is the case with many discoveries, may have occurred to more persons than one, without one borrowing from the other; the time was ripe for such a discovery; many had been travelling on the road that led to it: but in such case we usually accord the honours to the first that makes the announcement to the world. In the present instance such an announcement was made so long before the appearance of Pugin's book, and in works so familiar to architectural readers, that it is impossible to suppose that his mother-wit alone brought him to the conclusions he sets forth in his treatises. Pugin's lectures were published in 1841. In a volume entitled "Specifications for Practical Architecture," by Alfred Bartholomew, architect, published in the previous year, the author sets down the principle contained in Pugin's "two great rules" constantly and clearly. Take for example the following, from the Preface:—

"Pure taste in architecture has, in all past ages, been purely structural; and a departure from this wisdom is the true cause of the taste (or, to speak more properly, the want of taste) in modern architecture being so variable, so capricious, so much quarreled about, and so short-lived.

"In Pointed Architecture, all is structural, from the boss which confirms the arch-ribs (radiating from it, as the spokes radiate from the nave of a wheel), to the wall-buttress, which receives the energy of the vaulting, most artfully conducted down the vaulting-ribs, through the flying-buttress, and innoxiously dissipated on the ground itself; all is structural, from the rudder-like pinnacle,



which suddenly diverges into the substance of the wall-buttress the drift of the vaulting, to the triforium-arcade, which bestows economical use and elegance to the interior of the fabric, while it relieves from unnecessary weight the great columns supporting the clerestory, the energy of the vaulting having passed over its head to without the building.

"The modern man of taste would imitate the groined vaults of Pointed Architecture, merely because they are groined, but the Freemason groined them because he would so relieve from thrust the window-heads, voids, and other weak parts of a fabric."

"But Mr. Bartholomew neither is, nor assumes to be, the discoverer of this truth. It has by many of late years been laid down with more or less distinctness: but we believe that the person who may most fairly claim the merit of having first pointed out the true principles of architecture, by attaching all importance to constructive ornamentation and limiting the application of ornament to the 'decoration of construction,' is the French architect, Durand. So long ago as 1819, he published his 'Précis des Leçons d'Architecture,' which are founded altogether on this theory: we shall translate from his works a few passages, which will make this sufficiently plain—

"Whether," he says, "we ask the decision of reason, or examine the great monuments of the art, it is evident that to please is not the end of architecture; architectural decoration has never been its object."

Again: "We are far from thinking that architecture is not capable of exciting pleasurable emotion; we say, on the contrary, that it is impossible it should not please, whilst treated in accordance with the true principles. Does not nature connect a gratification with the fulfilment of our wants; and are not our most lively pleasures the satisfaction of our most imperious necessities? How then can architecture which satisfies so great a number of our wants, an art to which all other arts owe their existence, fail to be a source of pleasure?"

"No doubt the grandeur, the magnificence, the variety, the picturesque, and the character which we observe in buildings, are so many beauties, so many causes of pleasurable emotion. But is there any necessity for running after these? If an edifice is arranged in a manner suitable to the purpose to which it is destined, will it not be sensibly different from a building destined to a different use? Will it not have a marked character, and what is more, the proper character? If the different parts of this fabric, intended for different uses, are arranged in the manner proper to each, will they not necessarily differ from each other? Will not variety constitute one of the characteristics of the whole? If the disposition of all parts be made in the most economical, that is to say, in the simplest form, will not its grandeur, its magnificence be enhanced, because then the eye will embrace at once the greatest number of its parts? Where then is the necessity of running after these partial beauties?"

"It is then with the arrangement only that the architect should concern himself,—even if he regard decoration as all in all, and make it his sole study to please the eye; because that decoration cannot be called beautiful, cannot give rise to any real pleasure, which does not result from an arrangement the least wasteful and the most convenient."

"It is plain then that Welby Pugin is not the Columbus, nor even the Vesputi, who has led us to the comprehension of the true principles of Gothic architecture."

"In his condemnation of the pseudo-Gothic of the day, he writes sensibly and well; and we can almost sympathise with his enthusiasm in behalf of the old English styles, when practised upon sound principles. It would be well if he confined himself to this, and did not break out of his province to take part in church controversy, to lament over the 'lamentable schism' from which he has so lately been himself delivered, and to trace the decline of Christian art to the dark times of Pagan and Protestant ascendancy." He has grown tender, indeed, in his comments on the schism, being filled with a most Catholic hope that all the

Pope's stray sheep will shortly come bleating back to that pasture which he himself has found so fat; in the meanwhile it is gratifying to him to observe that even Protestants are beginning to build good churches; and without any Catholic qualms of conscience, he is ready to lend his professional advice and assistance towards the erection of such edifices, from the full conviction, no doubt, that though the costs may be defrayed by heretics, the buildings themselves will ere long be made available to the purposes of the true faith.

"The attempt to connect the decline of Gothic art with the introduction of Protestantism is absurd, and leads the writer into many inconsistent statements. If the one were a consequence of the other,—if the want of consistent principles, justly complained of in the architecture of the last three centuries, resulted from the want of consistent principles in the Protestant religion,—how is it that the art declined at once in countries that threw off, and in those that retained, the papal yoke? How is it that England, the stronghold of the new heresy, according to Mr. Pugin's own confession, was the last in which the 'true principles' were entirely lost sight of? If it be answered that the virus of the Reformation had affected all the states of Europe, though it became established as a chronic disease only in a few; let us ask, then, how it was that Christian architecture was never fully developed in Italy, the head-quarters of Romanism, and, least of all, within the papal territories? The holy fathers themselves were the great patrons of those to whom we owe the revival of Pagan art."

Has not the desecration of churches been carried forward almost as much by Roman Catholics as even by the Puritans? We have the testimony of Pugin himself to the well-known fact, that the sacred structures of this country retain more of their ancient character, have suffered less from the introduction of Pagan art, than those of any other. We seldom find, in England, that injury has been carried on in our ancient churches to such a reckless extent, as is admitted in the following, which we quote from the 'Apology': 'Modern Catholic ecclesiastics, in France and Belgium, have not only taken out the stained glass, but the mullions and tracery also, by way of lighting the church.' Where can we meet with a Gothic church upon the Continent, undeformed by the introduction of Pagan art, in the forms of altars, screens, baldacchini, coffered ceilings, and other incongruities?

"Finally, let us ask, if Protestantism and true principles of art be inconsistent with each other, how is it that Protestant England, and the Protestants of England, have led the way in the revival of Gothic art?"

#### THE NEW PNEUMATIC ENGINE.

At the *soirée* of the Marquis of Northampton on Saturday week, Mr. Reingle reproduced, in a more complete form, his metallic model for the air power, as intended to be applied to locomotive carriages, whether for railway uses or for common roads. It appeared from that gentleman's statement that the scale and proportions of his model would not allow, without a monstrous appearance, the air-balls, and especially the three-trigger valves, such as used for air-guns, to be shewn in conjunction with the other parts. In the course of the numerous anxious investigations, it was understood that the carriage engine, with all its adjuncts completely fitted, would be ready for the next *soirée*, when another form for locomotion, using the Archimedean screw to work against the atmosphere, was promised for exhibition, and, if we mistake not, means are to be employed to prove by demonstration the combined power and economy of the moving agent (compressed air) which many persons could not sufficiently comprehend by the explanations offered. The model of this pneumatic engine certainly has taken its full share of attention, and has provoked learned mathematical and pneumatic discussions, in which, on Saturday, some warmth was displayed both *pro* and *con*. Mr. Oliver Byrne was most active in defending Mr. Reingle's principles against what he termed the old-fashioned doctrine "that it costs as much to produce power as the power imparted." Mr. Reingle was strenuous in his endeavours to convince his dubious audience—for several attacked his assertions—that

his discoveries "had completely overturned that doctrine, the very extinguisher of genius, and the bar to all attempts to overrule long-established error." He demonstrated by example the immense difference there was by his invention between all beam-action steam power, and his faculty to fit several beams, carrying the moving power at the extremity of each beam, working upon the principle of a high pressure engine; that is to say, by injections of compressed air, by trigger movement, to raise one series of lifting air-vessels arranged along a cross bar uniting the four, five, or six beams, and at the same moment discharging similar air in similar quantities, to depress the lower valves of the opposite lower range of air-vessels. This action, he contended, brought the beam movement to a mere see-saw, without the smallest strain. Thus, if four beams be twenty feet in length, and the communication of power is placed on each side of the axis, at four equal distances, driving down wheels to move machinery or work water-pumps for mines, he converts this power at the end of each beam into eight times the first power, because it works agreeably with the known laws of leverage. At the next *conversazione* when the complete model is submitted, we will further enter on the assertion of the inventor, that he can make engines of any amount of horse-power; for he, no doubt, will be again called upon to further explain by model the assertion he has confidently put forward in an assembly of scientific individuals, connected with the first learned bodies in the world, that he can produce the enormous leviathan moving power equal to 320,000 horses. It is but due to the inventor to say he had many attentive listeners, and that, from his explanations, they were, with one or two exceptions, favourable to his views, and thought it probable and possible to bring his engine to operate with success.

#### GRAMMAR-SCHOOLS.

THERE are few counties in Great Britain which have so many endowed grammar-schools as Westmorland to boast of; and taking a radius of twenty miles round Kendal there is no district of equal circumference, and where there is only an agricultural population, which contains so many free schools where youth may receive the best instruction at so cheap a rate, in many cases at no expense to their parents, when residing within a short distance therefrom. We may enumerate Kendal, Sedburgh, Grayrigg, Hawkshead, Heversham, Burton, Cartmel, Lancaster, Giggleswick, and in some measure Kirkby Lonsdale. And how are many of these schools conducted? At Burton the endowment is entirely lost for want of a master, because one set of householders, in whom the right of appointment is vested, wish there should be (the visitor at their head) one description of master put into the school contrary to the provisions in the will by which it is endowed, and the other set wish to adhere to the letter of the endowment: but it would be invidious and censorious to specify and enumerate the different cases of mismanagement or bad government of those schools, many of which have rich exhibitions for supporting youths at the English Universities who have been educated at these schools, either from the negligence, immoral conduct, inebriety, incapacity, or age of the persons holding the situation of master, or from any other infirmity or cause. The object of the present paragraph is to bring under public notice the powers of trustees and visitors, contained in the Act 3 & 4 Victoria, cap. 77, intitled "An Act for improving the condition and extending the benefits of grammar-schools." By section first, Courts of Equity are empowered, whenever a question comes before them, to make decrees or orders extending the system of education and the right of admission into any school, and to establish schemes for the application of its revenues, having due regard to the intentions of the founder. By section 17, stating it is expedient to provide for the more easy removal of unfit and improper masters, "it is declared and enacted that it shall be lawful for the Court of Chancery to empower the person or persons having powers of visitation in respect of the discipline of any school, or who shall be specially appointed to exercise the same under that Act, and the governors, or either of them, after such inquiries, and by such mode of proceeding as the Court shall direct, to remove any master of any grammar-school who

\* Précis des Leçons d'Architecture, Données à l'Ecole Royale Polytechnique. Par J. N. L. Durand, Architecte, Professeur d'Architecture, et Membre correspondant de l'Académie des Beaux-Arts d'Anvers. Paris, vol. 1. pp. 18, 19, 21.



has been negligent in the discharge of his duties, or who is unfit or incompetent to discharge them properly and efficiently, either from *immoral conduct, incapacity, age, or from any other infirmity or cause whatsoever.*" Section 18th gives power to assign retiring pension, when incompetency of the master shall be from age or other infirmity, but not from *immoral conduct or incapacity.* The 3rd section of the above Act relates to the qualification of master required by the words of endowment. The 4th section—the Court not to lower the standard of admission when Greek and Latin are to be taught. The 5th section empowers the Court to dispense with the qualification required by any provision or statute for the master, in order to carry into effect more efficiently the intention of endowment deed. By the 6th section, the qualification of new schoolmaster, and right of appointment, is regulated. There is no doubt it would be salutary to put the enactments of this statute in force as regards some schools in Westmorland; but the above extracts will suffice for the present to draw the attention of the public to the powers therein contained. In a short time it may be necessary to advert again to this Act more specially and directly.—*Westmorland Gazette.*

## RAILWAY INTELLIGENCE.

**Wakefield and Lincoln Railway.**—The Wakefield and Lincoln line has been taken up with great spirit at Lincoln and its neighbourhood, and of the capital of 750,000*l.*, shares to the amount of 350,000*l.*, have been applied for by the gentlemen of the county, the provisional committee having determined to give the preference to applicants locally interested, provided that they are responsible parties. The Lancashire and London capitalists have sent claims for more shares than will remain after the Lincolnshire demand is satisfied. Every thing would thus seem to look well for the success of the project; which, when carried into execution, must prove by far the most important line for the agricultural districts of England of which the country can boast; carrying, as it must, the produce of Lincolnshire, North Norfolk, Cambridgeshire, and Huntingdonshire, to the great markets of consumption lying between Wakefield and Manchester, embracing the entire cotton and woollen manufacturing towns, with a population of near 2,800,000, all of whom have to be fed from other parts. So cheap is the transit of corn from Hamburg (notwithstanding the assertions of the hon. member for Stockport and his broad-brimmed brother Bright to the contrary), that a contract might be made, not, as they say, for 8*s.* per quarter charged as freight from Hamburg to Hull, but for half that rate per quarter, from Hamburg to any town between Wakefield and Manchester, including Leeds, Wakefield, Bradford, Dewsbury, Huddersfield, Brighouse, Elland, Halifax, Hebden Bridge, Todmorden, Barnsley, Rochdale, Bury, Oldham, Manchester, Ashton, Stalybridge, Stockport, and their very populous parishes and townships. In fact, without the Lincoln and Wakefield Railway, the cost and time of transit from Lynn, Yarmouth, and the other shipping places in Norfolk, as well as Boston, Wisbech, Spalding, and the other great shipping places in Lincolnshire, from which their supplies are now drawn, are actually more than from Hamburg or Dantzic, by an average of 30 per cent., which would have been proved before the House of Commons, had Mr. Cobden's committee been granted.

**Wisbech.**—The directors of the London and Birmingham and the Eastern Counties Companies had a meeting on Thursday last, for the purpose of carrying out a railway from the line at Ely to Lincoln, *viâ* Wisbech and Boston; it is said Mr. Stephenson is to be the engineer. This line, of course, will be opposed to Mr. Walker's line from Cambridge to Lincoln and York.—*Boston Herald.*

**Manchester, Leeds, and Hull Railway.**—On and after the 11th of April there will be two mails per day between Manchester and Leeds, and two between Manchester and Hull. As has always been the case with this company, the terms were settled between the Postmaster-General and the railway without having recourse to arbitration.

**South Devon Railway.**—We understand that Mr. Walker, the eminent engineer, who is specially appointed by the Lords of the Admiralty to report on the proposed coast line of the South Devon Railway, has arrived in this city (Exeter). He commences this morning an examination of the Exeter Canal, and will proceed with all possible despatch minutely to survey the banks of the Exe, the sea-shore to Teignmouth, and the banks of the Teign. His report, it is understood, will be of the most accurate description, so as finally to settle the question whether or not Mr. Brunel's line is one which ought to be adopted, either as regards the public safety or causing any impediments to navigation. We hear Mr. Brunel has been at Dawlish and Teignmouth during the last week, making the most rigid scrutiny into the feasibility of his proposed line of railway, so as to be prepared to rebut any arguments which may be advanced against it.—*Trevelman's Flying Post.*

**Bristol and Exeter Railway.**—A large and influential meeting of the city and county gentlemen was held at the Guildhall, Exeter, on Saturday week, to consider the propriety of adopting some course to celebrate the completion and opening of the Bristol and Exeter Railway. The High Sheriff of Devon was in the chair, and it was unanimously resolved that a public banquet should be given to the directors of the Bristol and Exeter and the Great Western Railways, the members and Recorder of Exeter, the Lord Lieutenant, the High Sheriff and members of the county of Devon, &c., on that occasion. A considerable amount was raised at the meeting for carrying the same into effect, and subscription lists are opened at the different banks in Exeter.—*Western Luminary.*

**New Railway.**—A railway is about to be proposed from Southampton, through the New Forest, between Ringwood and Christchurch to Lytchett, which is immediately at the back of Poole Harbour; from this point it will be continued to Dorchester, thence to the River Ye, and extending to Bridgwater. This will be effectually opening up the benefits of railway communication to the counties of Dorset and Somerset. The saving to persons residing inland upon coal, and other articles of consumption which are sea-borne, will be very considerable. We are happy to hear that the landowners on the line are generally favourable, and as both the South-Western and Bristol and Exeter lines will be fed by the proposed junction, we should not anticipate any opposition in these quarters.—*Somerset Gazette, March 23.*

**Competing Lines of Railway.**—In the Lords on Friday week, the Earl Fitzwilliam recommended to government to issue a commission to take surveys of railways generally throughout the country, and fix the points from which it was for the interest of the whole community that railways should run, leaving to private enterprise the execution of the lines thus declared by government to be of the greatest public utility. The Duke of Wellington promised to mention the recommendation in the proper quarter.

**Manchester and Leeds and Hull and Selby Amalgamation Bill.**—This bill was thrown out in the standing orders committee of the House of Commons, in consequence of the required preliminary notices not having been given. As each company, however, has the power of leasing to the other, the arrangement will be carried out, notwithstanding the rejection of the bill, the terms of the lease of the Hull and Selby being 16½ per cent. of net profits, exclusive of any additional capital for branches, which is to be shared as original stock.

**Lancaster and Carlisle Railway.**—This bill has passed through committee of the House of Commons without opposition, and there is now no impediment to its being the law of the land soon after Easter. The contracts for the whole of the works, including all extras, and also for the iron, have been concluded with eminent contractors, within Mr. Locke's estimates; the whole to be completed in two years.—*Lancaster Guardian.*

**Dublin and Drogheda Railway.**—The first experimental trip, which took place upon this line on the 20th instant was successful. No accident occurred.

**Ashton Branch Railway.**—The branch line now making from the Sheffield Railway to Ashton progresses rapidly under the able superintendence of the Messrs. Fowler, the contractors. Of the 12 arches which are to be built near and across the Dukinfield road, the walls of 11 are partially erected. Yesterday the first stone was laid of the 20 arches intended to be erected over the canal and the river Tame. Upwards of 300 men are employed on the works.

**Railway to Newcastle-upon-Tyne and Carlisle.**—The railway from Darlington to Gateshead will be opened by the 1st of July, and which will join the Newcastle and Carlisle Railway at Redheugh, a little to the west of Gateshead. An uninterrupted railway communication will thus be formed from London to the city of Carlisle, a distance of about 350 miles, which it is expected will be performed in 16 hours.—*Hull Packet.*

**Salisbury Railway.**—The threatened opposition to the details of the bill for this undertaking, in committee, has been abandoned, and the measure is proceeding through the necessary stages with the utmost expedition. It is in contemplation to have a station at Dean, and another at Romsey. The terminus will, it is thought, be advanced quite into the city.—*Bath Herald.*

**Railways to Scotland.**—The Directors of the Liverpool and Manchester, Grand Junction, and Newcastle and Carlisle Railways either have memorialized, or are about to memorialize, the Board of Trade for the purpose of having an inspection of the different projected lines of railway into Scotland. The object is to fix on that line likely to be most conducive to the general interests of the public.—*Preston Chronicle.*

**The Bill for a Railway from Blackwall to Stratford.**—Petitions in favour of the above undertaking have been signed within the last few days by most of the respectable inhabitants of Stratford and its vicinity. It is generally anticipated that the proposed bill will be passed the present session of Parliament.

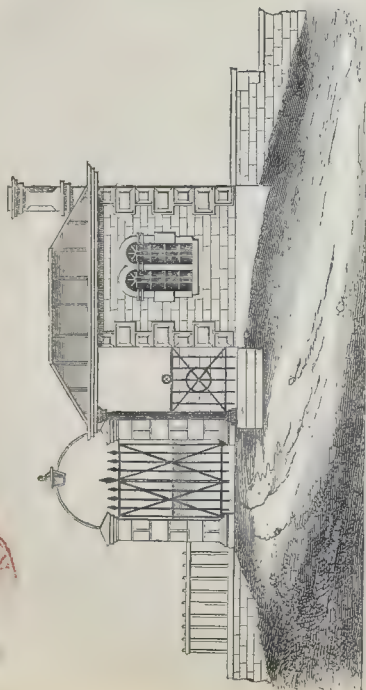
On Tuesday the directors were engaged in measuring the ground at Poulton, preparatory to the projected railway from Marlborough to Southampton.

**Railways in India.**—A recent number of the *Calcutta Englishman*, in an interesting article, inviting the attention of its readers to the consideration of the progress of public works in India, places before them as the first and most important subject that of "railway communication considered in a military as well as a commercial point of view;" and refers to a carefully compiled railway map published as a supplement sheet of the *Englishman*. The writer proposes, in a series of successive papers, to give the grounds for the adoption of the lines of railway laid down in the map, and invites information from all parts respecting local circumstances which may be supposed to affect particular districts. We believe that this important subject has been already examined and reported upon by one of the first engineers in this country; and we rejoice to see it again brought under public attention, convinced, as we are, that no measure can ever be proposed so eminently calculated to promote the permanent interests of India as the establishment of railways.

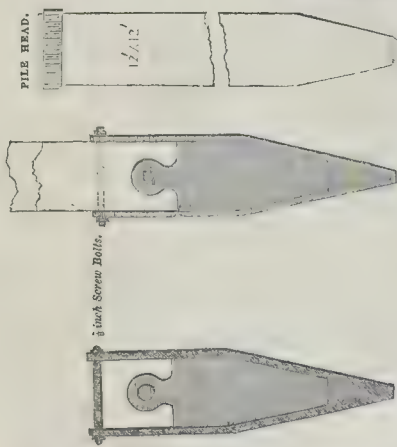
**THE IRON TRADE.**—We are gratified to find that the iron trade is participating in the general improvement which has visited our manufacturing interests. The consumption, we understand, was never greater than at the present moment, the majority of our iron-founders being very fully employed, and although the present make of pig-iron in Scotland cannot be estimated at less than 6,000 tons per week, there is no accumulation of stock in the hands of either makers or consumers. Very extensive purchases have, we know, been made during the last few days, and the price of iron has advanced to 50*s.* per ton at the Broomielaw. The manufacturers, however, are not disposed to contract extensively at this price, anticipating a further rise before long, in which they are borne out by the opinion of parties who are conversant with the state and prospects of this most important branch of manufacture.—*Glasgow Chronicle.*



APPROVED DESIGN FOR THE PROPOSED LANDING-PIER AT HYTHE.



THE LODGE AND GATES.  
(To a larger scale.)

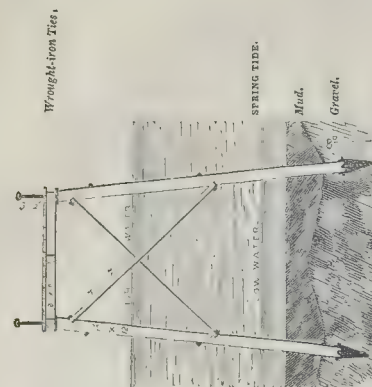


SECTION OF  
IRON PILE-SHOES.  
(To a larger scale.)

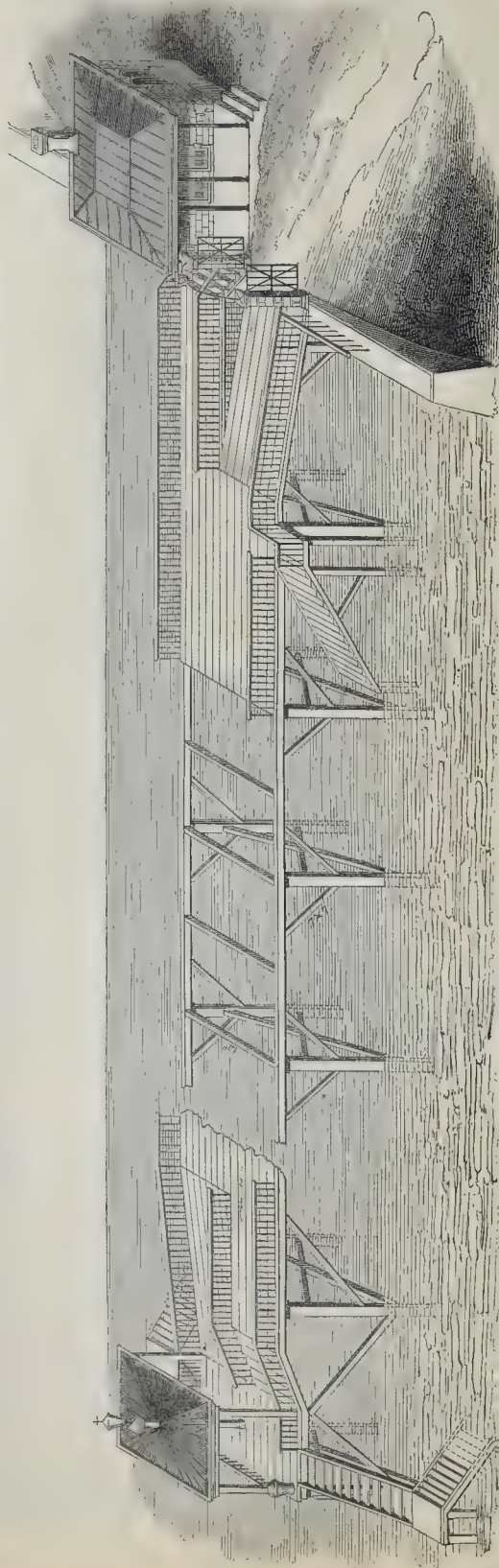
ELEVATION OF  
IRON PILE-SHOES.  
(To a larger scale.)



PILE HEAD.



CROSS SECTION OF THE PIER.]



ISOMETRICAL VIEW, SHEWING THE HEAD AND LANDING OF THE PIER.



## PROPOSED LANDING-PIER AT HYTHE.

TO THE EDITOR OF THE BUILDER.

SIR,—The accompanying design was thought worthy of the award offered to architects and civil engineers by the "Hythe Pier Committee" in October, 1843 (though want of funds occasioned it to be laid aside, and a more economical design to be adopted), and which is proposed to be carried out in the form of a *Head*; under such circumstances we do not hesitate to transmit it to you for insertion in your much-read publication, if space allow. Having been fully occupied ever since, we are only able to lay them before you at the present time; and not wishing to trespass too much on your pages, we shall only give a brief description of the proposed pier.

It will be observed, on referring to the isometrical view, that an inclined plane is formed at each approach, both from the sea and land; the former is similar to the sea approach of the Ryde pier, devised by Thomas Hellyer, Esq. The latter was designed (as also the former) so as to decrease the expense, which a greater artificial embankment or mound would have caused to be incurred if proposed in our design. The inclined plane is only for barrows, &c.; and for passengers on the other side, the descent is, as may be seen, gained by steps.

The total length of the pier from the gates to the extreme point was designed to be 2,200 feet, divided into twenty-two bays, the distance from centre of pile to centre of pile being 20 feet. The length may appear unnecessarily great, but is not so, it being the wish of the committee, as it is quite desirable that it should be, that at the pier-head there should never be less, at low spring tides, than 4 feet depth of water; and to gain this important advantage, the length before stated is required.

The dimensions of the piles, and the scantlings, &c., of the materials requisite for their construction, we do not here give, as they are marked on the draught forwarded to you.

The isometrical view shows a portion of the pier as finished, and a portion exhibiting the constructive part.

We are, Mr. Editor, your well-wishers,  
JOHN ELLIOTT and EDWARD BLAKE.

## LIFE IN THE OREGON TERRITORY.

THE following extracts, from the interesting travels of an American, Mr. Farnham, present lively pictures of the Hudson's Bay Company's chief post, and of American squatters:—

"FORT VANCOUVER, OCTOBER, 1839.

"The first day of the winter months came with bright skies over the beautiful valleys of Oregon. The herds of California cattle were lowing on the meadows, and the flocks of sheep from the Downs of England were scampering and bleating around their shepherds on the plain; and the plane of the carpenter, the adze of the cooper, the hammer of the tinman, and the anvil of the blacksmith within the pickets, were all awake when I arose to breakfast for the last time at Fort Vancouver. The beauty of the day, and the busy hum of life around me, accorded well with the feelings of joy with which I made preparations to return to my family and home. And yet when I met at the table Dr. McLaughlin, Mr. Douglass, and others with whom I had passed many pleasant hours, and from whom I had received many kindnesses, a sense of sorrow mingled strongly with the delight which the occasion naturally inspired. I was to leave Vancouver for the Sandwich Islands, and see them no more. And I confess that it has seldom been my lot in life to have felt so deeply pained at parting with those whom I had known so little time.

"Fort Vancouver is the depot to which are

brought the furs collected west of the Rocky Mountains, and from which they are shipped to England; and also the place at which all the goods for the trade are landed; and from which they are distributed to the various posts of that territory by vessels, bateaux or pack animals, as the various routes permit. It was established by Governor Simpson in 1824, as the great centre of all commercial operations in Oregon; is situated in a beautiful plain on the north bank of the Columbia, 90 miles from the sea, in latitude 45½ deg. north, and in longitude 122 deg. west; stands 400 yards from the waterside. The noble river before it is 1670 yards wide, and from five to seven fathoms in depth; the whole surrounding country is an uninterrupted forest of pine, cedar and fir, &c., interspersed here and there with small open spots; all overlooked by the vast snowy pyramids of the President's Range, 35 miles in the east.

"The fort itself is an oblong square, 250 yards in length, by 150 in breadth, enclosed by pickets 20 feet in height. The area within is divided into two courts, around which are arranged 35 wooden buildings, used as officers' dwellings, lodging apartments for clerks, store-houses for furs, goods, and grains; and as workshops for carpenters, blacksmiths, coopers, tinners, wheelwrights, &c. One building, near the rear gate, is occupied as a school-house, and a brick structure as a powder magazine. The wooden buildings are constructed in the following manner: Posts are raised at convenient intervals, with grooves in the facing sides. In these grooves planks are inserted horizontally, and the walls are complete. Rafters raised upon plates, in the usual way, and covered with boards, form the roofs.

"Six hundred yards below the fort, and on the bank of the river, is a village of 53 wooden houses, generally constructed like those within the pickets. In these live the company's servants. Among them is a hospital, in which those of them who become diseased are humanely treated. Back and a little east of the fort is a barn containing a mammoth threshing machine; and near this are a number of long sheds, used for storing grain in the sheaf. And behold the Vancouver farm, stretching up and down the river—3000 acres, fenced into beautiful fields—sprinkled with dairy houses, and herdsmen and shepherds' cottages! A busy place is this. The farmer on horseback at break of day, summons 100 half-breeds and Iroquois Indians from their cabins to the fields. Twenty or thirty ploughs tear open the generous soil; the sowers follow with their seed—and pressing on them came a dozen harrows to cover it. And then 30 or 40 acres are planted in a day, till the immense farm is under crop. The season passes on—teeming with daily industry, until the harvest waves on all those fields. And then sickle and hoe glisten in tireless activity to gather in the rich reward of this toil:—the food of 700 people at this post, and of thousands more at the posts on the deserts in the east and north. The saw mill, too, is a scene of constant toil. Thirty or forty Sandwich Islanders are felling the pines and dragging them to the mill: sets of hands are plying two gangs of saws by night and day. Three thousand feet of lumber per day—900,000 feet per annum—constantly being shipped to foreign ports.

"The grist mill is not idle. It must furnish bread stuff for the posts, and the Russian market in the north-west. And its deep music is heard daily and nightly throughout half the year.

"But we will enter the fort. The blacksmith is repairing ploughshares, harrow-teeth, chains, and mill-irons; the tinman is making cups for the Indians, and camp kettles, &c.; the wheelwright is making waggons, and the wood parts of ploughs and harrows; the carpenter is repairing houses and building new ones; the cooper is making barrels for pickling salmon and packing furs; the clerks are posting books and preparing the annual returns to the board in London; the salesmen are receiving beaver and dealing out goods. But hear the voices of those children from the school-house! They are the half-breed offspring of the gentlemen and servants of the company; educated at the company's expense, preparatory to being apprenticed to trades in Canada. They learn the English language, writing, arithmetic, and geography. The gar-

dener, too, is singing out his honest satisfaction, as he surveys from the northern gate ten acres of apple trees laden with fruit—his bowers of grape vines—his beds of vegetables and flowers. The bell rings for dinner; we will see the 'Hall' and its convivialities.

"The dining hall is a spacious room on the second floor, ceiled with pine above and at the sides. In the south-west corner of it is a large close stove, sending out sufficient caloric to make it comfortable.

"At the end of a table twenty feet in length stands Governor McLaughlin—directing guests and gentlemen from neighbouring posts to their places; and chief traders, traders, the physician, clerks, and the farmer slide respectfully to their places, at distances from the governor corresponding to the dignity of their rank in the service. Thanks are given to God, and all are seated. Roast beef and pork, boiled mutton, baked salmon, boiled ham; beets, carrots, turnips, cabbage, and potatoes, and wheaten bread, are tastefully distributed over the table among a dinner set of elegant Queen's ware, burnished with glittering glasses and decanters of various coloured Italian wines. Course after course goes round, and the governor fills to his guests and friends; and each gentleman in turn vies with him in diffusing around the board a most generous allowance of viands, wines, and warm fellow feeling. The cloth and wines are removed together, cigars are lighted, and a strolling smoke about the premises, enlivened by a courteous discussion of some mooted point in natural history or politics, closes the ceremonies of the dinner hour at Fort Vancouver.

## "AMERICAN SQUATTERS IN OREGON.

"It was dark when I arrived at the level country; and emerging suddenly in sight of a fire, my Indians cried 'Boston! Boston!' and turned the canoe to let me speak to a fellow countryman. He was sitting in the drizzling rain, by a large log fire,—a stalwart, six-foot Kentucky trapper. After long service in the American fur companies, among the Rocky Mountains, he had come down to the Willamette, accompanied by an Indian woman and his child, selected a place to build his home, made an 'improvement,' sold it, and was now commencing another. He entered my canoe, and steered across the river to a Mr. Johnson's. 'I'm sorry I can't keep you,' said he, 'but I reckon you'll sleep better under shingles, than this stormy sky. Johnson will be glad to see you. He's got a good shantee, and something for you to eat.' We soon crossed the stream, and crossed the cabin of Mr. Johnson. It was a hewn log structure, about twenty feet square, with a mud chimney, hearth, and fire-place. The furniture consisted of one chair, a number of wooden benches, a rude bedstead covered with flag mats, and several sheet-iron kettles, earthen plates, knives and forks, tin pint cups, an Indian wife, and a brace of brown boys. I passed the night pleasantly with Mr. Johnson; and in the morning rose early to go to the Methodist Episcopal mission, twelve miles above. But the old hunter detained me to breakfast; and afterwards insisted that I should view his premises, while his boys should gather the horses to convey me on my way. And a sight of fenced fields, many acres of wheat and oat stubble, potatoe fields, and garden vegetables of all descriptions, and a barn well stored with the gathered harvest, compensated me for the delay. Adjoining Mr. Johnson's farm were four others, on all of which there were from fifty to a hundred acres under cultivation, and substantial log-houses and barns. One of these belonged to Thomas McKay, son of McKay who figured with Mr. Astor in the doings of the Pacific Fur Company. After surveying these marks of civilization, I found a Dr. Bailey waiting with his horses to convey me to his home. We accordingly mounted, bade adieu to the old trapper of Hudson Bay, and other parts of the frozen north, and went to view McKay's mill. A grist mill in Oregon! We found him working at his dam. Near by lay French burren stones, and some portions of substantial and the well-fashioned iron-work. The frame of the mill-house was shingled; and an excellent structure it was. The whole expense of the establishment, when completed, is expected to be 7,000 or 8,000 dollars. McKay's mother is a Cree or Chippeway Indian; and McKay is a



strange compound of the two races. The contour of his frame and features is Scotch; his manners and intonations strongly tinged with the Indian. He has been in the service of the fur companies all his life, save some six or seven years past; and by his daring enterprise, and courage in battle, has rendered himself the terror of the Oregon Indians."

#### BIOGRAPHY OF FOUNDERS, ARCHITECTS, AND BUILDERS.

No. I.—EDWARD COLSTON.

At the age of 40 years he became a very eminent East-India merchant, prior to the incorporation of the East-India Company, and had 40 sail of ships of his own, with immense riches flowing upon him. He still remained uniform in his charitable disposition, distributing many thousand pounds to various charities in and about London, besides private gifts in many parts of the kingdom. In the year 1708 he instituted a very magnificent school in St. Augustine's-back, in Bristol, which cost him 11,000*l.* in the building, and endowed the same with between 1,700*l.* and 1,800*l.* per annum for ever. He likewise gave 10*l.* for apprenticing every boy, and for 12 years after his death 10*l.* to put them into business. It has been frequently reported that his private charities far exceeded those in public. I have heard that one of his ships trading to the East Indies had been missing upwards of three years, and was supposed to be destroyed at sea, but at length she arrived, richly laden. When his principal clerk brought him the report of her arrival, and of the riches on board, he said as she was totally given up for lost, he would by no means claim any right to her; therefore he ordered the ship and merchandise to be sold, and the produce thereof to be applied towards the relief of the needy, which directions were immediately carried into execution. Another singular instance of his tender consciousness for charity was at the age of 40, when he entertained some thoughts of changing his condition. He paid his addresses to a lady; but being very timorous lest he should be hindered in his pious and charitable designs, he was determined to make a Christian trial of her temper and disposition, and therefore one morning filled his pockets full of gold and silver, in order that if any object presented itself in the course of their tour over London-bridge, he might satisfy his intentions. While they were walking near St. Magnus' Church, a woman in extreme misery, with twins in her lap, sat begging, and as he and his intended lady were arm-in-arm, he beheld the wretched object, put his hand in his pocket, and took out a handful of gold and silver, casting it into the poor woman's lap. The lady being greatly alarmed at such profuse generosity, coloured prodigiously; so that when they were gone a little further towards the bridge foot, she turned to him and said, "Sir, do you know what you did a few minutes ago?" "Madam," replied Mr. Colston, "I never let my right hand know what my left hand doeth." He then took his leave of her, and for this reason never married to the day of his death, although he lived to the age of 85.—*Bristol Journal*.

**EMBANKMENT OF THE RIVER THAMES.**—Her Majesty's Commissioners of Sewers for the limits extending from East Moulsey, in Surrey, to Ravenshoe, in Kent, have issued their warrant to these several occupiers of wharves and premises on the southern shore of the river Thames, to the following effect:—"That, whereas the wall or bank of the river Thames within the parish of St. Saviour, in the borough of Southwark, in the county of Surrey, is by reason of the high tides become defective, and of insufficient height to resist the waters from overflowing the dwellings of the inhabitants, and the low grounds and places thereto adjoining within the said parish, to the great detriment and loss of the owners and occupiers thereof, &c." It is then ordered that the several resident tenants on Bankside shall raise the embankment 18 inches eastward and westward. It is much to be regretted that the embankment as proposed long since was so precipitately abandoned, particularly as the expense will fall very heavily on those wharfingers who hold their premises on lease only. A public meeting on the subject will shortly be advertised.

#### CHURCH-BUILDING INTELLIGENCE, &c.

**St. Andrew's Church, Plymouth.**—On Tuesday last, between 12 and 1 o'clock, a mural monument fell from its position near the south-eastern angle of the church, strewn the pews and floor in its vicinity with its fragments, the noble piece of sculpture being broken into "a thousand" pieces. No indication of its insecurity had been perceptible. The tablet set forth that "Near this place is interred the body of Edmund Lechmere, formerly commander of H.M.S. Lynn, and late of the Lynn frigate, of 32 guns, on board of which he departed this life, 16th of January, 1703, from wounds which he received on the 15th in an engagement with a French privateer, of 46 guns, from whom he protected a large fleet of merchant ships all into safety, and by bravery gave the enemy battle, and forced him to bear away with very much damage. He was, in the beginning of the action, wounded in both knees, and afterwards received a musket-shot through his body, yet neither discouraged him from prosecuting the enemy with the utmost vigour."

**Stained Glass.**—The painted window of the eastern aisle of the Church of St. Magdalene, was on Sunday submitted to the view of the congregation. The whole area of the window is occupied by appropriate configurations, executed by Mr. Wailes, of Newcastle, worked in stained glass of every variety of brilliant and subdued tone of colour. The subjects represented are those of our Saviour, Mary Magdalene, the Four Evangelists, and the Seraphim. The effect is exceedingly impressive. Every subordinate portion of the window is tastefully decorated with consistent embellishments, and the whole confers a strikingly pleasing effect on this beautiful fabric.—*Taunton Courier*.

**Thame, Oxfordshire.**—The parish church is about to be re-pewed, the necessary funds to defray the expense, having been raised by voluntary subscriptions amongst the inhabitants. On either side of the pews, which will be placed in the centre, there will be free sittings for between 300 and 400 persons more than at present.

**Briercliffe, near Burnley.**—R. Townley Parker, Esq., of Cuerden Hall, has, with his wonted liberality, given a very eligible plot of land for the site of a parsonage-house in connection with St. James's Church, Briercliffe, near Burnley. He has also given stone from one of his quarries for the building of the house.—*Preston Chronicle*.

We have pleasure in stating that her Majesty the Queen Dowager has recently forwarded to the incumbent of Stoke Saint Gregory the sum of 20*l.* towards the handsome church of that parish.—*Taunton Courier*.

**St. John's Church, Bridgwater.**—This edifice will be completed in a few weeks.

**TRAFALGAR-SQUARE.**—The works within the inclosure of Trafalgar-square are proceeding rapidly towards completion, Mr. Barry, the architect, having devoted much of his time of late for the purpose of causing the whole to be thrown open to the public during the summer months. The Artesian well is likewise fast advancing, the bore having been already sunk a considerable depth. The basins of the fountains will be 83 feet in diameter, and are to be covered with Maude's patent Portland stone cement, which has been found to resist the action of the atmosphere and of water as long as most descriptions of stone, while it possesses and retains the colour of that material. The pavement of the inner court of the quadrangle is to be laid out in somewhat of a tessellated style, the darker parts being composed of asphalt, and relieved by the introduction of ornamental work in the Portland stone cement. The whole space to be covered is about 18,000 feet.—*Globe*.

**STATUE OF THE DUKE OF GORDON.**—Preparations were commenced on Wednesday last for erecting in Castle-street the statue of the Duke of Gordon. An immense block of Peterhead granite, from the Stirlinghill quarries, weighing 10 tons, was brought to the intended site on the above day, and workmen are now busily employed upon it. This block forms the pedestal upon which the figure will stand. We understand it will take a month to complete the preliminaries for the erection of the statue on the pedestal, when it will be inaugurated with all due honours.—*Aberdeen Herald*.

#### Correspondence.

NEW BUILDING-ACT.

Sir,—May I draw your attention to the "Bill for better regulating the Buildings of the Metropolitan Districts, and to provide for the better drainage thereof" (dated 1st March, 1844), in which some of the proposed enactments are rather droll; some are exceedingly unjust (in proposing to deprive persons of their property without compensation); some are exceedingly arbitrary (in proposing to drive the poor from their houses); and as the Bill generally (if carried into law) will arm the district-surveys with an almost unlimited power of annoyance to the public?

The first clause I allude to is No. 5, which refers to Schedule (C) part I, in which it treats of the "Rule for ascertaining Stories;" but before giving it, I may perhaps be allowed to digress a little to explain that the customary mode of describing the stories of buildings for nearly the last two centuries has been as follows (which you are well aware of):

Cellar-story, or basement.

Ground-story.

One-pair-story,

Two-pair-story.

Three-pair, and so on, the top story being called the attic. The one-pair, or first floor, having been so denominated from being the first floor above the general or ground level.

But in the "Rule for ascertaining Stories" it is proposed, that "if the space between the top of the footings and the level of the first floor do not exceed 5 feet, then, the story nearest the foundation is to be considered the lowest or first story; but if such space exceed 5 feet, then such space is to be considered to contain the lowest or first story; and in that case the top of the footings is to be considered the level of the first floor!"

So that instead of going up to the one-pair floor as heretofore, it will be going down to the first floor! This will be rather amusing, if carried into law.

But in some cases, the lowest story is not to be called the first story! as in the event of the foundation being bad, or if from any other cause the space between "the top of the footings and the level of the first floor exceeds 5 feet, then such space is to be considered to contain the lowest or first story!" So that the first floor will be no floor at all, and will commence two stories below the ground level; the ground floor will be the three-pair; and persons living on the present one-pair, or drawing-room floor, will be up four-pair of stairs!

In clauses 15 and 16, are penalties proposed to be inflicted on parties using buildings before they have been certified; in some cases ranging from 5*l.* to 100*l.* per day, and in others from 100*l.* to 500*l.* per day!

In clause 50, it is proposed to secure a sufficient width of streets and other ways, according to the "conditions, regulations, and directions," in Schedule (I.), which is proposed to be enacted that every street must be of the width of 30 feet at the least; the effect of which will be, in a street 20 feet wide, that when a house is burnt or pulled down, it cannot be rebuilt without setting it back 10 feet, to give the enacted width of 30 feet. The property thus cut off, is to be given up to the public without compensation or remuneration! and where property is shallow, it cannot be rebuilt as a dwelling-house, if the rooms are less than 100 feet superficial; so that in such cases the property will be completely destroyed, and persons depending entirely on the rental of such premises (which is not an unusual case), will be left destitute.

The effect of such an enactment, after a time, would also be curious, as it would make straight streets under 30 feet wide completely zigzag; as on rebuilding premises after fire or otherwise, which generally occurs first on one side of the street and then on the other, the houses so rebuilt, would be set back 30 feet from the house opposite, thus sacrificing property without benefiting the public, and making a series of nuisance-corners down every street.

The provision in this clause, that all courts, alleys, passages, or other such public places, on rebuilding, must be at least 20 feet in width, with an entrance at each end of the same width, open from the ground upwards, or one entrance 30 feet wide open from the ground



upwards, will, in the case of fire, destroy a vast amount of property, and render it impracticable to rebuild in most of the courts and alleys of London.

Clause 51 proposes to enact that for discouraging, and prohibiting, the use of buildings unfit for dwellings, &c. &c.; it shall not be lawful to occupy buildings, or let or suffer them to be occupied, as dwellings, if the rooms are of less dimensions than one square, or 100 superficial feet!

The effect of this clause would be to deprive the chief part of the poor of London of their habitations, and to send them from the vicinity of their employment, to the distant suburbs, to seek the shelter that is denied them in the town; i. e. if there be sufficient houses of the qualified description to receive them, which I question.

And to give an instance of the destructive effect of the Act in the ward of Tower alone, which may be taken as a fair sample of the other parts of the city, I have ascertained that there would be upwards of 170 houses in alleys, courts, &c., chiefly of the poor, which could not be rebuilt. And under the restrictive clause of occupancy, I am of opinion that the poor tenants of one-half of the above number of houses would be turned into the street! Such would be the mild effect of the proposed measure.

And if I might venture to suggest such a thing on behalf of the poor working man, I would say a house with small rooms, was better than no house at all—than one three or four miles from his work—or even than one of the modern palaces, called union houses.

I have thus, Sir, endeavoured to draw your attention to some few of the severe enactments proposed by this Bill, which will destroy a vast amount of property, be a dreadful annoyance to the public, and crush the poor mechanic or labourer, by turning him out of his house. And as this will be the case with thousands in this great metropolis and its suburbs, the following question will necessarily arise,—where are they to go? and what is to become of them? It is not likely that they will be allowed to occupy a superior class of houses, and as persons cannot be compelled to erect houses for them, what is to become of them?

There are many other parts of the Bill which are exceedingly objectionable, but which are of minor importance to those referred to; but I trust that the public journals will join in endeavouring to draw the attention of the public to this measure, so that it may not pass into law, without due consideration and revision.

I am, Sir, faithfully yours,  
GEORGE AITCHISON.

Muscovy-court, Trinity-square.

#### NEW BUILDING-ACT.

Sir,—I cannot conceive why, in the proposed new Buildings' Bill, the district-surveyors' fees for most buildings, and particularly for small houses, should be considerably less than the fees are under the present Act, although great additional duties and responsibilities are proposed to be cast upon the surveyors, and notwithstanding the legislature, seventy years ago, at the then scale of money and price of living, deemed the fees then granted not too much. It would seem to me as though the framers of the Bill desire either to court the favour of that class of small speculative builders who, by their numerous evasions, cause district-surveyors the most trouble, or else to induce, by incompetent remuneration, neglect on the part of the officers under the new Act.

I am, Sir, your humble servant,  
ONE WHO DESIRES EVERY MAN TO BE FAIRLY PAID.

#### DISGRACEFUL PRACTICES OF SHAM SURVEYORS.

Sir,—I wish proceedings could be taken by respectable surveyors to put a stop to the nefarious practices of certain unauthorized surveyors. I am now somewhat reluctantly compelled to allude to an advertisement lately exhibited in your respectable and valuable periodical, with reference to these self-styled surveyors undertaking the usual business of surveyors "for nothing,"—at least for "no charge if not approved of."

Of course you are well aware that the members of our body have, by their friends, to be educated at a vast outlay of capital; notwith-

standing all this, there are some individuals who perhaps have only been at surveyors as office fags, or perhaps in the offices of builders in the same capacity, and who may learn just sufficient, when combined with their natural impudence, to make themselves very mischievous and annoying to the regular professor, and possessing this quick knowledge, or rather ignorance, fancy themselves adept in the business; although, not always appearing openly, yet sufficiently so to cause some poor creatures to be gulled and caught in the net spread for them; and in some shape or other, for a time, carry on their assumed calling, notwithstanding all the efforts of the regular professional to discover and expose them; such persons in the end bring disgrace on the very name of the profession, and much prejudice to the business of the honest surveyor.

I have heard of two instances lately, when two public edifices were advertised, and that the builders were to meet to appoint their surveyor to take out quantities; and as this branch of the profession needs a man of the greatest practical knowledge, and well-known standing, it of course requires the builders to pause ere they risk perhaps fortune itself in the hands of one of these quacks, nevertheless I have heard that in the first case, when the regular body of respectable builders met, that seven voted for one respectable surveyor, and eight voted for another, when about fourteen builders (at least so they called themselves) started up and voted for a man whom none of the respectable builders knew, or indeed ever heard of, yet of course the majority out-voted the others. What was the consequence? The quantities were supplied, and pretty quantities they were; for almost all the respectable builders declined tendering, and the one who succeeded threw up his contract, being frightened and rendered timid by the unknown and unusual way in which these quantities were got up. These two instances only occurred last week, when the same party came again with his friendly army; but I am thankful to hear he was smelt out, and deservedly rejected, and I trust, will be marked for the future. How a man, lodging in an upper story, and that in a questionable neighbourhood over the water, can be supposed to be responsible to the builders for his errors (if he make any), I know not. I would suggest that when this or any other touter comes in, to the prejudice of the regular man of business, that all builders wishing to tender should make a deposit of five guineas, and I am sure this would soon scatter entirely this mischievous class.

I deem it essential to the benefit of the profession, whether of builder or surveyor, to put a stop to the fraudulent practice of sham surveyors, of which I am assured you will see the propriety, and instead of your affording aid and assistance, will persist in not encouraging any such nefarious advertisements, unless with proper name and address, as your journal exists for the good of the professional and artisan. I think you will see the justice of my remarks, for I am well assured a paltry love of gain will never meet with your approval, or of that of the public; and if you would only refuse to take in any of their disgraceful and prejudicial advertisements, that this "Broker-alley" system would soon be at an end.

You will say, perhaps, that the public benefits by competition among all trades: this may be, but it cannot be so by a profession, where time alone is the only article that can be brought to market. Nevertheless, if competition must be resorted to, let it be done in an open and straightforward way, with real name and address, quite undisguised, and not based on deceit and perhaps fraud. Let any man who chooses to do work for nothing, if not approved, do it openly, so that he may be known by the regular man of business, who may by chance be pitted against him.

From a subscriber since you first began,  
Z.

#### EXPRESSION OF CHARACTER IN BUILDINGS.

Sir,—Will you permit me to add the following remarks upon a late original design in *THE BUILDER*, viz. a "Design for Schools," p. 102, to the judicious, but necessarily limited observations of your own which accompanied it? They are dictated I trust solely by a desire to expose error in principle, and not

from any pleasure in discovering it in the works of an individual.

If an architectural façade is to express the purpose or destination of the building, or (in other words) to possess a character in harmony with its intended uses, then is there an error of some magnitude in the design to which I have called attention,—I mean in its general arrangement; for by this arrangement such an expression could not be given to the exterior, or at least could not be given to the parts so as truly to characterize the whole. It is called a "Design for Schools," but is in reality, a design for a dwelling-house, with school-rooms attached. The principal feature in the design, and the part in which architectural embellishment (which is the language of the art) is chiefly employed, is a dwelling-house. What character is the designer to give it? Is it that of a domestic building? If he does he is not in that particular incorrect; and if he does he falsely characterizes the general design. I call the dwelling-house the principal feature in the design, for it is not only the centre, but it is of superior elevation, being two stories in height, while the school-rooms are but wings, and of one story, occupying, in fact, the relative position of the offices in a domestic establishment. No appropriateness, therefore, of style, or exterior embellishment applied to the school-rooms, could produce an effect that would characterize the whole composition, or repair the fault of the general arrangement.

The error, therefore, consists in giving that part of the building which is unessential, or at least of a subordinate purpose, the place of principal in the composition, and the essential or principal parts in regard to the destination of the edifice the place subordinate; but in the design in question the dwelling-house is not only made to occupy a position too prominent, but it is of dimensions disproportionate to the other and more important parts of the building:—supposing the scale 30 feet to the inch (for that given with the drawings is evidently an error of the printer), the domestic part of the building contains 5,600 superficial feet of flooring, while the two school-rooms together contain but 4,080 feet, or thereabouts!

I wish it to be understood that I am not charging these errors upon this design, as presenting a solitary instance of their commission, or as the only one in my mind's eye in which they exist; I merely point to it as an illustration of my remarks; but which, however, its appearance in *THE BUILDER* suggested. There are other designs, and executed ones too, in which such mistakes may be seen, and their name is legion!

Whilst upon the subject of expression of character in buildings, I would just remark upon the too frequent absence of it, even where the error I pointed out in the general arrangement does not exist to militate against its introduction.

Most of the other qualities requisite in a building, all understand, and intuitively perceive the importance of, and when not biased by opposing circumstances, endeavour to the best of their ability to obtain. All builders know, for instance, that a structure should be solid, that is to say, have a certain quantity of material, arranged on such principles as will insure the needful degree of strength. That it should also be commodious, conforming in its plan (if a public building) to the operations of the institution, or, if a domestic one, to the wants and habits of its inmates. Most builders are aware that it should have all its parts arranged with regularity and proportion to each other; that the height should be proportioned to the horizontal dimensions; that length should be extended with due reference to breadth, and the apertures be proportioned to the piers. These qualities are exceedingly important, but they are at the same time comparatively mechanical. An edifice may possess all the requisites of solidity, convenience, order, and adaptation to its uses, and yet, without expression of character, be no effort of artistic design, properly so called. It is but a dull and lifeless mass so called. It is the Genius of Architecture breathe into this soul of the art—until it receives in the style and decoration of the parts, both interior and exterior, a character analogous to its uses and destination, and express such uses and destination as distinctly as the language possessed by the art can utter it. It should in fact so



unfold itself to the sense of sight, that a stranger on beholding it would have excited in his breast emotions similar to, or at least in harmony with those which would arise from a contemplation of the object or end of its erection. "To the informed spectator," to borrow the language of an eloquent work of recent publication, "a piece of genuine architecture is a *creature*, imbued with a species of life; breathing, as it were, the sentiment of its original and peculiar purpose, and promulgating, in the symbolic eloquence of its particular form and style, the idea of its designer."

But to what extent do these principles govern at present, in the practice of design? Do not a majority of the buildings around us testify to the most striking indifference, not to say ignorance, of them, on the part of their designers? Whilst some present a monotonous mass of brick or stone, without grace or beauty, others disgust us with a random variety of unmeaning or conflicting ornaments, and it is difficult to say which offend most. How few of our various public buildings, from the prison to the palace, from the church to the theatre, possess those qualities with respect to style and decoration befitting their respective characters! The primary source of architectural utterance is found in analogy and association. But in reference to many of the edifices in question, I may ask, have the dictates of analogy and association been at all consulted? Are the sculptured emblems which, when properly used, constitute the figurative language of architecture, so selected and arranged as truly to characterize the buildings they are meant to embellish? Have we not in some instances theatres that might be mistaken for churches, chapels for ball-rooms? Or, reversing Shakspeare, *gorgeous temples and solemn palaces*? gaiety for solemnity, severity for richness? and other expressions of sentiment equally incongruous, equally ill-adapted to the conveyance of a true impression of the building. But I have gone as far as my time, and I fear your space, will allow me, and shall therefore conclude by expressing a hope that to the removal of these, as well as the grosser errors in architectural practice, **THE BUILDER** may be enabled to exert an influence.

I remain, Sir, yours very truly,  
S. HUGGINS.  
Liverpool, 22nd March, 1844.

#### FONT IN ST. MARY'S CHURCH, BRECON.

SIR,—I think your correspondent "a F.A.S." is mistaken in his observations on the Font in Brecon Church. All the communications of "J. L. T." are detailed in that spirit which, if followed up by your numerous friends in the country, must gradually bring to light many interesting particulars of bygone architectural days.

That the font "must certainly have been a piscina" can be easily ascertained by a line from "J. L. T." If a piscina, it must have been placed in the *south wall of the chancel, convenient to the altar*.

Even if the metal lining were removed, and a water-drain found, it would not indicate a piscina, as the drain is common to the piscina and font, though always found in the former. In Ireland I have met with several examples of ancient piscinas; one very fine one at the old ruined abbey of Mucross, near Killarney, the bottom or bowl part of which bears a close resemblance to the one furnished by your correspondent "W. H. J." in Number 40.

Two things in these matters may be taken as granted: one is, the piscina being placed in the *chancel*; the other, the font being always found in all ancient churches near the western doorway.

Therefore, a word or two from your obliging correspondent "J. L. T." as to the "whereabouts" of the "moulding in the background," which "a F. A. S." takes to be "the arch usually above a piscina," would throw much light on the subject. I am further inclined to agree with "J. L. T." by the position of the figures sculptured at the base of the bowl, by the outstretched hand and finger, as if pointing to the first ceremony or religious rite adopted by all Christians.

I am, Sir, your obedient servant,  
Gorey, March 25, 1844. J. K. L.

#### CLENDINNING TESTIMONIAL.

SIR,—I should be obliged by any of your correspondents informing me of the result of the competition in the matter of the Clendinning Testimonial, or if a decision has been come to. An unusually long period having elapsed since the day named as the last for receiving designs, and hearing no intelligence of them, I begin to fear that I have not only lost my time and trouble, but my drawings also.

I am, Sir, your constant reader,  
AN ARCHITECT AND COMPETITOR.  
March 23, 1844.

SIR,—Having some months ago seen in your valuable paper an advertisement for designs for a testimonial to G. Clendinning, Esq., all designs to be sent by January 1, and 20th for the one selected, I submitted a design myself, since which time I have never heard any thing further about it, although I requested if my design was not approved of to have it back. Now, Mr. Editor, I do think, after parties have devoted their talents and time, these drawings ought in common honesty to be returned; indeed, there is a suspicion attached to the affair, and the sooner it is removed the better.

By inserting the above, you will greatly oblige a constant subscriber,

JOSEPH HOLMES.

3, West-place, Dulwich.

[We have not received any information upon the subject of our correspondents' inquiries.—Ed.]

#### Miscellaneous.

A NEW CONSTANT BATTERY.—M. le Prince Pierre Bagration has invented a new and simple constant galvanic battery, the particulars of which have been communicated by M. Jacobi to the Academy of Sciences at St. Petersburg. Its elements are zinc, copper, and sal ammoniac; common earth saturated with the latter acting as a porous diaphragm. A plate of copper and a plate of zinc, placed at a distance the one from the other in a flower-pot, or any other water-tight vessel, filled with earth saturated with a concentrated solution of sal ammoniac, form a voltaic pair, whose action will, after a short time, continue constant, and be maintained for whole months, and to every appearance, for years; the only care necessary being from time to time to re-moisten the earth and renew the zinc. Before putting the copper plate into the earth, it should be plunged for some minutes into a solution of sal ammoniac, and then left to dry, until it receive a greenish coating. This operation renders the effect of the battery much more prompt; and in regard to it, brass may be preferable to copper. The plates should not be too near to each other, nor too small, because the earth opposes great resistance to the current. This form of battery is susceptible of many applications, but it will chiefly be useful where a constant and prolonged action, rather than energetic effect, is required—as, for example, in the reduction of metals, chemical decomposition, &c. It may be extended, however, to any quantity or intensity. Whenever a series of numerous elements be used, the vessels should be well insulated. M. Jacobi has had one of these sal ammoniac batteries of twenty-four elements in action for six weeks, without the necessity of making the least change in it.

CURIOUS MANORIAL RIGHTS.—At Rapley Castle, in Yorkshire, the seat of Sir William Ingleyby, there is in the great staircase in elegant Venetian window, in the divisions of which, on stained glass, are a series of escutcheons, displaying the principal quarterings and intermarriages of the Ingleyby family since their settling at Ripley, during a course of 430 years. In one of the chambers of the tower is the following sentence, carved on the frieze of the wainscot:—"In the yere of owre Ld. MDLV. was this howse bulded by Sir Wylliam Ingilby, Knight; Philip and Marie reigning at the time." John Palliser of Brighthwaite, formerly held his lands of the manor of Ripley by the payment of a red rose at Midsummer, and by carrying the boar's head to the lord's table all the twelve days of Christmas.

MOST IMPORTANT DISCOVERY.—We rejoice to announce the most important discovery which has probably ever yet been made in the records and literature of ancient Egypt. Every reader is acquainted with the history of the celebrated Rosetta Stone, and the happy surmise of Dr. Young, that the trilingual inscriptions on that interesting monument were three versions of the same subject. Following out this idea, mutilated as all the Egyptian part of the stone is, he found that what remained and could be deciphered was identical with the Greek text. Hence our grand key to the translation of the hieroglyphic characters and hieratic writings found among the relics of Egypt, on rocks, on the walls of buildings of every kind, on mummy-cases, and on papyrus; and it is evident that whatever could extend or add to this key must be of the utmost value. It was interpreted that the Rosetta inscription had also been set up in other temples; and the learned expressed a hope that in the course of time one or more of them might reward the research of zealous antiquaries. That hope has been fulfilled. Dr. Lepsius has discovered another copy of the Rosetta inscription at Meroe! The hieroglyphic portion is unusually perfect, and so we are informed is the other Egyptian writing. Now, then, the three legends may be considered throughout; and we hesitate not to say that this is likely to create a great revolution, by the vast accession to our means of knowledge, in the literature and history of the country so truly called the cradle of mankind. It is a gratifying circumstance that the noble expedition of the King of Prussia should have met with this return. Copies of the inscriptions have, we understand, been made for Berlin; but the main fact was communicated by letter to his Excellency the Chevalier Bunsen, the Prussian minister in London. We believe that Dr. Lepsius is directed completely to explore all this upper division of the country, and will not revisit Cairo till that is accomplished, probably about April. After some repose the expedition will proceed to Syria to examine the Egyptian inscriptions there; and from what has already transpired, there can be no doubt but that an extraordinary new light will be thrown over the old world by this royally liberal, auspicious, and fortunate effort.—*Literary Gazette*.

NAPOLEON'S TOMB.—The model of Napoleon's tomb is completed. It is formed of 12 pilasters, with an open work between each, edged with a circular gallery. This gallery communicates with two staircases to the vault below, giving a passage from the church near the choir to the crypt. Twelve figures of Victory, each with a crown in the hand, decorate the "pourtour" of the crypt. These statues, of gigantic proportions, are placed in front of the pilasters. Above reigns a wide frieze, ornamented with allegories and *bassi relief*. The sarcophagus which is to inclose the imperial coffin does not rise above the level of the ground. This measure was adopted, in order not to take away anything from the general harmony of the architecture of the dome, and to preserve all the historical appearance of the time of Louis XIV. A railing is placed round the monument, to enable the public to look at it without going too close. The Commission has decided that no other inscription is to be placed on the monument than the name of "Napoleon." The emperor's sword, hat, imperial crown, iron crown, and the decoration of the Legion of Honour which he wore at St. Helena are to be placed on the tomb, —*Galignani's Messenger*.

ICE-HOUSES.—The following is said to be the course of the Eastern ice-merchants in building ice-houses:—"They are built above ground in any location. A rough structure, twenty feet square and fifteen feet high, double throughout, and filled in to the thickness of nine inches with broken charcoal, chaff, or saw-dust, built in the open air, will keep ice securely. The ice should be separated from the building on the inside, by a layer of chaff, saw-dust, or hay, and the place of entrance should be at the top. With this trifling trouble, families everywhere may have the luxury of ice in hot weather—a luxury for which the rich are willing to pay great sums in cities, but which the poor in the country might have, but will not take the trouble."



**CITY ANTIQUITIES.**—In Cateaton-street, on the east side of Milk-street, Cheapside, where the ground has been excavated a considerable depth for the purpose of making a foundation for some warehouses which are now in course of erection, the workmen have discovered a large quantity of Roman earthenware, consisting of jugs, &c., and many ancient coins. On Wednesday week, on coming to a cesspool, which was under the surface about fifteen feet, a hen's egg was found quite perfect, which must have been there 200 or 300 years. A few days ago much curiosity was excited, in consequence of the workmen meeting with several piles of wood, which are fixed in the earth at a depth of about ten feet from the surface. There were two sets of piles, at about six feet from each other. In each set there are nine piles (forming a square) each pile being about five feet high. Upon these piles were several trunks of trees, which have been removed. They are supposed to have been placed there at a period long before the fire of London, as the transverse pieces of wood have no appearance of the action of fire upon them. Many antiquarians have been to view the spot, and have had a draught and plan of this mode of building of former times. It was thought by Mr. Hawke, the builder, that a cesspool might have been under, and that the piles were to support some large structure; but which was not the case. There formerly stood here an ancient public-house, called the Paul's Head. Some months ago the remains of a garden were found close by, while excavating for a sewer. Very extensive remains of foundation walls have been dug up, which were composed and cemented together in the most solid manner. The material consisted of cliff, flint and chalk, and sandstone, and so firmly united, that the pickaxe could not penetrate, and, in order to break the walls into pieces, the wedge was applied. Upon these walls the houses, which have been recently pulled down, were built. They have been entirely removed, in order to make a foundation sufficiently firm for the houses now being erected.

**KING WILLIAM'S COLLEGE.**—We have much pleasure in stating that active measures are now taking for the restoration of this building. The necessary timber has been purchased, a cargo forwarded to Derby Haven, and workmen are employed in clearing the ruins. Advantage will be taken of this opportunity to introduce numerous improvements in the structure, more especially in the chapel, the great resonance in which, in its former state, was a subject of general complaint. We understand that the sum insured has been received, which, together with the amount of nearly 700*l.* already subscribed in the island (to which the munificent donation of 300*l.* was contributed by our excellent bishop), will, we hope, go far in enabling the trustees to replace the college on a much superior footing to its former condition. One suggestion has, we hear, been thrown out, which will, we hope, be acted upon—namely, that the building be divided into three or more separate parts, having only one communication on each floor, to be closed by an iron door. This would on any similar occasion effectually cut off the progress of the flames, and thus guard, as far as human means can, against a similar calamity. Had such been the case at the late fire, the destruction would have been confined to the wing where it originated. It is fully expected that every thing will be ready for the reception of the students after the midsummer vacation. —*Mona Herald.*

**THE QUEEN'S NEW SUMMER-HOUSE.**—Six of the frescoes, which have been some time in progress, to decorate the new summer temple in Buckingham Palace gardens, are completed. The poem illustrated is the *Masque of Comus*. The eight artists charged with their execution are Messrs. Eastlake, Leslie, Stanfield, MacLise, Etty, Uwins, and Sir William Ross. The building is a rustic octagon, standing on the top of an artificial hill.

Mr. James Fillans, the sculptor, has just completed his bust of Professor Wilson. It is an admirable likeness. It is to be cut in marble for the friends and admirers of the professor in his native town of Paisley.

**CITY OF LONDON SCHOOL.**—The corporation having devoted the fine of 400*l.* paid some years ago by Mr. Thomas Tegg, the bookseller and publisher, to be excused from serving the office of sheriff, towards the establishment of an exhibition to one of the universities for the benefit of pupils of the above school, Mr. Tegg has manifested his approval of such an appropriation by recently making the important addition to this fund of 100*l.*; and in return for so distinguished an act of liberality, the committee of the school have agreed that the exhibition shall in future be designated "The Tegg Scholarship or Exhibition." Mr. Tegg has also accompanied his gift with a number of valuable books for the library of the school. The corporation has lately caused one of the principal windows in the building to be enriched by the insertion in stained glass of the armorial bearings of the following benefactors of the school—viz., The corporation of London, Dr. Conquest, the late Sir James Shaw, Bart., Mr. Tegg, and Mr. W. S. Hale, the chairman of the select committee. In addition to which a statue will shortly be put up, which is in preparation by Mr. S. Nixon, of the original founder of the establishment, John Carpenter, town-clerk of London in the reign of Henry VI., and one of the executors of the famous Sir Richard Whittington.

**PROJECTED IMPROVEMENTS AT DOVER.**—We understand that the Earl of Guilford, the noble proprietor of Frith Farm, near the Castle, is about to apply to Parliament for a private Act to enable him to let a portion of the valley on lease for building purposes; and that plans for the erection of splendid terraces, said to be equal in design and magnitude to any in the kingdom, have been prepared, as also for detached villas; altogether, nearly 1,500 residences are contemplated to be formed on this delightful spot. It is also, we believe, part of the plan to make another outlet from the town, into the Deal-road, past the Castle Jetty, by which the Castle-hill may be avoided, and the distance to Deal considerably lessened. We hope to see the plans of the noble Earl carried out, as we feel convinced it will prove a good speculation. —*Dover Telegraph.*

**GIGANTIC SHED.**—Messrs. Ainsworth and Co. are now erecting a new power-loom shed, and, as we are informed, it is the largest in the world; it will not be uninteresting to give a few of the particulars respecting it. The shed is 350 feet in length, by 157 in breadth, divided into 36 bays. The roof is supported by 352 columns. It is calculated to contain 1,650 looms, and when complete the number of hands actually employed in the room will be 855. The production of the looms will average per week 13,200 pieces, 20 yards each, or 3 1-5 pieces per minute. This applies to the weaving shed alone, independent of the spinning and other departments. —*Preston Guardian.*

**COPPER BALLOON.**—A curious experiment is about to be made on air-balloons, which is likely to excite the curiosity of the public. A balloon, composed of copper, is so far completed, that it is now exhibited to the public. This immense globe is formed of sheets of copper, united and soldered. The object proposed by this experiment is to resolve the problem of the employment of metals in the construction of balloons; it is expected by this experiment to advance the question of aerial navigation. When it shall have been ascertained that solid metallic envelopes may be substituted for light silk, it is considered it will be a step towards the application of locomotives in the shape of balloons.

**THE ULVERSTONE COPPER ORE MINING COMPANY.**—This company, whose works are now in full operation at Cockley Beck, in Leathwaite, for the purpose of obtaining this valuable mineral, have now, we learn, every chance of ultimate success, several large pieces having been already taken out. The works lie directly on the opposite side of the "Old Man" to those of the Coniston Company, and it is supposed by eminent geologists that the interior of this large mountain abounds with inexhaustible veins of this material. —*Preston Chronicle.*

Mr. Baily has received a commission for a statue in marble of his late Royal Highness the Duke of Sussex, for the Masonic Hall, at the Freemasons' Tavern.

**STEAM-BOAT VENTILATION.**—One of the Addiscombe Professors, Lieut. Cook, R.N., F.R.S., has invented a method of ventilating steam-boats, which promises fair to add materially to the comfort of passengers by these vessels. Those who have merely crossed the Channel, especially by night in boisterous weather, are well aware of the impurity of the air which passengers, however delicate, are under the disagreeable necessity of inhaling, and which of itself is quite enough to produce sickness; but in a hot climate, the evil is of still greater magnitude. Even in large steam-boats, invalid passengers have been fairly driven upon deck in the night from the lower cabins, finding it impossible to remain in such an atmosphere. The evil being universally admitted, it remains to be seen how far the remedy will be applied, should it in practice prove as efficient as in principle it appears to be sound. A cylinder—in which a solid piston moves air-tight—has two valves at each end; through one, opening inwards, fresh air is admitted into a vacuum; which is, by the next action of the piston, forced through the other valve at the same end, opening outwards into tubes, and by these conveyed to every cabin upon each deck; while the hot, or foul air, is at the same time drawn off from these cabins into a vacuum above the piston, through a valve opening inwards, from whence it is finally ejected through the fourth valve, opening outwards into the open air. The effect produced will, of course, depend upon the size of the cylinder, and this upon the size of the vessel. One 2 feet in diameter—the piston having a two-foot stroke—with tubes and valves sufficiently large, would force in about 100 cubic feet, or above 600 gallons, of fresh air (drawing off the same quantity of impure air) every minute! Large steam-boats might have two cylinders. The machinery may, in an instant, be disconnected, so as to cease from acting. The fresh air would be conveyed in a regular stream, and not be intermitting in its effect.

**WESTMINSTER BRIDGE.**—A beautiful design by Mr. Barry, for an iron bridge on the site of the present bridge, has been published. It consists of five elliptical arches, is of a light and graceful structure, and is at least 14 feet lower than that now in use. The plan for this new structure is proposed in consequence of the unsafe and unsatisfactory state of the foundation of the existing bridge, as well as to improve the navigation of the river, and facilitate traffic by lowering the carriage-way. It is said that an iron bridge of this description could be constructed for less than double the amount that would be required to repair and render secure the present unseemly structure. The cost has been estimated at 185,000*l.*, including the expenses for erecting a temporary wooden bridge; and it is understood that this sum might be raised, for the most part, if not wholly, upon the security of the income from the property belonging to the Bridge Commission. —*Globe.*

Active preparations are going forward at Waltham, for the erection of a more commodious national school and house for the master. The first stone will be laid in a few days. This is a praiseworthy undertaking, and will be a credit to the parish, an honour to its founder, and an example worthy of imitation to all the villages around. —*Nottingham Journal, March 15th.*

There was found lately on clearing the canal at Rheims, a medal of Julia, the mother of Alexander Severus. She was assassinated at the same time as her son, A.D. 235. The head is well preserved.

The longest canal communication in the world extends from St. Petersburg to the frontiers of China, over a space of 4,472 miles. It was commenced by Peter the Great.

**PRINTING IN MANCHESTER.**—In 1598 the first printing press was erected in Manchester: in 1844 there are, it is estimated, upwards of 500.

Of the the total number of dwelling-houses in Ireland, namely, 1,328,839, 1,024,575 are mud cabins.

A marble statue of Sir Astley Cooper, of colossal dimensions, is nearly ready for St. Paul's Cathedral.



## Tenders.

TENDERS delivered for taking down the present and rebuilding a new Bridge over the river Brent; also for underpinning the piers and sundry repairs to Finchley-bridge, both in the parish of Hendon.

—Mr. Mosley, County Surveyor. March 26, 1844:—

BRENT BRIDGE.		FINCHLEY.	
Gerry.....	£2,298 0 0	£225 0 0	
Milnes.....	2,299 0 0	250 0 0	
Casling.....			135 10 0
Ledger.....	2,810 0 0	186 0 0	
Hardy.....	2,898 0 0	167 0 0	
Pratt.....	2,993 0 0	180 0 0	
Johnson.....	2,998 0 0	177 0 0	
G. Smith.....	3,049 8 7	450 0 0	
Plews.....	3,150 0 0	207 0 0	
Martindale....	3,377 0 0	263 10 0	

TENDERS delivered for a small house, with smith's shop adjoining, for Mr. Violet, in Paradise-street, Stockwell.—Mr. Rogers, Architect.

Freemantle.....	£420
Hill.....	225
Eskins.....	210

Mr. Eskins' estimate was accepted.

## Current Prices of Metals.

March 22, 1844.

	£. s. d.	£. s. d.
SPELTER.—Foreign ton ..	22 10 0	23 0 0
" For delivery ..	21 0 0	21 5 0
ZINC.—English sheet ..	0 0 0	30 0 0
QUICKSILVER ..	per lb.	0 4 6
IRON.—English bar, &c.....	per ton.	5 5 0
" Nail rods.....	0 0 0	6 0 0
" Hoops.....	0 0 0	7 15 0
" Sheets.....	0 0 0	8 5 0
" Cargo in Wales ..	4 15 0	5 0 0
" Pig, No. 1, Wales ..	3 0 0	3 5 0
" No. 1, Clyde ..	2 8	2 10 0
" For, Swedish ..	9 10 0	10 0 0
" Russian, cond. ....		16 10 0
STEEL.—Swedish keg ..	p. ton	18 10 0
" Fagot ..	0 0 0	19 0 0
COPPER.—English sheathing, per lb. ....	0 0 9½	
" Old.....	ditto.	0 0 8½
" Cake p. ton.....	0 0 0	85 0 0
" Tile.....	0 0 0	83 0 0
" S. American ..	75 0 0	77 0 0
TIN.—English, blocks, &c. cwt.....		3 13 0
" bars ..	0 0 0	3 14 6
" Foreign, Banca ..	0 0 0	3 8 0
" Straits.....	0 0 0	3 6 0
" Peruvian.....	0 0 0	3 0 0
Tin plates, No. 1C, p. box ..	1 5 0	1 8 0
" No. IX.....	1 11 0	1 14 0
" wasters 3s. p. box less		
LEAD.—Sheet milled ..	per ton	17 15 0
" Shot, patent ..	0 0 0	19 15 0
" Red.....		21 10 0
" White.....		23 10 0
Pig-LEAD.—English ..	0 0 0	17 0 0
" Spanish ..	0 0 0	16 10 0
" American ..	0 0 0	16 5 0

The market for metals improves, and iron is now firm at 4l. 15s. per ton in Wales, with the probability of higher rates, the stocks being rapidly reduced. Spelter, copper, and tin fully maintain the preceding rates.—*Midland Counties Herald.*

## TO OUR CORRESPONDENTS.

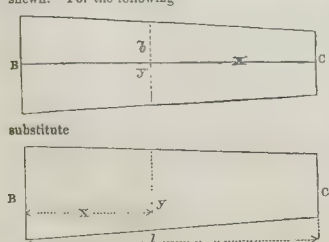
"CATERA DESIDERANTUR."—We have seen the jocose subject before in print. We should prefer his monument.

We cannot answer our correspondent who desires to know the name of the person who drew up the proposed new Building Act.

We have received the letter of "C. F." "Ein Zimmermann" is not correct. The word "Summer" is an English word of very great antiquity.

## ERRATA.

Page 125, column 2, correct the diagram as here shewn. For the following



Also in the third line of the second column, for B l + C l read B l + C l.

Page 151, 3rd col. 14th line from bottom, for expense read expanse.

## MEETINGS OF SCIENTIFIC BODIES.

To-day and during the ensuing week.

SATURDAY, MARCH 30.—Free-asons of the Church. Adjournment of Our Lady's Chapter for delivery of the inaugural address upon the foundation, 8 P.M.; Westminster Medical, 32, Sackville-street, 8 P.M.; Chemical, Society of Arts, Adelphi, 8 P.M. (anniversary).

MONDAY, APRIL 1.—Entomological, 17, Old Bond-street, 8 P.M.; United Service Institution, Middle Scotland-yard, 9 P.M.; Chemical, Society of Arts, Adelphi, 8 P.M.; Medical, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 2.—Linnaean, Soho-square, 8 P.M.; Horticultural, 21, Regent-street, 3 P.M.; Civil Engineers, 25, Great George-street, 8 P.M.

WEDNESDAY, 3.—Society of Arts, Adelphi, 8 P.M.; Geological, Somerset House, 8½ P.M.

THURSDAY, 4.—Zoological, 57, Pall Mall, 3 P.M.

SATURDAY, 6.—Westminster Medical, 32, Sackville-street, 8 P.M.

The meetings of the following Societies are continued throughout the year, on the regular days:—Horticultural, Zoological, Entomological, Botanical, Royal Botanic, and Pharmaceutical.

## Meetings of the Freemasons of the Church.

A.D. 1844.

14th	Epiphany Chapter.....	9th Jan.
15th	Candlemas Chapter.....	13th Feb.
16th	Our Lady's Chapter.....	12th March.
17th	St. Mark's Chapter.....	16th April.
18th	St. Philip's Chapter.....	14th May.
19th	St. John's Chapter.....	11th June.
	(Elect Council, Treasurer, and Collector.)	
20th	St. James's Chapter.....	9th July.
21st	St. Bartholomew's Chapter ..	13th August.
22nd	St. Michael's Chapter.....	10th Sept.
23rd	St. Luke's Chapter.....	8th Oct.
24th	All Saints' Chapter.....	12th Nov.
	2nd Festival of Foundation,	1st Dec.
	Advent Sunday.....	
25th	Advent Chapter.....	10th Dec.
	(Elect Officers, and add By-laws to General Laws.)	

## ADVERTISEMENTS.

A COPY of each PROVINCIAL PAPER throughout England, and a variety of Irish, Scotch, German, West-India, and other papers, are regularly filed with the agent, Mr. Deacon, 3, Walbrook (opposite the church door), for the inspection of those who favour him with their advertisements, and which may also be perused in the Office and Dining-room on the ground-floor, by taking refreshments. The literary, scientific, and amusing periodicals of the day may also be seen. Cup of Coffee 3d., Mutton Chop 5d., Rump Steak 5d. Burton and Pale Ale, Stout, &c.

HYDROPATHIC ESTABLISHMENT, MALVERN WELLS, WORCESTERSHIRE. Dr. KING, author of "Observations on Hydropathy," a Second Edition of which, much enlarged and improved, is preparing for the press, having recently returned from Graceland, has selected this beautiful and salubrious spot as peculiarly eligible for carrying out, with the grandest results, the operations of the Water Cure. The accommodations are of the most cheerful and best description.

OFFICE for PATENTS of INVENTION and REGISTRATION of DESIGNS, No. 14, Lincoln's-inn-fields.

INVENTORS and CAPITALISTS are informed that all business relating to the securing and disposing of BRITISH and FOREIGN PATENTS, Preparation of Specifications, and Drawings of Inventions, is transacted with care, economy, and dispatch.

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Ornamental Designs may also be registered under the Act 6 & 7 Vic., c. 100.

A Prospectus, with full particulars as to the course to be pursued, and the expense, &c. of being protected, either by Letters Patent or the Designs Acts, may be had gratis, upon application, personally, or by letter, to Mr. Alexander Prince, at the office, 14, Lincoln's-inn-fields.

Bill Street, facing Richmond Bridge, and 77, Regent's Quadrant, London.

JOHN P. HOPE, SURVEYOR, AUCTIONEER, APPRAISER, and HOUSE and ESTATE AGENT, begs most respectfully to acquaint his Friends and the public generally, that he has commenced business as above; and will be most happy to superintend the erection, alteration, or repairs of buildings for noblemen and gentlemen; the measuring and valuing work for building departments, &c. (derived from twenty years' practice therein), including his having acted as clerk of the works of the Wesleyan Theological Institution, (Richmond), with prompt attention and moderate charges, he shall obtain a share of public patronage and support, which he now earnestly solicits, and which will be his constant study to deserve.

P.S. An APPRENTICE WANTED, who will be treated as one of the family.

Residence, Victoria Place, Richmond Hill, Surrey, February 28th, 1844.

## PUBLICATIONS.

## TO RAILWAY ENGINEERS.—

The First Number of THE RAILWAY CHRONICLE will appear on the 20th of April. A detailed Prospectus will be sent free, and will furnish their address to the Editor, 14, Wellington-street North, Strand, London.

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London: D. Bogue, 86, Fleet street, and J. MENZIES, Edinburgh.

## CHEAP PAPER-HANGINGS.

BOYLE & CO. PAPER-STAINERS and HOUSE PAINTERS, 41, LUDGATE-HILL, respectfully invite the attention of hotel proprietors, builders, and the public, to their large stock of Paper-hangings. Bed-room, and parlour papers, 1d. to 3d., oil, grained, and marbled, 1d. to 3d., and satins, 4d. to 6d., &c. &c. per yard. Ladies and gentlemen visiting London will find this establishment unequalled in cheapness and manufacture. Estimates given on the most liberal terms. Patterns sent to all parts of the country.

## ORNAMENTAL WINDOW GLASS.

2s. per foot super.—CHARLES LONG having greatly improved his machinery for ornamenting glass, is enabled to offer handsome patterns at 2s. per foot super glass included. 100 feet can be executed and delivered in two days. Address to Charles Long, House Decorator, &c., 1, King-street, Portman-square. For Cash only.

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TURPS, ditto ..	2s. 6d.
Best PUTTY, per cwt. ....	9s. 6d.
Genuine WHITE LEAD, warranted, per cwt. ....	25s. 6d.
SECOND ditto ..	24s. 6d.
THIRD ditto ..	23s. 6d.

At J. H. SIMPSON'S COLOUR WAREHOUSE, 54, London-road, Southwark.

## PLUMBERS, PAINTERS, BUILDERS,

and OTHERS supplied with CROWN and SHEET WINDOW GLASS, SHEET PLATE, &c. &c., for Pictures Glazing, &c. &c., in any quantity, at Manufacturer's Prices.

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SHEET LEAD, in sheets, per cwt. ....	25s. 6d.
Ditto, cut to sizes and PIPE ..	19s. 6d.
WHITE LEAD ditto ..	20s. 6d.

Colours, Pipe, Brushes, &c. &c., equally low, and quality warranted. Complete Lists, priced, may be had on applying to R. COGAN, 5, France-street, London. PRINT, PICTURE FRAMES and CABINET MAKERS, can be provided with flatted Crown, flattened Sheet, and the patent Sheet Plate. Lists of which, shewing the price for any Square, from 14 by 12 to 40 by 30 of Best and Second quality, will be sent (gratis) upon receiving the address. Builders, Glaziers, and others having to Contract, sending a copy of their specifications, with a list of dimensions to R. COGAN, will receive by return of post the lowest prices for all qualities and sizes of Crown Sheet-Glass and Sheet-Plate, &c. Glazing estimated for if required.

SUBSRYMEN, MARKET GARDENERS, and OTHERS requiring Small Glass, will find a greater variety of size & a large stock of which is constantly on hand) than COGNAN SHEET and CYLINDER. The advantages of Common Sheet over Crown for Glazing Sky-lights is doubly great, as it is perfectly level, and of more superior appearance & is required; a light 6 feet 6 in. long, with openings of any width, needs only one lap. This Glass is considerably stouter than Crown, and may be had from 1s. 3d. per foot.

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French Table Flowers, China Vases, Fancy Glass Ware, and Alabaster Figures in every variety.

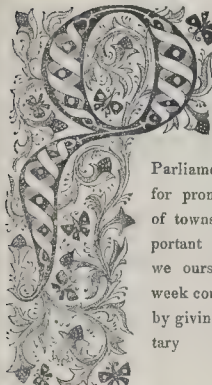
R. C. having just completed his Show Rooms for the above articles, begs to invite the inspection of the Public. A liberal Discount to Bazaar Keepers and others.



# The Builder.

NO. LXI.

SATURDAY, APRIL 6, 1844.



## QUESTIONING

not that our readers, both in town and country, will consider a general Parliamentary enactment for promoting the health of towns in the same important light in which we ourselves do, we this week continue the subject by giving the Parliamentary

*Report of the Select Committee appointed to consider the expediency of framing some Legislative Enactments (due respect being paid to the Rights of the Clergy) to remedy the Evils arising from the Interment of Bodies within the precincts of large Towns, or of places densely peopled.*

Your committee have deemed it expedient, in the inquiries which they have made regarding the important question, how far the health of the population might be effected by interment taking place within towns or densely-peopled places, to consider the subject under the following heads:—

1. Whether the custom of interments within the precincts of large towns or populous places be injurious to the health of the community.

2. In the event of the injury being proved, what remedies should be suggested.

3. In what manner the remedies ought to be applied, so as not to interfere with vested rights.

1. In reference to the first subject of inquiry, how far the present custom of interment in populous places be injurious to the health of the people, your committee have received evidence from persons in every class of life. That of some of the sextons and grave-diggers in this metropolis exhibits a loathsome picture of the unseemly and demoralizing practices which result from the crowded condition of the existing grave-yards—practices which could scarcely have been thought possible in the present state of society. Your committee have also obtained the evidence of men of a superior education and acknowledged ability; of gentlemen at the head of the medical and surgical professions; of clergymen and high dignitaries of the church; and, after a long and patient investigation, your committee cannot arrive at any other conclusion, than that the nuisance of interments in large towns, and the injury arising to the health of the community from the practice, are fully proved.

Your committee refer to the following extracts, among many other portions of the evidence taken in support of their conclusion, as to the evils of the practice:—

The Rev. J. Russell, D.D., "It is sickening; it is horrible."—Sir James Fellowes, M.D., "It becomes a serious question, with an increased and increasing population, upon what rational grounds such an objectionable feature can be longer continued without danger to the public health."—James Copland, Esq., M.D., F.R.S., Censor of the Royal College of Physicians, "I believe that the health of large towns is influenced by four or five particular circumstances; the first, and probably the most important, is the burial of the dead in large towns. In considering the burials in large towns, we

have to consider not only the exhalation of the gases and the emanations of the dead into the air, but the effect that it has on the sub-soil or the water drunk by the inhabitants."

Sir Benjamin C. Brodie, when asked whether he considered the crowded state of the churchyards as one cause of fever or disease in the metropolis, answers, "I have always considered that as one cause." "My opinion is, that the interments in the interior of this town must be injurious to the health of the town." And W. F. Chambers, Esq., M.D., in his letter to the chairman, which will be found in the Appendix, states, "I have no doubt that the fevers which are called typhus, even in this cleanly quarter of London (Brook-street), owe their origin to the escape of putrid miasma. I should presume that over-crowded burying-grounds would supply such effluvia most abundantly."

George Alfred Walker, Esq., surgeon, of Drury-lane, who has considered the subject with great attention and ability, gives the same testimony, and the whole mass of evidence taken before the committee leads to the same result; it has, therefore, not been deemed requisite to give in detail further extracts on this part of the subject.

The chief part of the evidence given before your committee has been in reference to the metropolis; but the evidence received from some intelligent persons, in regard to other large towns, and the mass of correspondence from the mayors, or other official gentlemen, communicated from nearly every large and populous place in the United Kingdom, some portions of which correspondence are inserted in the Appendix, sufficiently prove, to the satisfaction of your committee, that the evils of interment in towns and populous places have grown to such a height, that no time ought to be lost by the Legislature in applying a remedy. That this custom has desecrated the repose of the dead and injured the health and feelings of the living cannot be denied; it has also exhibited the singular instance of the most wealthy, moral, and civilized community in the world tolerating a practice and an abuse which has been corrected for years by nearly all other civilized nations in every part of the globe.

II. The next question, how to remedy the nuisance proved to exist, would resolve itself into a recommendation that such legislative enactments should be framed as would prevent the interment of the dead in or near the habitations of the living. Your committee, however, cannot but foresee that some obstacles must be overcome in effecting this change; besides which an increase of expenditure must be incurred. These difficulties, which your committee trust will be overcome, appear to arise from the following causes:—

The rapid and extraordinary extension of buildings in various parts of the kingdom, which might approximate them to places of interment when a certain distance was fixed, and might render the necessity of their removal more frequent than at first sight would appear probable.

The outlay requisite to purchase sites for the purposes of interment near large towns must in all cases be considerable, the circumjacent land bearing an increased value in proportion to the extent and population of a town.

The additional charge for removing the remains of the poor to some distance from their dwellings, and the necessity of having an officiating minister at the place of interment, and the consequent increase of expense or inconvenience to the parish or the incumbent, are not to be overlooked.

Although at the first glance these difficulties appear of moment, on consideration they lose much of their importance. The boundaries or limits of towns may be determined, and the flow of human dwellings is more likely to run in any other course than that which leads to the vicinity of a grave-yard or cemetery. Some additional expenses also must necessarily be incurred, but these will be in an insignificant proportion when compared to the great benefit that will arise to the health and enjoyment of the community by a change in the present system of interment. The Bishop of London says, "I am sure that the clergy, generally speaking, would be willing to make some sacrifice for the sake of effecting so great an improvement as is contemplated." His lord-

ship says, "With respect to interments under churches, I consider it altogether an objectionable plan."

The difficulty that was suggested in the committee, arising from the occasional necessity of burying persons of all religious persuasions in the same inclosed ground, if a removal of interments from towns took place, seems obviated by the Bishop of London in the following questions and answers:—

Assuming that a piece of land for a cemetery was purchased by a parish, or by a parochial union of parishes, for the purpose of interment, and assuming that this piece of ground was purchased by a penny rate, or a rate to a certain amount raised upon the parish at large, would there be any objection to a portion of this ground being set apart for dissenters, or for people of any other religious denomination, with this money so raised?—I do not see any objection to having a part unconsecrated, if any person should prefer being buried in such ground; of course it would not be for members of our church; the clergy would be desirous that such persons should be buried in a different part. It would be impossible, unless you set apart one for one, and another for another; you must have a part consecrated and a part unconsecrated in the cemetery for the interment of those not in the communion of the Church of England.

Your lordship sees no objection to the principle, supposing the money to be obtained by a rate levied upon the parish, to its being applied in that manner?—I should say not; I see no objection in principle. I do not suffer my objections to interfere with public measures.

Although the evidence, and especially that of a documentary kind, before your committee, tends to show that the grievance in question is felt even in many of the smaller towns; yet in a question of so great importance, and involving so many feelings and interests, it appears desirable to proceed cautiously and by degrees. With this view your committee recommend that legislation be, in the first instance, confined to towns of the largest size, and that legislation with respect to the others, if felt needful or desirable, be postponed until a subsequent session.

III. In directing their attention to the third and last subject of their inquiry (the manner in which the removal of places of interment from populous towns may be effected without interfering with vested rights), particular attention ought to be paid to the peculiar situation of the parochial clergy, whose chief source of income, in some cases, is derived from fees received from interments. Of these fees it would be great injustice to deprive the parties. The effects of the contemplated change on the emoluments of the parish clerks is also, in the opinion of your committee, a matter to be taken into consideration. The only means, therefore, of removing the evils arising from the present mode of interment in towns, seems to be to grant a power in parishes, where an additional fund is required, to raise a rate sufficient to cover all the increased expenses which may be incurred under the proposed system.

It appears difficult to carry into execution any of the provisions recommended here without the assistance of some central and superintending authority to be established for that purpose.

In conclusion, your committee cannot but be of opinion that a legislative enactment, prohibiting interments in towns and their vicinity, is required for the welfare of the community, and that it is desirable such enactment should emanate from the government.

Your committee will conclude their report with the following resolutions to which they have agreed.

Resolved, that it is the opinion of this committee:—

1. That the practice of interment within the precincts of large towns is injurious to the health of the inhabitants thereof, and frequently offensive to public decency.

2. That in order to prevent or to diminish the evil of this practice, it is expedient to pass an Act of Parliament.

3. That legislation upon the subject be, in the first instance, confined to the metropolis and to certain other towns or places the popula-



tion of which respectively at the last census exceeded 50,000.

4. That burials be absolutely prohibited, after a certain date, within the limits of such towns or places, except in the case of family vaults already existing, the same partaking of the nature of private property, and being of limited extent.

5. That certain exceptions, as applying to eminent public characters, be likewise admitted with regard to Westminster Abbey and to St. Paul's.

6. That certain exceptions be likewise admitted with regard to some cemeteries of recent construction, according to special local circumstances, to be hereafter determined.

7. That within the dates which may be specified, the parochial authorities in such towns or places be empowered and required to impose a rate for the purpose of forming cemeteries at a certain distance from the same.

8. That a power be given to the parochial authorities of two or more parishes or townships of the same town to combine, if they think proper, for the same cemetery.

9. That a *minimum* of distance be fixed for such cemeteries, from the same motive that leads to their establishment—the public health; and that a *maximum* of distance be likewise fixed, so as to secure the lower classes, as far as possible, from the hardship of loss of time, or weariness in proceeding to a great distance to attend the funerals of their relatives.

10. That the parochial authorities be responsible for the due and decent administration of each burial within the new cemeteries, in the same manner as they are now within present churchyards; and that, on the other hand, they be entitled to the same amount of fees on each burial as they at present receive.

11. That due provision be made for the perpetual possession by the parishes or townships of the ground on which the cemeteries shall be made.

12. That due space be reserved, without consecration, and within the limits of the intended cemeteries, for the separate burials of such persons or classes of persons as may be desirous of such separation.

13. That no fees from any such burials in unconsecrated ground be payable to any ministers of the Church of England.

14. That, subject to the conditions expressed in the 10th and 13th resolutions, arrangements be made to equalize as far as possible the total amount of fees payable on burials within the same cemetery, whether in the consecrated or the unconsecrated ground.

15. That considering the difficulty of fixing the same date for the prohibition of burials within the limits of different towns, or the same distance, for the construction of the new cemeteries, and the importance of having reference to various local circumstances, it does not appear desirable to observe in all cases an uniform rule in these respects; but that the time and manner of applying the principles set forth in the foregoing resolutions should be entrusted either to some department of the government, or to a board of superintendence, to be constituted by the Act of Parliament.

16. That the duty of framing and introducing a Bill on the principles set forth in the foregoing resolutions, would be most efficiently discharged by her Majesty's government, and that it is earnestly recommended to them by the committee.

We shall next week continue the same subject.

## F.

IMPROVEMENTS AT WINDSOR.—The Crown has lately determined to sell the whole of the ground lately occupied by the Lower Royal Mews, for the site of 12 or 14 large mansions which are to be erected in conformity with plans approved by the Commissioners of Woods and Forests. The Commissioners have also recently purchased several houses in Thames-street, preparatory to their being taken down for the purpose of widening the carriage-way, and thus effecting a very great improvement in this portion of the town.

THE CARTOONS OF RAPHAEL.—There is at present an artist busily occupied, by order of the King of Prussia, at Hampton-court, copying upon the most elaborate scale these wonders of art.

## NEW BUILDINGS' BILL.

A MEETING of the Master Carpenters was held on Wednesday week, at which was a very full attendance, for the purpose, among other matters, of receiving the report of the committee upon the above-mentioned Bill. The chair being taken by Mr. H. Biers, the president, and the ordinary business of the society being disposed of, five new members were proposed and elected, viz. Mr. Crowe, of Mount-street, Grosvenor-square; Mr. Charles Harbert, of Clipstone-street; Mr. E. W. Burgess, of Wardour-street; Mr. E. W. Gooch, of Norfolk-crescent; and Mr. Thos. Rider, Jun., of Union-street, Borough.

Mr. Higgs gave notice that at the next meeting he should propose Mr. Timson, of the Hampstead-road, for election.

The Chairman then stated that the committee upon the New Buildings' Bill had met several times, but had not yet been able fully to complete the report they were so anxious to present to the meeting.

The Chairman here entered into a statement of the leading features of the proposed Bill, which, however, it is not necessary for us to give, as we have since been favoured (exclusively) with a copy of the report itself.

*The Report of the Committee appointed by the Society of Master Carpenters, to investigate and superintend the Progress of the proposed New Building-Act through Parliament.*

Your committee beg to report that according to your directions they have fully considered the several clauses, schedules, and other matters contained in the proposed "New Buildings' Bill," and they have much pleasure in stating that the present proposed Bill is a great improvement in many of its provisions upon the several Bills that have been brought under public notice for the three years past.

But although very considerably improved, and especially upon the Bill proposed in the last session of Parliament, yet much still remains to be done to it in alteration, addition, and abstraction. And here your committee would urge, that although the public generally consider a "Buildings' Bill" as merely interfering with the rights and costs of the builder only, that this is a most erroneous opinion, as it is the public generally, and individually, at whose expense and inconvenience any unnecessary provisions must be borne; and when it is considered that under the extended limits of the "New Buildings' Bill" the dwellings of between two and three millions of inhabitants will be regulated, it must be obvious to all that the residents within the control of its proposed power have much more to do with its provisions than they may imagine.

The Bill now comprises within its limits all such places lying on the north side or left bank of the river Thames as are within the exterior boundaries of the parishes of Fulham, Kensington, Paddington, Hampstead, Hornsey, Tottenham, Saint Pancras, Islington, Stoke Newington, Hackney, Stratford, Bromley, Poplar, and Shadwell; and to such part of the parish of Chelsea as lies north of the said parish of Kensington.

And to all such parts and places lying on the south side or right bank of the said river as are within the exterior boundaries of the parishes of Woolwich, Charlton, Greenwich, Deptford, Lee, Lewisham, Canberwell, Lambeth, Streatham, Tooting, and Wandsworth.

And to all places lying within two hundred yards from the exterior boundaries of the district hereby defined, with power to be given to her Majesty in Council for further extending its provisions to twelve miles from Charing-cross.

The Bill is drawn up in two parts; the first part detailing generally its several provisions, and the second part containing schedules of the matters referred to in the first part of the Bill. Your committee, in accordance with this arrangement, report, firstly, upon the general part of the Bill, and, secondly, upon its sche-

dules, and will then attach an appendix showing such parts of the Bill as, in their opinion required to be altered, added to, or amended.

Your committee would call your attention to the alteration in the names of the rates of the buildings; the Bill calling a fourth-rate house of the present Act a first-rate house, and a first-rate house, under the old Act, is therein called of the fifth-rate. The reason for this alteration is supposed to be that houses above 82 feet high, and covering a superficies of more than twelve squares, and warehouses above 65 feet in height, and extending more than thirty-five squares, will be (and perhaps properly so) under special supervision. Your committee think that this alteration in the names of the rates ought not to be carried out, but that the rates ought to be left as in the old Act, both as regards correct definition, and as preventing the innumerable mistakes which would inevitably occur, if the new designations were to pass into law. The new rates requiring special supervision, might be called "AN EXTRA RATE," and "A SPECIAL RATE."

Your committee represent that the Act is proposed to be superintended and carried out by district surveyors as at present, but of course with addition to their number, and also by "REFEREES," and a "REGISTRAR," and "DEPUTY REGISTRAR," with power of appeal to the Commissioners of Works and Buildings to modify where necessary the strict letter of the Act. Upon these appointments your committee give hereafter in this report further observations.

Your committee are of opinion that where a party-wall is required to be rebuilt, and the consent of an adjoining owner cannot be obtained, that permission to a certain extent ought to be given to build a portion of the party-wall upon the soil of the owner withholding his consent, but under the direction therein of the referees.

Your committee are desirous that a better definition of the general line of buildings be given, than that at present set forth, for the prevention of projections and encroachments, and which, although not positively over the public way, yet when carried out as they are in many places by building over or upon the front gardens of houses, as in the line of the New-road, the City-road, and many other places, are very objectionable, preventing that free current of light and air intended by the first builders; and, further, if these encroachments are to be permitted, or any other additions or projections suffered to be erected, they ought only to be done by the written permission of every person interested in the line of houses which may be affected by such erection.

Your committee further notice that a *minimum* width is proposed for all new streets, whatever may be the respective rates of houses, viz. 30 feet; but your committee think that this provision might be greatly improved by regulating the widths of streets by the number of stories above the footways.

Your committee are of opinion that the time to be given in the notices of works about to be done under this Act is much too long, and would be of great inconvenience to parties about to build, rebuild, or alter edifices; they therefore recommend an alteration there in.

Your committee particularly call your attention to the 51st sec. of the Bill, as from its ambiguity it is likely to affect to a very serious extent the owners of all or nearly all third and fourth rate houses ALREADY BUILT.

Your committee agree upon the principle of every dwelling-room having a WINDOW and a FIRE-PLACE; but so many thousand houses having been built under the existing Act, by the provisions of which it was impracticable to make the BACK ROOMS of many THIRD and ALL FOURTH rate houses of a superficies of ONE SQUARE, it would be exceedingly unjust so to restrict parties who have built according to Act of Parliament for three-quarters of a century, from either letting or occupying such parts of such houses ALREADY BUILT; they therefore recommend this clause to be most materially revised, in order to prevent so much injustice as would be caused by its enactment.

And here your committee beg further to observe that in the smaller description of residences, even under the PROPOSED BILL, it



would be difficult to make the back rooms of such houses with a "square" of flooring.

Your committee beg to call your attention to the fees about to be established, and although your committee do not find fault with the scale of fees as regards the different rates of buildings, your committee must call to your serious consideration that there are many additional fees inserted in this Act which are not to be found in the old Act.

Your committee would next bring under your consideration the office and appointment of "OFFICIAL REFEREES;" and, with regard to their appointment, your committee consider that if "competent persons" were appointed, much good would arise, as a court of appeal would then be open to the public, and the judges would be much better able to deal with the matters brought under their consideration than any court as at present constituted, and which officers could, if so thinking fit, attend to view the subject matter of dispute; at the same time your committee think that not less than THREE referees ought to be appointed.

Your committee observe that the referees would not be bound to certify a building under their supervision within a given time, although a large penalty would prevent such building from being used previous to granting such certificate.

Your committee also call your attention to section 82, which section relates to the appointment of an officer termed a "REGISTRAR." Your committee having very fully considered the nature of the duties of the office, concur in the utility of the appointment.

Your committee have to suggest that additional provision be made that, upon further extension of the limits of the proposed Act, equitable contribution be made by all districts within such limits towards the expenses of the referees and other new officers proposed to be created.

Your committee would also advise an alteration in the 97th section, for as it at present stands, an information may be laid by a common informer. This appears to be highly objectionable; and they submit that any information laid under this Act ought to be by the district surveyor, and that a moiety of every penalty which might be inflicted, should be paid over to the poor of the parish.

Your committee also suggest that power ought to be given to the referees to take evidence upon oath.

Your committee having brought the first part of the Bill generally under your notice, now particularly request your attention to the part of it which is set out in the several schedules.

Schedule A. repeals the 14th Geo. 3, cap. 78, commonly called the "Building Act," with the exception of such clauses thereof as relate to dangers by fire.

It wholly repeals the 50th Geo. 3, cap. 75, being an Act passed to permit roofs to be covered by patent tessera.

It partially repeals the 4 & 5 of Will. 4, cap. 35, and the 3 & 4 of Vict. cap. 85, which Acts are better known as the *Chimney Sweepers' Acts*.

And here your committee would express their opinion that numerous fires, and also the wearing away of flues, would be very greatly diminished, if the legislature would permit climbing boys, say of not less than fourteen years of age, and duly licensed, to sweep chimneys as formerly, instead of the very imperfect method of cleansing them by machinery.

Your committee call your attention particularly to schedule C. parts 2 and 3. These set out the class and also the rates of buildings, the names of which have been most inconveniently reversed; that which is called a FIRST rate in the schedule is in the old Act called a FIRST rate, and the smallest or lowest rate is designated by this Bill a FIRST rate. This ought, for the purpose of preventing confusion of ideas, and also that the several rates may be called by their proper names, to be reversed, and with the addition of the extra rate before referred to.

This schedule gives greater extent of superficial measure to the several rates, as compared with the existing Building-Act, and is so far an improvement; but your committee consider it desirable to recommend a still further extension in the superficial measure. This schedule also regulates the rate by the height, and also by the number of

stories. Your committee observe that the party-walls in all the rates have been increased in thickness, as compared with the old Act; and although in some instances they concur in such additional thickness, yet in several instances they consider it desirable that the thickness set out should be altered from the present proposal, as involving unnecessary expense without corresponding advantage.

Your committee would particularly impress that schedule C. part 2, might be very greatly improved by two intermediate rates being introduced to follow the second and third rates (in this schedule); for although in the suburban districts the increased superficies is, and no doubt will be, considered a desirable improvement; yet in the metropolis and other crowded neighbourhoods, a smaller space must be made to suffice, so that an additional story will be a very necessary accommodation.

Your committee think that this ought to be permitted, provided the superficial measure of the building does not exceed four squares and a half; and that the walls of this description of buildings might be permitted half a brick less, than if the whole extent of the superficies were taken, as set out in the schedule to houses, with the number of stories.

Your committee request your particular attention to this suggestion, as they consider the subject of much importance where space may be valuable, or not easily or cheaply to be obtained.

Schedule C. part 4, your committee consider may be improved by making the openings in party-walls a foot wider and a foot higher, and taking out entirely the provision as to the piers proposed to be built at the sides of openings.

Your committee call your particular attention to the alteration in the regulations of ADDITIONAL buildings; under the present Act the whole of the walls must be of the thickness of the rate of the principal building to which any such ADDITIONAL building may happen to be attached. Under the regulations in the proposed Bill, an ADDITIONAL building (when considered for the purpose of ascertaining the thickness of the EXTERNAL walls) would be rated as a separate building, and whatever might be the rate of the principal building, the external walls of the ADDITION would only have to be built of such thickness as such addition might rate in itself. This is a great improvement upon the old Act, but the provision ought to extend to the PARTY-WALLS of such ADDITIONS.

Your committee also call your attention to the regulations as to greenhouses, aviaries, and other such buildings. Your committee think that these trifling additions do not require the superintendence of the official "referees."

In schedule D. part 1, your committee recommend that the regulations relating to "foundations," being the first paragraph; and also the last one, relating to "walls generally," be entirely taken out as quite unnecessary; and at part 2, the regulation as to breast-summers ought also to be omitted, as this may lead to much litigation between builders and surveyors, and unnecessary interference.

In part 3 of this schedule, provision is made, in case of alteration of an adjoining building from a smaller rate to a larger rate, that the value of the extra SITE is to be paid for by the owner increasing the rate; a provision ought also to be made for the payment of any additional thickness that may be occupied in the party-wall.

In this part (3) of schedule (D.), provision is made, subject to the decision of the "referees," to permit two houses of the highest rate to have an opening or communication between such two houses. This is a very beneficial arrangement, but it ought in justice to be permitted to every rate from the highest to the lowest.

Schedule E. relates to regulations regarding projections; but your committee must confess that they really cannot understand how this schedule can be carried out, for while permission is given at one part of the schedule to form any projection, if made of combustible materials, another part of this schedule prohibits any projection beyond the "general line of fronts." The heights of shop-fronts and sign-boards are also regulated by this schedule, which, in the opinion of your committee, might be improved by allowing addition to the heights respectively.

Schedule F. regulates the construction of chimney-breasts in party-walls, and prohibits their OVERSAILING, except under certain regulations as regards the projections of chimney-breasts in the upper stories, or dressing-rooms, of the better description of houses, and in all other, and even in these, prohibits an OVERSAILING of chimney-breasts *sidewise*; permission for oversailing ought to be inserted in this schedule (the salient angles being regulated at 135 degrees, as in the former part of the Bill), as such permission would be a great saving both in space and cost, and could not be of any possible detriment either to strength or construction.

Upon the regulations in sewers, as in schedule H, your committee think that wherever a sewer is built in the public way in front of any house, that it ought to be made imperative for the owner to lay into or communicate the drains and cesspools of the house with such sewer, whatever may be the distance from such house to such sewer. This regulation would prevent many of the surreptitious and imperfect drainages which at present exist, and would greatly promote the health of the tenants and locality, by an additional quantity of water being forced through such sewers.

Schedule I. would be greatly improved by regulating the width of streets by the number of the stories of the houses to be built in such street.

Your committee having given the regulation regarding the area of rooms their very serious and deliberate consideration, and although they very fully concur in the advantages of a large room over a small one, yet they feel that in preventing the occupation of a room otherwise fitted for a dwelling, solely because it does not contain (perhaps within a small quantity) a superficies of 100 feet, that in thousands of instances great injustice will be done to persons who have built under the restrictions of the existing Act, they recommend that the superficial quantity be not the test, but that if otherwise fitted that such rooms shall be permitted for occupation.

And here your committee cannot but suggest that, in carrying out this Act and its sanitary regulations, a great boon would be granted to the poor especially, if permission were given for a better ventilation by apertures and lights, free of window-duty, and which, in the opinion of your committee, ought to be allowed when light and ventilation are required; the parts so lighted and ventilated not being used for dwelling or sleeping therein.

Your committee must now call your attention to schedule L., which contains the list of fees proposed in future to be paid for the several duties to be performed under this Act. Your committee do not object to the fees charged in the first six rates of buildings, but to the fee for inspecting and reporting to the official referees upon party-walls, they cannot so readily assent, and your committee do not clearly understand the duties for which this fee is to be demanded. Additions to principal buildings will under the proposed Bill be exempted from fees, if covered in within a certain period after the principal building. Your committee consider the word "repairs" ought to be taken out of this schedule as too indefinite, and leading to an interference by the district surveyor, and a consequent fee, where the legislature did not intend any superintendence by that officer.

In the scale of fees for special duties, many of them being provided for in the fees in alterations and in rebuilding, your committee recommend that some be expunged and others abated. And in this recommendation your committee feel satisfied that the present district surveyors, a highly respectable body of public officers, have no desire whatever for either duplicate fees for the same service, or an additional fee for any trifling service that may be incidentally performed.

Your committee have thus generally reported upon the several parts of this very important proposed Act of Parliament, and having given the same their most deliberate and serious attention, hope that the SOCIETY OF MASTER CARPENTERS will feel satisfied that although perhaps inadequately, yet they have, to the best of their judgment, brought forward the most material parts of the proposed Bill for the better consideration of the society; and they beg further to state that in the various recommendations, either in abate-



ment or addition, their sole object is, and has been, for the public benefit, and that alone; and they cannot close this report without congratulating the society that although their opposition to the various Bills introduced into Parliament since 1840, and up to the introduction of this Bill, has been most constant and determined, and which opposition at one time was considered as emanating from private or interested motives, yet this society have been able at all times to give such reasons for all the alterations that they have from time to time recommended, as to make it clear to the promoters of the several Bills, and especially to the noble lord under whose superintendence through Parliament the one before us now is, that this society have been actuated by but one motive, which was, to obtain a really useful, good, and practicable Buildings' Bill, and which your committee think they may now say is likely to be passed.

The Bill being drawn in two parts, one part necessarily referring to the other, has occasioned your committee repetition in several of the observations they have had to make. Your committee, although unwilling to trouble you, did not think that without thus fully setting forth, and repeating in some instances that which they otherwise would have avoided, that they could make themselves clearly understood.

In conclusion, your committee have appended to this report extracts from the proposed Bill, with such emendations therein as have occurred to them in going through the several provisions and enactments; and which emendations your committee hope will be satisfactory to the society, and which they also hope may be made in the Bill previously to the same being passed into law.

(Signed) H. BIERS, President.

We shall in our next number give the appendix to this report.

#### INSTITUTION OF CIVIL ENGINEERS.

APRIL 2.—The President in the chair.

The discussion on the subject of slips in cuttings and embankments of railways was renewed, and was extended to such a length as to prevent any papers from being read.

Some interesting observations were made by Sir H. T. Delabèche, the Rev. Mr. Clutterbuck, and several members, on the geological features of the slips, whether occurring naturally in cliffs, as at the back of the Isle of Wight, or in the artificial cuttings of railways. It was contended that in both cases the reduction of the lower and softer beds to the state of mud by percolated water, rendered them incapable of bearing the weight of the superincumbent strata, and that the mass when saturated slid down by its own gravity; but that slips in railway work were accelerated by the vibration caused by the passage of the trains. The vibration of the air from the discharge of a gun had been known to cause an avalanche; and the cases were almost analogous. More attention, both to surface and bottom drainage of the slopes, was much insisted upon, and it was urged that the back drains so close to the top of the cuttings were prejudicial; that in dry seasons the bottoms cracked, the rain found its way through, and it had been frequently noticed that the slips commenced at a few feet below the level of these drains.

The dry shafts, which had been sunk in the slopes of the Eastern Counties Railway by Mr. John Braithwaite, with the concurrence of Sir T. Delabèche, were instanced as very successful in rendering wet and treacherous strata comparatively dry and secure.

An interesting section was exhibited of the embankment at Hanwell, on the Great Western Railway: this embankment, which was of gravel, was 54 feet high; it was laid in a marshy valley traversed by the river Brent; the London clay, upon which it was laid, inclined towards the river; and at one of the numerous fissures, with which that stratum abounds, a subsidence occurred, squeezing up at the same time on the lower side to as great an extent as the embankment sunk, which was stated to be nearly as much in one year as the entire mass of the embankment. This subsidence was stopped by loading the foot of the slope, and thus restoring equilibrium, and it was stated to be at present quite secure.

It was urged that in the earthwork of canals,

where there was no vibration, the slips generally occurred in the first few months after the formation of the embankments; but that on railways they occurred quite as frequently after the lapse of several years. It appeared therefrom that much was due to vibration.

The monthly ballot took place, when the following candidates were elected:—Messrs. A. S. Jee, as member; Adolphe du Bois de Ferrieres, J. H. Tasker, B. Snow, A. Coldinge, and T. Hughes, as associates.

The following papers were announced to be read at the meeting of April 16th, there not being any meeting on Easter Tuesday, the 9th instant:—

No. 661. "Account of the Railway from Amsterdam to Rotterdam, and of the principal Works upon it," by Le Chevalier F. W. Conrad, M. Inst. C.E., translated from the French, by C. Manby, secretary.

No. 662. "Description of the Piling Machine, used at Montrose Harbour Works," by J. Milne, communicated by G. T. Page, Assoc. Inst. C.E.

No. 673. "Account of a series of Experiments on Solid and Hollow Axles," by C. Geach.

#### DANLEY'S PATENT CHIMNEY-BAR.

TO THE EDITOR OF THE BUILDER.

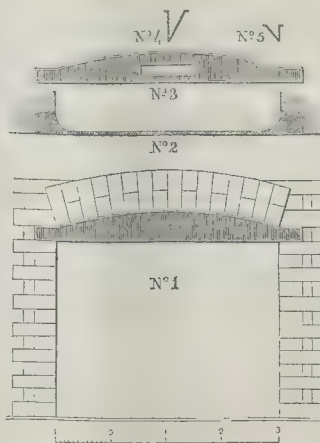
SIR,—I beg leave to send you a rough sketch of my newly-patented Chimney-bar, which if you think worthy of notice, the insertion of it will oblige me. I have also other inventions that may be considered applicable to your columns.

This bar forms no impediment to the smoke passing up the flue; for, instead of there being  $\frac{1}{4}$  inches, it will be seen there is but  $\frac{1}{8}$  of an inch of work. The bar is fed with pure atmosphere, so that it may be introduced into apartments in cold weather for respiration. As soon as I have specified, I will forward you a treatise of my invention for the better formation and safe construction of flues and chimneys. I have had thirty-six years' practical experience in their construction; and have long considered an alteration requisite; as it has ever been my opinion that chimney-building is the most defective part of house architecture.

Your obedient servant,

WILLIAM DANLEY.

Frederick-street, St. John's Wood-road.



#### EXPLANATION.

No. 1. Front elevation of the bar as fixed in brickwork.

No. 2. Plan of ditto, as laid on the chimney-jambs.

No. 3. Internal elevation next the fire; the aperture is a thin plate perforated with holes; the bar is hollow and forms a hot-air chamber, which passes through the aperture and feeds the flue with an ascending current of warm air, which will always prevent apartments from being fouled by smoke.

No. 4. Section in the centre of the bar.

No. 5. Section of the bar at its ends.

#### SOCIETY OF ANTIQUARIES.

FEB. 29.—T. Amyot, Esq., treasurer, in the chair.

A paper was read by T. J. Pettigrew, Esq., F.R.S., and F.S.A., containing remarks on the extracts from the old English medical manuscript at Stockholm, communicated by George Stephens, Esq., and which Mr. Pettigrew illustrated by extracts from several similar manuscripts preserved in the British Museum. He stated that English treatises on medicine, or rather collections of medical receipts, are common in manuscripts of the fourteenth and fifteenth century. They were chiefly founded upon the popular Latin poem of the "School of Salerno," the *Regimen Sanitatis*, composed in the eleventh century. The Stockholm poem relates chiefly to the virtues of herbs, which had so large a share in the common medicine of the day, and which, in order to be effective, were to be gathered under certain influences of the planets. Belief in the particular effects of certain positions of the celestial bodies, not only in the cure, but also in the production of diseases was very prevalent, and so continues in many parts of the world, particularly in the East. A certain knowledge of astronomy, or rather of astrology, was necessary to the physician, because he was guided by it in the time and manner of letting blood, and other operations. Evil spirits were believed also to exercise an extensive agency in producing diseases, and various methods were employed to drive them away from the patient. Betony, goldflower, pimpernelle, motherwort, vervain, henbane, and other plants, were very efficient for this purpose. Some of the remedies are of a singular nature. For dropsy, thrice-three earth-worms with their heads cut off, immersed in holy water in which sugar or liquorice is to be dissolved, are recommended to be taken daily for nine days. Numerical and other charms are very common in these treatises. Charms were particularly employed against venom, tooth-ache, jaundice, hemorrhage, fevers, epilepsy, &c.; and Mr. Pettigrew accounts for their being in many cases efficacious through the influence exerted by the mind over the functions of the body, and this efficacy was of course in proportion to the ignorance of the age in which they were used.

MARCH 14.—Lord Viscount Mahon, V.P.

The following gentlemen were elected fellows of the society: Dr. Barnett, M.D., of Chesham-place; James Dearden, of the Orchard, Roehdale, Esq., formerly of St. John's College, Cambridge, and barrister-at-law; the Rev. Abraham Hume, of Liverpool; and James Nicholson, Esq., of Thelwall Hall, near Warrington.

It was announced that the second volume of the "Great Rolls of the Exchequer of Normandy," edited for the society by Thomas Stapleton, Esq., F.S.A., and which completes the work, is now ready for delivery.

Mr. E. B. Price exhibited rubbings of two remarkable sepulchral brasses.

Albin Martin, Esq., exhibited a collection of glass vessels popularly called lachrymatories, discovered in the Elysian fields near Naples, and several ancient lamps of terra cotta from a burial-place in the neighbourhood of Cumæ. Also sketches in oil of the following classic localities: the plain in which Pompeii and Stabia were situated; Puzzuoli, the ancient Puteoli, where St. Paul landed on his way to Rome, after his shipwreck at Melita; the site of the villa of Lucullus; view of the Lago d'Agnano, near the Lucrine Lake, still remarkable for its warm sulphureous baths. The exhibition was accompanied by a paper by A. J. Kempe, Esq., F.S.A., shewing that the vessels in form of a tear were, probably, genuine tear bottles, and that the practice of depositing lamps in tombs were continued by the Romans after Christianity had been embraced, and burning of the dead disused.

MARCH 21.—Mr. Amyot in the chair.

Among the presents received was a handsome work on the ancient architecture and monuments of Saxony, entitled, "Denkmale der Baukunst des Mittelalters in Sachsen." It was accompanied with a letter from the author, Dr. L. Puttrich, stating that, having studied what has been published with regard to similar remains in England, he had observed a great correspondence with those of Germany. His



volumes consist of numerous plates in lithography.

Edward Blore, Esq., F.S.A., presented exterior and interior views of the ancient refectory at Great Malvern, which appears to have been wholly constructed of wood, including the windows, which were square-headed, but had very elegant tracery. The roof was high pitched, and handsomely ornamented. This very curious structure was wantonly demolished in 1841 by a speculative tradesman, and it is believed no other representations of it than Mr. Blore's have been preserved.

J. A. Cahusac, Esq., exhibited some antiquities found at Stony Stratford, consisting of three spears, an arrow-head, and two Roman coins, one of them of the Emperor Constantine.

H. C. Harford, Esq., communicated an account of some ruins, supposed to be Roman, excavated at Preston, near Weymouth; and exhibited several of the remains found there, consisting of great iron bars, swords, &c.

John Gough Nichols, Esq., F.S.A., communicated some remarks on a patent appointing Edward Duke of Somerset, Governor of King Edward the Sixth, Protector of the Realm, and Lieutenant and Captain-general of the Wars. This important document, which is now in the possession of William Staunton, Esq., of Longbridge House, near Warwick, bears the signature of the king and of sixty-two other persons; and Mr. Nichols showed that it received the signatures of the peers in the House of Lords on the last day of the first session of King Edward's Parliament. It appears never to have passed the great seal, its progress having been stayed after the breaking up of the Parliament. Its most remarkable feature is a clause declaring the tenure of the duke's high office to be terminable at the king's pleasure, expressed in writing under the great seal; whilst in the patent under which the office was actually held, and which is printed in Burnet's "History of the Reformation," the term of the duke's regency was to be commensurate with the king's minority, which the late king's will had fixed at the age of eighteen.

#### IMPROVEMENTS IN THE CITY.

THOSE who have been absent from the "City end" of this great metropolis for a series of years will be somewhat startled if they have occasion to pay a visit to that part of London. "Stands the City where it did?" may perhaps be their exclamation of astonishment on contemplating the march of improvement which is now so rapidly approaching its climacteric point. To say nothing of the immense advantages obtained some years back by the removal of old London-bridge and its contiguous abominations, the abolition of Crooked-lane and the purlieus of the once famous "Boar's Head Tavern," and the opening of a new bridge across "Old Father Thames," with handsome and spacious approaches, it is only necessary to make a circuit of half a mile round the Royal Exchange, in order to be made in some degree acquainted with the reforms effected from time to time in that important commercial locality. Some of our more elderly readers may perhaps have a faint recollection of old Princes-street, on the west side of the Bank of England, which some fifteen years ago was not wider, if we rightly remember, than Finch-lane is at present. Now, on the other hand, we have a fine wide street, which, continued by Moorgate-street, forms one grand and direct line of communication from the Mansion-house to Islington. On the eastern side of the Bank, Bartholomew-lane has been latterly most conveniently widened, and the old ruined tower which formerly reared its head at the north-western corner, flanked by a boot-maker's stall (for it could hardly be dignified by the term "shop"), has given place to a handsome *façade* of buildings, which very worthily hold up their heads by the side of the New Royal Exchange. Going still further it will be found that the old and ugly little church of St. Benet Fink is now on its last legs, and on the eve of final extinction. The unsightly heap of bricks and mortar yeelp "Bank-buildings" is already levelled with the ground, and the elegant portico of the new Exchange may now be viewed to some advantage. By the encroachment of this edifice, two very ancient city thoroughfares, "Castle-alley" and "Bank-street," have been utterly annihilated, but, of course, without any disadvantage

to the public. The alley of "chop and steak" houses, cigar-shops, &c., which formerly ran along the east side of the old Exchange, has also been destroyed, although Finch-lane still remains intact and unimproved. In Thread-needle-street the increased width of the thoroughfare will shortly be carried out along its whole length by the removal of the houses and shops in front of Merchant Tailors'-hall; and the "Hall of Commerce" (as it is termed) has been erected, since 1842, upon the site formerly occupied by the old French Protestant church—as ugly a building, perhaps, as architect ever devised. It had stood, however, for nearly three hundred years, and some curious antiquarian discoveries were made beneath the foundations when it was pulled down by Mr. Moxhay.—*Times*.

#### RAILWAY BUSINESS IN THE HOUSE OF COMMONS.

TUESDAY, MARCH 26.

*Maryport and Carlisle Railway Bill.*—Read a second time and committed, and referred to the committee of selection.

*Brighton and Chichester Railway Bill.*—Motion made and question proposed "That the Bill be now read a second time;" amendment proposed, to leave out the word "now," and at the end of the question to add the words "upon this day six months;" question put "That the word 'now' do stand part of the question?"—The house divided; ayes, 99; noes 48;—main question put, and agreed to.—Bill read a second time and committed, and referred to the committee of selection.

*Stratford (Eastern Counties) and Thames Junction Railway Bill.*—Motion made and question proposed, "That the Bill be now read a second time;" amendment proposed, to leave out the word "now," and at the end of the question to add the words "upon this day six months;" question proposed, "That the word 'now' stand part of the question;" amendment, by leave, withdrawn; main question put and agreed to.—Bill read a second time and committed, and referred to the committee of selection.

*Colchester and Harwich Railway (No. 2) Bill.*—Read a second time and committed, and referred to the committee of selection.

*Manchester and Birmingham Railway (Macclesfield and Poynton Branches) (No. 2) Bill.*—Reported; report to lie on the table, and to be printed.

*Norwich and Brandon Railway Bill.*—Report considered; amendments agreed to; Bill to be engrossed.

*York and Scarborough Railway Bill.*—Report considered; amendments agreed to; Bill to be engrossed.

*Midland Railways Consolidation Bill.*—Reported; report to lie on the table, and to be printed.

*Furness Railway Bill.*—Reported; report to lie on the table, and to be printed.

*Guildford Junction Railway Bill.*—Report considered; amendments agreed to; Bill to be engrossed.

*Brighton, Lewes, and Hastings Railway Bill.*—Read a second time and committed, and referred to the committee of selection.

*Gravesend, Rochester, and Chatham Railway.*—Petitions for leave to proceed; of James Pim, and members of the provisional committee for constructing the Gravesend, Rochester, and Chatham Railway; to lie on the table, and to be printed.

*London and South Western Railway (No. 1) Bill.*—Read a second time and committed, and referred to the committee of selection.

#### COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.—No. II.

TO THE EDITOR OF THE BUILDER.

SIR,—Having in a late number of THE BUILDER considered the word ABACUS, it is now proposed to define the moulding called ECHINUS.

Professor Hosking thus explains the word: "Echinus (Gr. *εχινος*, an egg), a moulding of eccentric curve, which, when it is carved, being generally cut into the forms of eggs and anchors alternating, the moulding is called by the name of the more conspicuous." Mr. Gwilt

defines it as "the same as the ovolo or quarter-round, though the moulding is only properly so called when carved with eggs and anchors.

It is the shell or husk of the chestnut, though the ornament does not seem to bear much resemblance to it." (*Encyclopædia*, p. 968.)

The learned Evelyn's quaint description may be welcome: "It is, indeed, a quarter-round, and sometimes more, swelling above the cinctures, and commonly next to the abacus carved with ovals and darts (by our workmen called eggs and ankers as little politely), which is frequently shut up with a smaller ovolo of beads and chaplets, or like ornament; but so adorned, it commonly runs under the Ionic voluta, and that of the Composita, and next the Doric abacus, as in that singular example of the Trajan column, it creeps under the plinth of the capital. Such as pretend to etymologies for every thing they hear, will have it *ἐχινος* *παρά τὸ ἔχειν*, or *οὐνίχων* *λατὸν*, because of a kind of self-contraction; others more rationally, from the resemblance of roughness in the carving, *ἐχινον* *ρραχίοντες*, as bristling with darts like a hedge-hog, or rather the thorny husk of a chestnut, which being opened discovers a kind of oval-figured kernel, which dented a little at the top the Latins call *Deccaminata Ova*." To these definitions we may add that the word is Latin, but derived from the Greek, "qui terrestris est, et erinaceus etiam appellatur, et marinus, a spinis quibus *texerat*." (*Lex. Schrevelii*.) The primary meaning of echinus is a sea-urchin which is armed with prickles. Secondly, it is put for the rough prickly shell of chestnuts, and lastly, for the chestnut itself, from a resemblance of whose contour the moulding under consideration derives its name. In Roman architecture this moulding is called an ovolo, from *ovum* (Latin) an egg, to which in shape it is somewhat like, more especially when carved. We shall first consider the moulding as it is found in Grecian architecture, to which alone the term echinus is strictly applicable.

In the best examples with which we are acquainted, as, for instance, in the Parthenon and Theseum, the echinus has nearly the same projection as the abacus (it is actually the same in the temple of Apollo Epicurius at Bassæ), and we shall find that the sharper is its outline, that is, the more it is remote from the quarter-round, the more it is held in estimation; and that as it approaches the ovolo in form so it may be traced to belong to a declining period, or one nearer to the time of the Roman use of the Doric order. If we grant for a moment that timber construction afforded the first hints for architectural composition, and that the origin of the abacus may be traced to the intervention of a cube of wood between the column and its entablature; where will the advocates of this system find the prototype of the echinus? To the Greeks we must look for the adoption of this beautiful moulding, which connects in such a happy manner the square abacus with the circular shaft; and truly may it be said to be their own invention, even if we are compelled to admit that some slight hint for it is to be found among the heavy capitals of Egypt. Professor Hosking has well observed: "Greek architecture is distinguished for nothing more than for the grace and beauty of its mouldings; and it may be remarked of them generally that they are eccentric and not regular curves. They must be drawn, for they cannot be described or struck; so that though they be called circular or elliptical, it is seldom that they are really so; not but that they may be, but if they are, it is considerably the result of chance, not of design. Hence all attempts to give rules for striking mouldings are worse than useless, for they are injurious; the hand alone, directed by good taste, can adapt them to their purpose, and give them the spirit and feeling which render them effective and pleasing." (*Treatise on Architecture*, p. 38.)

In those buildings which belong to the best age of Grecian art, the days of Pericles and his chief architects, Calliades and Ictinus, as seen at Athens, Bassæ, Sunium, Thoricæ,

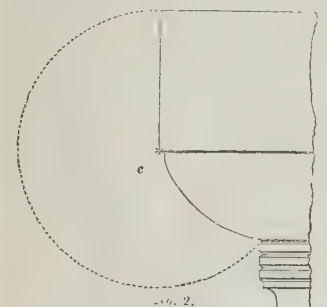
\* We do not believe this to be borne out by example; on the contrary, we think the Greeks had a rule for every thing in their architecture, the discovery of which was directed by genius, but its practice mechanical.—Ed.



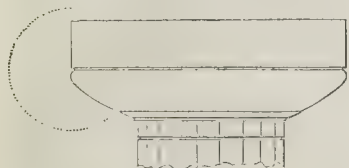
Eleusis, Rhamnus, and elsewhere, we shall find that the echinus has its lower part either very slightly curved (No. 1 illustration) or else



perfectly straight; whilst in buildings of later date, and of equivocal taste, we find that the moulding nearly resembles an elongated or ovate quarter-round, as in the Agors at Athens (No. 2 illustration), and in a build-

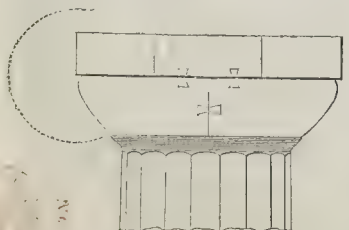


ing at Cadacchio (No. 3). Professor Donaldson has drawn notice to the general principle which "directed the Greeks in the



No. 3.

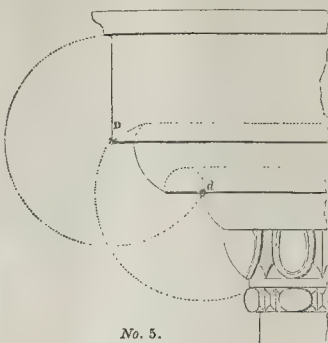
composition of their Doric capitals. From the necking to the abacus the outline is that of a cyma-reversa, having a projection that varied according to the era, or style of art peculiar to the country; the existing Attic examples being but slightly projecting, while the immense abacus of the orders now remaining at Corinth, Paestum, and in Sicily, gives a bolder profile to the capital." Some idea may be formed of the vast proportions of the temple of Jupiter at Agrigentum, when we find that the echinus of each column is formed of two stones, each weighing  $21\frac{1}{2}$  tons, held together by plugs or dowels by the centre stone of the abacus, which is in three pieces. (See No. 4.) In the capitals



No. 4.

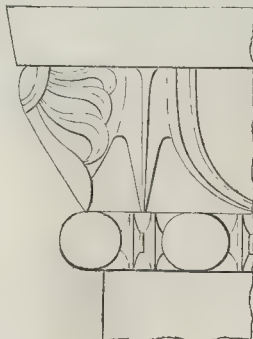
of the antæ of Greek examples, the echinus is

generally undercut, so as to form that remarkable moulding called the hawk's-beak or birds-beak moulding. (See No. 5, from the Parthe-



No. 5.

non.) No. 6 is an antæ capital from the Doric temple at Rhamnus, in which the egg-and-



No. 6.

anchor ornament is introduced in the echinus, which partakes of the sharp outline described above. The proportionate depth of the abacus and echinus to each other is not always the same; but as a general rule it may be held that the former member should have the greatest depth. In the Parthenon the relation in this respect is as 11 to 9; at Sunium and at Bassæ as 7 to 6; at Thoricus as 6 to 5; at Eleusis as 12 to 9.†

In the temple of Hercules, at Agrigentum, the echinus is deeper than the abacus; and in the temple of Jupiter, at the same place, it is considerably so, as seen in the cut above. This moulding, besides its place under the abacus, is likewise seen in various parts of the entablature. In Doric structures the echinus is

† The pure Grecian method of proportioning the abacus and echinus to each other, whatever their profile, was to render them *symmetrical* visually by striking a circular line from the lower edge of the abacus, as at C No. 1 and c No. 2, the upper edge of the abacus and the lower edge of the echinus being both found in the circular curve-line. In No. 5 this symmetry is twice repeated in the same antæ-capital, the circular curves being struck from D and d. See notes to Bartholomew's "Specifications" on this subject. Where the visual breadth of the abacus is less than that of the echinus, as in the examples No. 3 and 4, the effect is peculiarly disagreeable, from the want of symmetry; that of Agrigentum, however large, being much too small to be proportionate.—Ed.

found in the upper part or crown-moulding of the cornice, having only a fillet above it, as in the Parthenon. In the Grecian Ionic it is found in the cornice, and it also forms one of the mouldings which divide the architrave from the frieze, as in the temple on the Ilissus; and this moulding, which is left plain in the last-named example, is enriched in others, as in the temple of Minerva-Polias.

In all cases where an ovolo is employed, it should be placed above the eye; and the most judicious use of it appears to be where it has a flat member above as well as below, and thus we generally find it placed under a fillet and above a fascia.‡

Vignola, in his design for a Tuscan profile, makes the crowning member of the entablature a deep ovolo, a practice which cannot be defended. This moulding enters very largely into the composition of Gothic architecture. In the next paper we shall consider the word *annulet* as in immediate connection with capitals of columns, and the two important members which have been noticed.

G. R. F.

#### THE NEW ROYAL EXCHANGE.

WITH the promptitude and punctuality that have attended all the proceedings connected with this great work, the mass of Bank-buildings which concealed the principal or west front, have been removed within a short month, and the portico in all its splendid proportions is now exhibited. We understand that this portico is the largest by far in London, and that it is only second to the portico of the Pantheon at Rome and the Madeleine at Paris. It consists in front of eight Corinthian columns, the extreme breadth being 90 feet, and the height to the apex of the pediment 76 feet. At the meeting of the Joint Gresham Committee which took place on Saturday last, this feeling was exhibited by the most liberal suggestion for further decorations in sculpture at the expense of the committee; and it was resolved, that in addition to the sculpture on the pediment, the interior should be decorated by a statue of our gracious Queen Victoria, and that inasmuch as the statue of the munificent founder, Sir Thomas Gresham, in the old Exchange, was destroyed by fire, a new one should be provided and placed in the niche of the tower over the great eastern entrance. Other suggestions for further decorations were referred to a sub-committee for consideration. The place of the statue of the Duke of Wellington in front of the portico of the Exchange is also determined upon, and it will be about thirty yards back from the corner of Prince's-street, and in the centre of the area created by the destruction of Bank-buildings. In reflecting on these great changes, it is rather curious to recur to the state of things which existed on this spot not more than eighty years ago; at that time, though Cornhill was a broad street, the houses on the site (subsequently occupied by Bank-buildings) came up to a point, and Threadneedle-street is marked in "Gwynn's Plan" as only 14 feet 9 inches wide. The Bank of England was first built in 1732; it consisted then of what is now only the centre of the present building, but the proprietors soon after began to acquire ground and premises both east and west. Eastward, they quickly bought the property up to Bartholomew-lane; but, westward, they were stopped by the church of St. Christopher Le Stocks, which stood until after the riots in 1780, when, from a conviction of the danger of a lofty tower overlooking the Bank, an act was obtained for taking it down, and soon after that time all the principal front of the Bank was arranged and completed by Sir Robert Taylor up to the corner of Prince's-street, then a crooked and narrow street leading to Coleman-street. Bank-buildings, just pulled down, were built by the Bank, under the advice of the same architect, in the place of a mass of old houses, placed there after the fire of London, and which were bought by the directors for the purpose of the improvement. Names of streets appear to have been improved as well as streets themselves; for in the "Plan of Gwynn" before referred to, the continuation of Broad-street westward into Threadneedle-street is marked with the elegant name of "Pig-street," a name which was abandoned about the date of these improvements.—Times.

‡ Where the ovolo is placed below the eye, it is reversed, and becomes, as in some bases, a peculiar kind of "torus."—Ed.



## Freemasons of the Church

Founded on Advent-Eve,  
A.D. 1866.

"Freemasonry beeth the skylite of nature, the understandinge of the myghte that ys peregrine; and its sondrye werckynge, sonderlyche, and skylite of recenynges, of mayghtes and mynges, and the true manere of facconynge al thynges for mannes use: headlye, dwellynges, and buldynges of all kynnes, and al othre thynges that make gudde to manne."

"Macconnes habethe alwyse, yn eberyche tyme, from tyme to tyme, communicatide to mankynde soche of her secrettes as generalyche myghte be usufulle: they haue the kepte backe soche alleine as shulde be harmfulle yf they comed ynn euyllie handes. Macconnes love eithre othre myghtylye: yf may not othertwise be: for gude menne and true, kenynge eithre othre to be such, dertlye always love the more as they be more good."—From a Manuscript in the handwriting of King Henry the Sixth.

AN adjournment of the 16th, or "Our Lady's Chapter," was held on Saturday evening, the 30th March, at which was a very numerous attendance. The Rev. George Pocock, B.C.L., was called to the chair, and though many were absent, attending the *société* of the Marquis of Northampton, President of the Royal Society, we recognized many well-known to us, among whom were the Rev. T. M. Fallow; Messrs. Stothard; Geo. Aitchison, Sen.; Geo. Aitchison, Jun.; V. Bartholomew; W. P. Griffith, F.S.A.; Papineau, Sen.; Papineau, Jun.; Moon, Barr, Thomas, Archer, Perry, East, C. H. Smith, T. Deighton, Nunn, W. G. Rogers, W. H. Rogers, Finn, Staples, A. Bartholomew, F.S.A.; G. P. Pocock, Fisk, Houle, Cull, Winterbottom, Springbett, and many others.

The tables were spread with the effects of the college, and the rooms were hung with various architectural subjects, among which were rubbings from ancient monumental brasses, and two from very beautiful modern ones by Mr. Archer.

Mr. William Gibbs Rogers exhibited two boldly and exquisitely carved specimens of fruit and flowers, previously to their being placed in the School of Design at Edinburgh; and an elaborately chased "benitier" of bronze, with, rising from the bowl of it, a figure of our Saviour, an Italian work of the early part of the 17th century; also a richly-carved royal trophy in the style of Grinling Gibbons, 5 feet high and 4 feet wide, and of such extraordinary relief as to project nearly a foot, consisting of the point lace neckcloth of Charles the First, elegantly grouped with the sword and sceptre of England, pearls, crowns, and other insignia of royalty; flowers and musical instruments also forming an important feature in the composition, and on each side pendent groups of dead game, of remarkable lightness and fidelity. There were also on the table fourteen groups of figures of mediæval German carving, forming a series of the "Via Crucis," and some specimens of German Gothic tracery with inter-penetrating mouldings, and five large ancient alms-dishes of laton, furnished by Mr. W. G. Rogers.

Mr. A. Bartholomew exhibited, for future explanation, a scientific catenary composed of spring weighing machines, by which may be indicated the strain on every suspension link, and also the effects of pressure on different parts of arches, whether suspended or inverted, and of masonry. He also exhibited an implement, made of the vertebrae of four ox-tails, by which the curvatures of the arch ribs of

groined vaults and buttress-steeple (like St. Dunstan's-in-the-East) may be truly formed, according to the weight of the boss, spire, or other surmounting mass.

Mr. G. Aitchison, jun., presented a rubbing from an ancient monumental brass in Alhallow's Barking Church, near the Tower of London.

William Thomas, Esq., of Baker-street, Portman-square, was elected Professor of Fresco Painting to the College.

The election of new members, and the other ordinary business of the meeting being concluded, the special business of the evening was proceeded with, when Mr. Alfred Bartholomew, the secretary, delivered from a beautiful carved oak "Letterne," the property of Mr. W. G. Rogers, around which appears in raised letters, the inscription, "Record with Steadiness the Engraved Word."

### THE FOLLOWING ADDRESS.

THE SIXTEENTH CHAPTER of this institution being adjourned to this evening, for the special purpose of our members hearing an inaugural statement of the actual condition and prospects of the foundation of the College, it has devolved on me, Gentlemen, to address you upon a subject so interesting to our mutual profession and bonded union; one which we have had great trust, and still have, will become important to ourselves, and to all persons whose interest is concerned in the right conduct of practical architecture: and, indeed, who is there not so concerned? for even foxes who have holes, and birds who have nests, possess some knowledge of architecture; and have not many species of that which we esteem the lower animal kingdom unerring rules of architectural beauty and construction implanted by Almighty and Omniscent Wisdom, from which we may well copy, whether for the high branch of abstract taste—or the still higher one of fitness—that exact adaptation to purpose, that economy of material, and production of the greatest strength; to which few human architects have ever arrived, and perhaps none?

And here I would make the customary deferential excuses and lamentations, that one more competent was not appointed to now address you; but instead of doing so, I shall rather thank you for the high honour which I have received by being chosen to deliver to an audience so numerous, so respectable, so scientific, the inaugural address of the College, and I shall bring before you matter which, if it sparkle not, shall contain and yield some reflection of the sterling integrity of purpose, the pathos of architectural zeal, with which the spirits of the respected friends around me are radiant.

In taking the portion of time which we have, to found deliberately all our laws, and in avoiding all precipitancy, we have insured the future well-being of the College.

Let the impatient remember, that though Nelson was an hour or more before he returned a shot, resolving, though attacked, to order all well for a victory before he entered into vindictive conflict, yet did conquer through such well-set deliberation; whereas, had he entered into combat unprepared, he would himself, though so often before a conqueror, have been conquered.

Gentlemen,—Sixteen months ago our friends met here, and this college was founded: sixteen months ago we were bonded together into a fraternity, which, I have confident hope, will long survive the mural fabrications of even its discreetest members; and trust when the statically-poised dome is rent, and pulverized, and fallen,—when the masonic column lies prostrate and shivered,—when the arch, thrown out of equilibrium, is a fractured and severed ruin,—the College of the Freemasons of the Church, poised upon truthfulness, erected upon science, and depending upon the equilibrium of nature's philosophy, and through orthodox practice fused and run through every of its corporate members, from the crown of the head to the sole of the foot, shall flourish, and as old Time grows more and more hoary, still be green, and spreading more widely, and bearing more fruitage, and cheering more the heart of fabricating science, and shedding the cheerfulness of its countenance into all lands, wherever Anglo-Saxon perseverance shall counter Anglian merchandise, and literature, and civilization.

I hardly think it possible that in an assembly informed so well, knowing so intimately where have lain the corruptions, the grievances, and the disorders of our art, and which knows so well what have been our efforts, what are our views and intentions, one can be found to doubt the persevering truth of that which I have stated.

If, in times most generally accounted barbarous, and of little general science, existed such a community in our art, that from Russia to Ireland, from Norway to Spain, architecture, like the grass of the field, sprang up, and throve, and year by year grew with the same family impress, little altered by cli-

mate,—why should we doubt, when literature has gone out into all lands like the solar rays from which nothing under heaven is hidden,—when science, in its expanse unmeasured, has stretched from the palace to the cottage, from the garden to the desert, from the rivulet to the ocean, from the quiet wild-flower-grown byway, to the tornadoed railroad,—why should we doubt, with these advantages which this age (call it an iron one if you please) alone has possessed, why should we doubt such should occur?

Possibly some member's friend, with whose introduction we may be this evening honoured, may think that in meeting here for the hearing of an inaugural address sixteen months after the actual foundation of the institution, that sixteen months or nearly so have been expended idly. Not so. Sixteen months of collegiate industry have been passed; and within those sixteen months, by knitting together a strong and fervent *esprit de corps*, by founding good laws, and ordering every thing on firm, just, and extended principles, more has been effected than all other architectural societies have performed from their first existence.

The constant endeavour with our sturdy-hearted members has been to plan, to form, to build, and to solidify every thing preliminary, in such wise, that no future subversion shall possibly take place; that the good intentions of our founders may never (come what else may) be subverted: that all may, with the greatest minuteness, be so provided for the governance of the College, that no ill-informed or mischievous, or egotistical, or quarrelsome mar-plot, shall hereafter prevail against the sober, and proper, and wise, and fundamental principles of the institution.

If, then, Gentlemen, sixteen months have been consumed in the perfecting of such design in its most minute details, I trust those sixteen months will not be accounted as lost. In fact, I may say, that there are certain things to which this foundation has set its hand which no other society has even mentally weighed, much less had the boldness to put into operation.

As a few strangers are among us, I may be excused for entering into some details which are to all others of my auditors sufficiently well known.

In this college we are of five grades,—architectural-fellows, architectural-associates, clerical-fellows, lay-fellows, and honorary-fellows. This subdivision, or rather union of classes, has been broached for the purpose of bringing under one comprehensive union, the various persons who operate either in architectural fabrication or towards it.

In calling for contributions, the strictest economy has been exercised, and yet not without the laying down of some regula of splendour.

The beautiful illuminated vellum diplomas which lie on the table before you, designed by our talented member and illuminator, Mr. W. H. Rogers, perhaps vie in beauty with the admission documents of all other societies; and by examining the laws of the College, it will be found that while rigid economy has been consulted, something of splendour has been worked out.

In fixing the amounts of contributions, the greatest consideration has been exercised in settling them at 1l. 11s. 6d. per annum, or 12 guineas for life, from architectural fellows, and at 1l. 1s., or 7 guineas for life, from all other contributing members, the extremes of meanness and of wasteful profusion have been avoided; these contributions being within the means of the many, and beyond the means of only the few.

We have laid down very orderly rules for our chapters and other meetings, for our members' literary and graphic contributions, for our council, for the ultimate obtaining of a charter, and for the appointment of professors and officers to the College.

One part of the mechanism of the institution I think calculated to cause it to work as it should, is the description of officers denominated *Correspondent-Delineators*, whose duty consists in transmitting to us draughts and descriptions of architectural subjects at a distance from the metropolis, and thus enable us to collect, from local eye-witnesses, every information which we may require from a distance: this will in some manner re-create the wonderful community of the old freemasonry, which seemed like electricity to pervade all lands and all architecture. All competent persons who may desire to join our fraternity will be received among us in this capacity, without any contribution further than their correspondence and delineations, and will have granted to them the St. George illuminated diploma.

By the appointing of so numerous a body of scientific gentlemen, each in his office, we doubt not that we shall obtain the best scientific information upon the various subjects connected with practical architecture; and by this subdivision (for we have small faith in the man of Pantechnicon knowledge, who is often a man nearly approaching to Pantechnicon ignorance), we hope that every thing will be done well; for even in the Russian



horn-band, where each man has only to produce one sound, its note is purer and better than the artificially produced notes of any pan-phonic instrument which has ever been brought into use.

And even should any of our scientific officers be ignorant of all other things besides his particular art, to us as a collegiate architectural body it would matter little, provided he give us the fruit of the particular gift or talent for which we have elected him for our service.

If it be asked why, when there were already so many societies in existence devoted to architecture, the foundation of the College of the *Freemasons of the Church* was undertaken? Let me answer to such as may not be intimately acquainted with the state of architecture in England, its tone—the bearing and frame of architectural society,—that had those institutions promoted to the proper and legitimate purpose the objects of their foundation, this association would never have been framed. Allow me, *Gentlemen*, to say, that those who have promoted the formation of this institution, bore mentally and ennobled in their imagination this society long before any of the existing architectural societies were even thought of: those who have framed this institution, and have accreted it into promising growth which will doubtless flourish, have besides original ideas of greater compass than those which have led to the formation of any of the existing and defunct societies, have had the benefit of the experience of their languishment, disease, and failure. We have, therefore, the advantage of original conception purified by such experience; we have amalgamated with our freemasonic body the result of bygone experience; we have had the advantage of much advice; and I may say that we have succeeded in uniting in one body a larger and more intelligent and respectable body of scientific persons than ever before were linked in one association of the same nature.

We have one other advantage:—for many years past not only have professional persons hinted and even loudly contended that some great cause exists requiring the formation of such an association, but they and the whole public have agreed that architecture has been in a fallen state, and requires regeneration; and all in concert have complained that such societies as have been founded have failed of their objects: hence we have not only apology for this foundation, but we have been positively called into existence by the circumstances of the times, by the community of mind operating to that end, and fortuitously drawn out, and as it were crystallized together: and may such crystallization be shining, and reflect purely and in native brilliancy all the beauty of the design, and of the talent and ability and mental illumination with which, *Gentlemen*, I know you as a body and as scientific individuals to be gifted. It would be invidious in me on the present occasion to attempt particularizing the cases in which other societies and institutions have failed; but, *Gentlemen*, I shall deem it to be my duty, and I know I shall be seconded by friends so sterling in such resolve, to undo the evil offices which have been performed by others towards our noble art of architecture: where science has been trampled upon, we shall water the plant, and make it spring up many-fold; where poison has been disseminated, we shall confine it within the moderate bounds of medicating utility; where undue excision has been undertaken, we shall exercise such nurturing and such gentle pruning as may tend to wholesome fruitage, and not destroy.

In a word, the office of the *Freemasons of the Church* will ever be to admire and endeavour to imitate, at humble distance, the constructive wisdom of the Architect of the Universe, who while planning the entirety of the heavens' starry frame, has not forgotten the articulation of the limbs of the microscopic insect, nor has thrown away one particle of creation's mass.

By the institution of the class of *Architectural Associates*, we hope the greatest results.

We do not propose such grade for the teaching of old practitioners (though none of us profess to be too old to learn, on the contrary, all confessing ourselves to be mere pupils), but to imbue the rising members of the profession with principles which shall stand the test of time, that *studies of philosophers*, and to provide for such adolescent architects, canons by which the powers of their mind directed aright and assisted orthodoxly, they may, by a moderate age, acquire all the learning which the experienced architectural practitioner has to impart.

*Genius*, we cannot pretend to provide for the man by nature dull; BUT WE CAN TEACH THE DULLEST TO PROFIT BY THE CANONS OF ARCHITECTURAL TRUTH, WITH WHICH GOD HAS STORED SOME FEW MINDS FOR THE BENEFIT OF THE MANY; and when we look at the countless works of antiquity, and find so many thousands of them approaching the perfection which *genius*, God's gift, alone can impart, we see that *genius* must

have been more common (which is a thing we deny) or that through community of imparting knowledge, persons of inferior ability were able to profit, and were led according to the rules which *Genius* can impart and order in her paths, WHICH THOUGH SEEMINGLY ECCENTRIC, LIKE THOSE OF THE BLAZING COMET, ARE IN LIKE MANNER NATURAL AND ORDERLY.

We have laid down methods for numeration in architecture,—for the distinguishing of colours in cameo drawings and engravings, by which draughts of coloured glass and mosaics, can be printed in the cheapest possible manner, and be circulated among even workmen of means the most constrained, and thus found again good taste with the multitude who must ever, like the herbage of the fields, form the chief covering of the globe. We have begun the completion of the nomenclature of architecture, rendered necessary by the fact of there not being previously a distinct name for one thing in twenty in Gothic architecture,—a whole line of words being often necessary to distinguish some small article. We have undertaken the subdivision and classification of the present ill-arranged subdivisions of Pointed Architecture, so as to improve and facilitate the means of its knowledge and practice. Much of this is already done, and much more have we in hand; and if any of greater impatience than industry, knowing not how slowly have the grand improvements in art and science taken place, should grow weary under any assumed undue delay in our open appearance, my short answer is—I *know* we have already ventured farther, and have done more towards regenerating, and ordering, and bonding architecture under scientific limits, than any other architectural society which has existed since the decline and total decrease of the *Freemasons of the olden time*, whose name is so great, but whose work, living in every vault, and pinnacle, and buttress, and tower, and spire, in all Christian lands, is so much greater still.

And here I might be asked by some who know not the true signification of the term *Freemasonry*, why we have assumed such a title? To that my answer is, we have a right so to do; as architectural constructors in durable stone fabric, masons we are, and not men of lath and plaster; free, I trust we shall be, to leap over by scientific impetus the old hedges of unarchitectural ignorance, which had impounded the art, and left us no freedom of scientific and architectural action; and if we must be emancipated, let us know no pale but that of science—let us fear no straying but that of the over-leaping of the walls of integrity, sterling purpose, and scientific impetus.

We do not desire to destroy existing architectural institutions, but when they are purged and set upon a right footing, to unite all, and so to bind up one powerful weapon against future corruption and subversion.

Some might ask, why we have adjoined to the architectural department those of clerical and lay fellows? My answer is, the day being past when extraneous lay interference in architecture can be prevented; we, therefore, finding that public amalgamation has occurred with the profession of architecture that it cannot be removed or prevented, are obliged for patronage and for power so to continue it, endeavouring to educate the public to good taste and deferential reliance upon due scientific abilities: although the Grecian temple and the Gothic cathedral were alike the result of high professional talent and taste, with which no public had ever any hand, and we could easily prove that from the hour when public interference with the management and details of architecture first began, then commenced the contempt of that public for the very works of that architecture with which it had had so much hand; THE VERY CARSEST AND GROSSEST OF THE HACKNEY, SCRIBBLING BABBLERS OF THE DAY, WHO UPHOLD SUCH LAY INTERFERENCE IN ARCHITECTURE, GENERALLY CONFINING THEIR ADMIRATION TO ANCIENT EDIFICES BUILT ALONE BY SCIENTIFIC MEN, IN WHICH IT IS IMPOSSIBLE TO SAY WHETHER MOST AROUND TASTE OR SCIENCE, THOSE COMPANIONS INSEPARABLE IN EVERY EXAMPLE OF GENUINE ARCHITECTURE.

Why we have blended the clergy with us I think can need no questioning. While the clergy must have so much to do with church architecture, their exclusion would be vain; therefore it must be for the interest of all, that clergy and laity should go hand in hand with each other, and so profiting mutually, and partaking of the same imbuing of taste and science, the fabrication of sound edifices may rightly progress.

Some may think we have affected some state, and may possibly incur the ridicule of mankind thereby; but I think no state greater than the importance of the occasion requires has been assumed. Some may think there is of the ridiculous in setting up to reform that which many attempting have failed of doing. But if such feelings and motives, or rather such paralysis, were to prevail, and to prevent the free and powerful action of those who desire to better

any thing which has fallen into a state of irregularity, then would little be done to regenerate things so fallen.

I can, and I trust my friends here assembled can, bear to stoop to conquer—can bear to undergo that necessary preliminary to heroism which lies in undertaking something, the engaging in which borders in the minds of quiet, ordinary people, upon the ridiculous.

We have drawn together the *élite* of architectural science, having around us perhaps the best in each department: we have become fenced in and bulwarked by a firm *esprit de corps*, for the want of which other architectural societies have failed, for they indeed have never been nurtured as brotherhoods.

We have been by fortuitous circumstances placed in a situation for the diffusion of our labours, opinions, and knowledge—to all branches of the building community: we have the means of beraldizing into all countries the fruits of our science, research, and perseverance.

It is matter of proud feeling and high congratulation to our fraternity, that while not asking for membership with strangers so long as we have been engaged as lawgivers, our numbers have increased, and considerable revenue has been secured, while if so much as one original member has left us, it would be impossible to find a second who has.

It will be in after-life matter of some gratification to me that our friends have built up and nestled the College under this roof. I have firm confidence that, as it is growing strong on the wing, it will ere long take bolder flight and build its own nest. Till then I shall be proud of its still finding here an abiding place.

But I am warned by the lateness of the hour to desist from following a theme in which, were it possible that I could be eloquent, the subject of my present address would surely have power to make me so, for the time would fall in the endeavour to speak adequately of our beloved art.

I must, therefore, conclude, thanking you for the patient hearing with which you have honoured me; and trusting that as the time has arrived when, fully formed, the College will commence openly its operations, that something worthier, contributed by our scientific members, will, on the next occasion, arrest your attention—whether it be graphic or whether it be literary.

The next meeting will be that of the 17th, or Saint Mark's Chapter, on Tuesday evening, the 16th instant.

#### CHURCH-BUILDING INTELLIGENCE, &c.

*Restoration of St. Olave's Church.*—The restoration of St. Olave's Church, which was so severely injured by the destructive fire at Topping's wharf, in the autumn of last year, is rapidly advancing. The slating of the new roof was completed on Saturday week, and the reparation of the tower is progressing briskly. The fittings of the interior are also in a forward state. The Ionic columns, a considerable portion of the side galleries, and the entire of the communion, including the statues of Moses and Aaron, and the tables of the decalogue, are in tolerable preservation. Whether the bells will be recast or not is at present undecided. It is stated that Mr. Allen, the architect, intends so far to complete the building as to have the sacred pile ready for public service by the ensuing Midsummer, if not at an earlier period. We have in hand some interesting illustrations of this beautiful work of Flitcroft, who for many years assisted Sir Christopher Wren.

The site for a new church to be erected in Belton-street, Long-Acre, has been marked out, the tower of which will be built upon the exact area where stood the public-house the Guy, Earl of Warwick, which existed for about two hundred years. The sacred edifice, which will be called "Christ Church, St. Giles-in-the-Fields," will be constructed with Caen stone and Kentish rag, and will be made capable of containing about 1,000 persons, all the sittings being free. There will be galleries; and the interior of the edifice will be 50 feet wide by 70 long. The cost of it will be rather more than 4,000*l.*, a portion of which is provided from the Metropolis Churches Fund, but the greater part has been raised by voluntary contributions from the principal inhabitants. A sum will also be subscribed for the endowment of the church. Adjoining this building will be some spacious houses, erected according to the plans of the Commissioners of the Woods and Forests, which, when completed, will make a very great improvement in this part of the metropolis.



## RAILWAY INTELLIGENCE.

*Edinburgh and Glasgow Railway Extension Bill.*

A good deal of interest has been excited during the last few days, both in Edinburgh and Glasgow, regarding certain clauses in their new bill (the 36th and 37th), which give the above company the very questionable power of opening and inspecting parcels sent along their line. If we are not much mistaken, however, the public have little to fear on this score, for we have reason to believe that these clauses were withdrawn from the bill by the promoters, even before general attention was called to them in the prominent manner in which they have recently been noticed. At a meeting of the Glasgow Town Council, held on the 7th current, at which the propriety of petitioning for the bill was considered, a letter was read from the law agent of the company, stating "that he had advices from London, announcing that in consequence of some doubts having been expressed, the clauses 36 and 37 of the Edinburgh and Glasgow Railway Extension Bill had been withdrawn from the bill for the present, and referred to the select railway committee." The council accordingly, on the distinct understanding that these objectionable clauses were withdrawn, agreed to petition in favour of the bill. A day or two afterwards a second communication was received from the same gentleman, on the part of the company, stating that the clauses "had been withdrawn absolutely from the bill, because the subject had been taken up by the select committee, now sitting on railways in general, who are to consider and report to the House of Commons whether any and what clauses ought in future to be inserted in railway bills, for the protection of the company against frauds, having regard, however, to the interests of the carriers and of the public." We are, therefore, to believe that these special clauses do not now exist in the bill referred to; but at any rate it would not perhaps be too much to ask a distinct declaration upon the point from the railway authorities, especially as the public mind, both here and in Edinburgh, is much excited on the point.—*Glasgow Herald.*

*Railway to Scotland.*—A prospectus for the continuation of the Lancaster and Carlisle Railway to Glasgow and Edinburgh, along the valleys of the Annan and Clyde, by Lockerby, Lymington, and Lanark, has at length made its appearance, which is without exception the most satisfactory document of the kind that ever came under our notice, and cannot fail to ensure its success. Among the provisional committee are the names of Lord Belhaven, the Marquis of Queensberry, the Earl of Cathcart, Lord Abercromby, Lord Elphinstone, Sir William Jardine, Sir W. C. Anstruther, Sir Frederick Pollock, and a host of the most influential landowners along the line; and what is, perhaps, of still more consequence, the undertaking is supported by the Directors of the Grand Junction, the North Union, the Lancaster and Preston, the Manchester and Bolton, and other railway companies, by whom one-third of the capital is to be provided. The total cost is estimated at 1,800,000*l.*, and in the present state of the money market, and the almost certainty of its proving a profitable line—the committee estimate it at eight per cent.—not a doubt is entertained but the whole capital will be speedily subscribed. We fully expect to see the work undertaken and completed in a very short period.

*Important Railway Communication.*—The importance of railway communication from the British to the Bristol Channels, and the desirableness of a junction between the South-Western and Bristol and Exeter Railways, have been felt by the public. Both these objects are now likely to be attained. A railway is about to be proposed from Southampton, through the New Forest, between Ringwood and Christchurch to Lytchett, which is immediately at the back of Poole Harbour; from this point it will be continued to Dorchester, thence to the river Yeo, and extending to Bridgwater. It is not yet decided whether there shall be one or two companies, but this will be known in a week or two.—*Sherborne Journal.*

*Bristol and Gloucester Railway.*—The usual half-yearly meeting of the proprietors of this railway was held on Thursday week. Great satisfaction was expressed at the report of the directors, and at the advantageous position in which the company is placed. The minimum receipts upon the line, when it shall have been completed, are calculated at a sum which will give 10 per cent. interest to the shareholders for their money, rendering this line one of the most prosperous in the kingdom. The report contains the gratifying announcement to the proprietors that no further calls will be necessary, as there are sufficient funds in hand to finish the line. From the engineer's report it appears that the whole of the permanent-way is laid upon the extension-line, and the entire line, it is now said, will be opened in three months from this time. The delay beyond the period originally contemplated is caused by the unfinished state of the line, belonging to the Great Western Company, between Stone-house and Gloucester. The meeting unanimously empowered the directors to subscribe an additional 10,000*l.* towards the projected South Devon Railway.—*Bristol Journal.*

*North British Railway Bill.*—On Thursday week, the committee of the House of Commons met to consider this Bill.—Sir C. Lemon as chairman. There were present—Mr. Macaulay, Mr. Ellice, Mr. Pringle, Sir A. L. Hay, Mr. Duncan, Mr. Stafford O'Brien, Mr. Foster, &c. Mr. Talbot opened the case for the company, and stated that the opposition to the measure arose from certain proprietors of lands through which the railway would pass. On Friday, the Lord Provost, Mr. J. F. Macfarlane, Mr. H. F. Cadell (Cockenzie), and Mr. Miller, the engineer, were examined in favour of the Bill.

*Strasburgh Railroad.*—The Council of Administration of this railroad has been finally constituted, and has presented to the Minister of Public Works a tender for the immediate execution of the works. The council includes Mr. Charles B. Baldwin, member of the British Parliament. Alderman W. Thompson, M.P., is President of the London Committee.

*Exeter and Crediton Railway.*—A meeting was held in Exeter on Wednesday week, to form a company for a railway from Crediton, to unite with the Bristol and Exeter Railway near Cowley Bridge. The meeting was attended by a deputation from the Bristol and Exeter Company.

*St. Helen's Railway.*—We learn, from good authority, that the amalgamation of the St. Helen's Railway and the Sankey Canal is now settled, and the two companies are working in concert until an Act of Parliament be obtained.—*Liverpool Courier.*

The Great Western Railway Company have bought four acres of land adjoining the railway, in the parish of Standish, a few miles below Gloucester; with the view, as is surmised, of making a large station there, should a line be carried onward across the Severn to South Wales.—*Bristol Journal.*

*Erection of a Roman Villa.*—A site has been selected for the house which his Majesty the King of Bavaria has ordered to be built strictly after the model of the ancient Romans, and for that purpose an architect and a painter have been sent to Naples to examine and to study all the particulars and minutiae of the best preserved private buildings at Pompeii and Herculaneum. The extensive collection of ancient utensils and furniture which his Majesty at various times received as presents from the King of Naples will be sufficient to furnish the house.

*Singular Discovery of Ancient Coins.*—On Wednesday week, as some men were employed digging near the railway at Cheltenham, they discovered, at about 40 feet below the surface of the earth, a small earthen urn, of remarkable texture, upon which were carved some beautiful specimens of ancient Roman architecture, and upon being opened it was found to contain a number of ancient gold and silver coins; amongst others were a few of silver of the reign of Tiberius Cæsar, in high state of preservation.

*St. Mary de Crypt Church, Gloucester.*—The restoration of this beautiful church is proceeding, under the superintendence of Messrs. Dawkes and Hamilton, most satisfactorily. The sedilia in the south side of the chancel, and the sepulchre and abbots' seat on the north, which are of exquisite workmanship, have been completely restored. The canopies on each side of the altar have been re-erected, and are choice specimens of the architectural skill of the early part of the fifteenth century. The stone altar-table which had been buried, but was recently discovered in an unmutated state, has been placed in its original position. It is a slab of Forest stone, 10 feet 1½ inches in length by 3 feet 7½ inches in breadth, and stands on five massive legs. The restoration and extension of this church have been undertaken by the rector, the Rev. A. Sayers, entirely on his own responsibility. The subscriptions already received or promised do not amount to more than 400*l.*; while the lowest estimate of the projected improvements is 1,100*l.*

*New Church at Hollinwood.*—The subscriptions recently raised with the view of defraying the cost of repairing the roof of St. Martin's Church, Hollinwood, have been converted into a fund for the purpose of erecting an entirely new church at that place. Several liberal donations have been presented to effect that object, which has met with the most encouraging countenance from the Venerable the Archdeacon of Manchester. At a recent meeting of the seat-holders and other parties interested in the present church, it was determined to take prompt measures to secure the building of a new church, with adequate accommodation for the poor.

The Committee of the Birmingham Church Building Society have decided immediately to commence the fifth church, to be named St. Andrew's, on a site liberally presented to them by Messrs. E. and C. Robins, in an elevated situation on their estate, adjoining Waterylane. The land on which St. Matthew's Church, parsonage, and schools are erected, was also presented by the same gentlemen.

Contracts for new seating with carved oak, and new flooring and plastering the parish church of Tavistock, Devon, have been entered into, and will be proceeded with immediately. The seats are to be all open benches, with carved ends. The altar, pulpit, and reading-desks are to be of Caen stone, beautifully carved. The money was raised by public subscription, amounting to about 3,000*l.*

*Wiltshire.*—The parish church of Marston Maizey is in such a dilapidated state, that it is proposed to take it down and rebuild the same upon a larger scale. It is in contemplation to erect a district church at Chittoe, in the parish of Allcannings, and another at Zeals, in the parish of Mere. The parish church of Melksham will probably be enlarged.

*Rumcorm Parish Church* is about to be rebuilt in the early English style, with a tower and spire, at an expense of 6,000*l.*

*THE CHIEF TEMPLE OF HYMEN AT GRENA GREEN.*—In front of the building there is a grass lawn, green and pleasing to the eye, garnished in divers places with trees and evergreens of less size; and a carriage drive of 200 yards long, more or less, leads from the entrance gate near the Green up to the door. Moreover, an adjoining field has been taken in and added to the grounds, that nothing might be wanting, round about, which runs some shady and labyrinthine walks, where lovers may saunter at will in the cool of the evening; and many stately trees growing thereby spread their nervous limbs abroad over head, whereon any who have too hastily done a rash act may go and hang themselves up at pleasure. In fine, the place is altogether tastefully laid out, with care both for joyous pastime and pleasant recreation.

*ANCIENT RELIC.*—Mr. T. Walsh, Limerick, has got a curious and rare specimen of the gold pin or bodkin which the Irish chieftains of old wore in front of their dress. It was found in the crevice of a rock at Carrigaholt Castle, on Tuesday, where a few natives were burning sea-weed. It is fully seven inches long, and is of the purest gold, weighing over two ounces.—*Cork Examiner.*



PATENTS RELATING TO ARCHITECTURE,  
ENGINEERING, &c.

Granted between 26th February and 28th of  
March, 1844.

[SIX MONTHS FOR ENROLMENT.]

William Clegg Gover, of Chester-square, Middlesex, gentleman, for a method of casting off the sash-lines and weights from the window sashes, and of taking out the window-sashes from their frames without removing the beads.—March 1; two months.

Joseph Crawhall, of Newcastle-upon-Tyne, rope manufacturer, for improvements in machinery for manufacturing ropes and cordage.—March 2.

John Stevelly, of Belfast, professor of natural philosophy, for improvements in steam-engines.—March 2.

Samuel Atkinson, of Manchester-street, Gray's-inn-road, Middlesex, turner, for improvements in the construction of wheels for carriages.—March 4.

Bernard Peard Walker, of North-street, Wolverhampton, clerk, for improvements in machinery for making nails.—March 6.

William Henry Barlow, of Leicester, civil engineer, for improvements in the construction of keys, wedges, or fastenings, for engineering purposes.—March 6.

William Fairbairn, of Manchester, engineer, for certain improvements in machinery used for propelling vessels by steam.—March 7.

Alexander Angus Croll, of Brick-lane, Middlesex, superintendent of the gas works, and William Richards of the same place, mechanical inspector, for improvements in the manufacture of gas for the purpose of illumination, and in apparatus used when transmitting and measuring gas.—March 7.

Charles Harrison, manager of the Coed Talon and Leeswood Iron Works, Flintshire, for certain improvements in the manufacture of cast-iron pipes, and other iron castings.—March 14.

William Godfrey Kneller, of Wimbledon, Surrey, chemist, for improvements in the preparation of zinc, and in combinations of zinc, with other metallic bodies.—March 14.

Henry Pershouse Parkes, of Dudley, Worcester, manufacturer of chain cables, for improvements in the manufacture of flat pit chains.—March 14.

John Browne, Esq. of New Bond-street, Middlesex, for improvements in urinary utensils.—March 14.

Moses Poole, of Lincoln's-inn, Middlesex, gentleman, for improvements in steam-engines, steam-boilers, and furnaces or fireplaces. (A communication.)—March 14.

Emanuel Wharton, of Birmingham, engineer, for improvements in steam-engines, which are in whole or in part applicable to other motive engines, and to machines for raising or impelling fluids.—March 14.

Hugh Inglis, of Kilmarnock, Scotland, mechanic, for improvements upon locomotive steam-engines, whereby a saving of fuel will be effected, which improvements are applicable to steam-vessels and other purposes, and to the increasing the adhesion of the wheels of railway engines, carriages, and tenders upon the lines of rail, when the same are in a moist state.—March 19.

John Butt, of Maldon, Essex, draper, for improvements in candlesticks.—March 22.

John Harcourt Quincey, of Old-street, City-road, gentleman, and John Johnson, of Curator-street, lamp-maker, for improvements in the manufacture of lamps, and shades for lamps and other lights. (Partly a communication.)—March 25.

James Hardy, of Birmingham, Warwick, gentleman, for improvements in the process of welding tubes, pipes, or hollow rods of malleable iron by machinery.—March 28.

Joseph Maudslay, of the firm of Messrs. Maudslay, Son, and Field, of Lambeth, Surrey, engineer, for improvements in steam-engines.—March 28.

A meteorological observatory has been erected on Vesuvius; it is in the form of a tower, and stands a little above the Hermitage, 2082 feet above the level of the sea.

## Correspondence.

SHAM SURVEYORS.

SIR,—I agree with your correspondent "Z," that it is quite time that sham surveyors were held up to public censure, and prevented from committing depredations on the public. A few months since it came out in evidence, in the Court of Queen's Bench, that one of these sham surveyors claimed a commission from a stove-maker of only twenty per cent. If his client were plucked in the same way all through his house, the fellow had a fine picking.

Your constant reader,

A SMITH.

SIR,—By way of comment on the remarks of "Z," as to the "disgraceful practices of sham surveyors," published in your last Number, I, in common with every member of our profession, must disapprove of any one engaging to work for "no charge if not approved;" but, I think, as regards those surveyors who profess to take out quantities for builders, from architects' designs, that their charge for so doing is decidedly too much; and, I am induced to believe, that if those gentlemen were more moderate in their demands, the profession would still retain its former respectability. To illustrate this, I will mention a case which occurred in my own practice: I was engaged a short time since as architect to a house which cost nearly 2,000*l.*; I named a respectable surveyor to take the quantities from the drawings, and the builders written to approved of him; the quantities were furnished, and the builder whose tender was the lowest paid this surveyor 2½ per cent. on the amount. Two or three other similar instances have also occurred; and looking to the fact of the architect having much trouble in preparing the designs, much anxiety in superintending the work during its progress, as well as the responsibility, and remembering the pay he receives, I think the surveyor is much too well paid. I have no desire to underrate the value of these gentlemen's services, but, I think, their fee should bear a better proportion to that of the architect. I quite disapprove of the system adopted by some architects of supplying the builders with their own quantities, because I think the architect should not receive a fee from the builder; but, I must confess, that on the next occasion that I require quantities to be taken from my designs, I shall hesitate in consenting to so large a commission being paid as that which I have adverted to, and which is called the "usual charge." Your obedient servant,  
April 1, 1844. A.

FONT IN ST. MARY'S CHURCH, BRECON.

SIR,—I have read both your correspondents' letters on the above subject, and have much pleasure in forwarding, to the best of my ability, the information required. "The moulding in the back-ground" is formed thus, but is very much mutilated.

I left out the fragment in my sketch, as it certainly, in the present detached situation of the font, does not add to the beauty of the composition. I mentioned in my description, that a metal basin is inserted in the bowl, which might be removed as occasion required, and which, therefore, precludes the necessity of a water-drain, whether the bowl was originally supported by a shaft or fixed in the wall. I mention this because your correspondents seem to fancy that the bowl is lined with metal. I have no means of informing "J. K. L." of its original position, as I fancy the style of the font to be much earlier than any part of the church, which I believe to be built in the last period of the Pointed mode, perhaps as late as the reign of Edward VI. or of one of his sisters.

I apprehend its present position, near the western door of the church, is no criterion of its nature, as "J. K. L." seems to think; because even if it were originally a piscina, it has been used as a font for perhaps centuries, and might therefore have been removed to its present situation. I think "a F. S. A." in his conjectures respecting what I termed "a moulding in the back-ground," and which he has construed into a portion of the arch above



a piscina, misunderstood my meaning; if he will recollect, I believe I said it butted up against the side of the bowl, as if it were the portion of a string-moulding in a wall, the font having three whole sides and two half-sides exposed, and perhaps taking the character of a corbel. This is merely a supposition of mine, and, from my incompetency to form an opinion on the subject, very liable to be incorrect.

I think I neglected to tell you, that the left hand of each figure underneath the bowl, hid by the face, clasps an open book upon the breast, as if indicating, while pointing to the water above, that the holy origin of baptism is found in the Book of Books.

I am, Sir, your obedient servant,  
Berkeley-place, Brecknock. J. L. T.

RAVAGES OF WORMS IN TIMBER.

SIR,—In the article from Mr. James Steward, of Dover, I find a fear expressed of the timbers suffering from the ravages of the worm. Provided piles were used of a description of wood grown in the West Indies, which I believe is called mora or green heart, that difficulty I feel assured would be obviated; for I have known the same used at Liverpool some years back, and last year I observed it, and it had entirely resisted the worm. Curiosity caused me to make some inquiry of the nature of the wood while there, and I found the properties quite understood; as such, it rather astonishes me that the same has not been applied to the purposes alluded to. The only reason I can account for it is the material not being known, or the difficulty of obtaining it; probably you will inform me through your valuable periodical the reasonable cause.

I am, Sir, your most obedient servant,  
A CORRESPONDENT.  
London, 11th March, 1844.

ARTISTS' BENEVOLENT INSTITUTION.—

The annual celebration of the festival for the support of the funds of the Artists' General Benevolent Institution took place on Saturday, in the great room of the Freemasons' Tavern, Queen-street, Long Acre, on which occasion upwards of 150 persons, connected with the fine arts and literature, sat down to a more than usually excellent banquet, prepared by Mr. Bacon, the proprietor of that well-known place of good cheer and conviviality. The chair was taken shortly after six o'clock by Sir Robert H. Inglis, M.P., who was supported on his immediate right and left by several of the most eminent patrons of the institution. The musical arrangements were under the direction of Mr. T. Cooke, who presided at the piano-forte, assisted by Messrs. Hobbs and Hawkins, of the Chapel Royal, Mr. Bradbury, and several pupils of Mr. Cooke. This part of the arrangements was very good, and was a principal feature of the evening. The chairman, during the course of the proceedings, proposed, in the usual manner, the healths of the Queen, of the Queen Dowager, Prince Albert, and of the other members of the Royal Family, which were drunk with the usual lively displays of good feeling and loyalty. A long list of other toasts was then drunk, and responded to with cheers. Several gentlemen addressed the company, in brief speeches, in advocacy of the cause of the meeting; and the result of their appeals and that of the chairman was a contribution and subscription of upwards of 500*l.* Amongst the principal contributors to which amount were—the British Institution, 50*l.*; the Duke of Sutherland, 10*l.* 10*s.*; the Duke of Northumberland, 10*l.* 10*s.*; Sir J. Swinburne, 10*l.* 10*s.*; Sir R. Inglis, 10*l.* 10*s.*; Lady Chantrey, 20*l.*; Mr. Jones Lloyd, 10*l.*; Mr. Tomlin, 10*l.*; Sir O. Hayter, 10*l.*; Mr. Dickinson, 10*l.*; Baron Rothschild, 10*l.*; Sir Martin Shee, 5*l.*; Mr. Phillips, R.A., 5*l.*; Mr. G. Jones, R.A., 5*l.*; Sir W. Ross, R.A., 5*l.*; Mr. B. Cabell, 5*l.*; Mr. Munn, 5*l.*; Mr. R. Cooke, R.A., 5*l.*; Mr. T. H. Pulteney, 5*l.*; Mr. N. Walford, 5*l.*, &c. The company separated shortly before eleven o'clock.

REDCLIFF BELLS.—The seventh bell of this fine peal, which fell in November last, has been replaced.



## Miscellaneous.

**METROPOLITAN IMPROVEMENTS.**—The site of the contemplated Thames embankment on the Middlesex side of the river is undergoing a minute survey, and when carried into effect will be one of the greatest ornaments of the metropolis. A line of quays, similar to those on the banks of the Seine in Paris, is proposed to be carried from Whitehall to Blackfriars-bridge upon arches, so as not to interfere with the navigation of the river, and the numerous coal-barges approaching the wharves. At Piccadilly the houses are now nearly all pulled down, and workmen are busily engaged in razing them for the new road, which will join the Vauxhall-road, and materially widen the vicinity of Buckingham-palace. The "rookery" which has existed for so many centuries in Westminster, Tothill-street, York-street, and Castle-lane, is all to come down to make way for the improvements. The widening of Piccadilly, by taking in a small portion of the Green-park, will commence this month. The new street leading from Coventry-street across Leicester-square to Long-acre is in an advanced state, as all the old buildings are pulled down, and workmen are laying the foundations of the new houses. The new street from Waterloo-bridge, across High-street, Bloomsbury, to Tottenham-court-road, is proceeding rapidly, and several hundred houses have been pulled down in the neighbourhood of St. Giles's.

**EXTENSIVE IMPROVEMENTS AT ETON COLLEGE.**—ETON, March 26.—At a recent meeting of old Etonians it was agreed that extensive alterations and additional buildings should be made in Eton College, for the accommodation of the scholars on the foundation, at the estimated cost of 23,000*l*. It was proposed to erect the new building on the site of the coach-houses and stables of the Provost and Fellows, to alter and improve the present long chamber, to form proper sewers, and provide an apparatus for warming with hot water the apartments in which the scholars will be lodged. It is also intended to form on the ground-floor of the new buildings, which from local circumstances cannot be applied to the accommodation of the scholars, one large room for the reception of the library of the school, to which his late Majesty George IV. was a liberal contributor, which room may be used as an examination room for the Newcastle Scholarship, and for the prizes given by his Royal Highness Prince Albert for proficiency in modern languages, and also rooms in which the different masters for modern languages and mathematics may receive their pupils. There will also be two rooms appropriated in the tower for the use of the upper boys in the evening. Estimates from 15 competitors were sent in to Mr. Shaw, the architect, by whom they were opened at Christ's Hospital on Monday last, and afterwards forwarded to Eton, and at a special meeting held at the College on the same day it was settled that Mr. Burton's tender should be accepted. These important and extensive works will be commenced forthwith, under the superintendence of Mr. Shaw and Mr. Harrison, the architect and surveyor of the college.

**TYNDALL'S PARK.**—We understand that the whole of Tyndall's park, and the adjacent field, is to be let for building. If the plans are carried out, the contemplated buildings will form one of the most ornamental parts of the city. They are laid out in squares, terraces, &c., and reflect great credit upon the taste of Mr. Dyer, the architect, to whom the disposal of the ground has been confided. A number of workmen have for some time past been employed in the construction of the sewers and drainage. It cannot but excite regret that this beautiful spot, so much resorted to for healthful recreation, is to be covered with houses, though it is only to be wondered at that such appropriation, so much more profitable than grazing-land, has not been before carried out, as was intended some twenty years ago. There cannot be a doubt that the land will fetch a high price.—*Bristol Journal*.

**SUBMARINE PLOUGH.**—A submarine plough for removing sand-banks in shallow waters is said to have been constructed by Dr. Eddy, of Cincinnati, somewhat on the principle of the Archimedian screw, boring up the sand at one end, and passing it through the screw to be discharged at the other extremity.

**SMOKE.**—In the voluminous report on smoke, lately made in the House of Commons, by a select committee, some curious facts are mentioned; for example, Mr. Chandler, camellia-grower at Wandsworth, states that on account of the great increase of chimneys from manufacturing in that vicinity, plants which formerly might be handled without any bad effect, now soil the hands to the greatest extent. Among other plants which formerly flourished, but will not now grow in the neighbourhood of the metropolis, are China roses, rhododendron hirsutum, rhododendron virginicum, and many others of the prettiest varieties, now quite extinct. Mr. Anderson, the curator of the Physic Gardens at Chelsea, testifies to the noxious effects of what he calls the "bitter smoke" upon the trees of that establishment, particularly on evergreens, and on two magnificent cedars which have so long been an ornament to the gardens, and form a very conspicuous object from the river. It appears that the sooty particles are attracted to and attached by the resinous exudations of the leaves, while the large surface of the foliage above prevents their being washed away by the rains, so that the functional action of the leaves is disturbed, if not entirely destroyed.

**DEATH OF THORWALDSEN, THE EMINENT SCULPTOR.**—COPENHAGEN, March 25th.—Albert Thorwaldsen, the greatest artist of the day, is no more. Yesterday evening he went, as was his custom, to the theatre. Before the commencement of the performance he suddenly fell back in his seat, and he was carried out, and soon after breathed his last. He was born on the 19th of November, 1770, and was consequently in his 74th year. To the last day of his life he preserved his activity and cheerfulness of spirits, and he was engaged on some important works, among which may be mentioned the colossal statue of Hercules for the Palace of Christianburgh. On Saturday, the 30th of March, the mortal remains of the great master were interred in the Holm church. All he died possessed of he has bequeathed to the Thorwaldsen Museum; but, with the exception of his works of art, his property is not so great as was imagined. He had been working on the bust of Luther upon the day of his death.

**PUBLIC EXPENDITURE.—THE ROYAL PALACES AND HOUSES OF PARLIAMENT.**—On Saturday week was issued the estimate of money required for public works and buildings, for the year ending the 31st March, 1845. For public buildings and royal palaces the sum required is 112,190*l*.; for the temporary Houses of Parliament, 5,420*l*.; for the new Houses of Parliament (beyond the sum voted), 60,000*l*.; for Trafalgar-square, 7,000*l*.; for Holyhead roads, &c., 4,169*l*.; for the Caledonian canal, 50,000*l*.; for public buildings in Ireland, 26,871*l*.; and for Kingston harbour, 8,000*l*.; making, in the aggregate, 273,645*l*. The actual decrease, compared with 1843, is stated to be 42,626*l*. Among the items for services executed in 1843-4, and not provided for, is one of 1,500*l*. for the Queen's Prison, for furniture of some offices, and for furniture and bedding for the poor prisoners.

The Royal Academy of Fine Arts at Munich is about, for the first time in the last six years, to have an exhibition, commencing on the 25th of August; for which government has placed at its disposal the new palace just completed in front of the Glyptothek. The works of foreigners are to be received on the same terms as those of the national artists; and the academy has undertaken to invite individually the leading artists of all countries to contribute their works, undertaking to pay all expenses of transmission and return.—*Athenæum*.

**PHYSICIANS' HALL.**—We observe that within the last few days workmen have been busily engaged in the demolition of the Physicians' Hall, George-street, preparatory to the erection of the splendid edifice which is intended to be raised on its site for the office of the Commercial Bank. We understand that a new hall for the Royal College of Physicians is to be built in the centre of the eastern division of Queen-street.—*Edinburgh Observer*.

The foundation stone of the New Market-house, Ruperra-street, Newport, was laid on the 26th ult.

**DEATH OF A CELEBRATED GERMAN ARTIST.**—The *Journal des Débats* announces the death, at Munich, on the 18th ult., of M. Jean Baptiste Stiglmeier, director of the Royal Foundry of Munich, in the 52nd year of his age. "This distinguished engraver, painter, and sculptor carried the art of casting metals to the highest point it had ever reached in Germany. The monuments of colossal grandeur for which the Germans are indebted to him amount in number to 193, amongst which figure in the first rank the equestrian statues of Maximilian I. of Bavaria, and the Electors, his predecessors, which have been all gilt; the obelisk erected at Munich, in commemoration of 30,000 Bavarians killed in Russia. ["The inscription on this monument goes further," says our Paris letter, "for it states that the men whose deaths it commemorates 'fell in defence of their native land (vaterland)!'"] At Guntzburg (and I suppose they are to be found in nearly all the other towns of Bavaria) the churches contain tablets to the memory of the Bavarian soldiers who fell in the battles against the French, which preceded the capture of Paris in 1814!"; the statues of Schiller, Jean Richter, Mozart, Beethoven, Bolivar (for Bolivia), and last, the statue of Goethe, who was the intimate friend of Stiglmeier, and at the execution of which the latter, although ill, worked with so much ardour, that two hours after the cast was terminated, and even before the mould was broken, he expired in the arms of his assistants. Some months previously, M. Stiglmeier, although he then enjoyed excellent health, had a sudden presentiment of his approaching death. From that moment he occupied himself night and day in preparing instructions for the execution in bronze of the statue of Bavaria, of which the celebrated sculptor, Schwanthaler, is now composing the model, a monument which is to be sixty-eight feet high, and which, after the famous Colossus of Rhodes, will be the largest piece of sculpture which ever existed. Fortunately, the instructions given by M. Stiglmeier have been committed to writing. They are most complete, and will be of the utmost utility to the artist to whom shall be intrusted the most gigantic operation of casting in bronze this immense monument."—*Times*.

**DISCOVERIES IN EGYPT.**—I learned from Selim Pacha, the governor of Upper Egypt, who received us in a most friendly way at Siut, that, a few months before quarries of alabaster had been discovered a short distance off in the direction of the eastern mountains, the excavation of which had been committed to him by Mohammed Ali; and I heard from his dragoman, that there was an inscription to be found on them. I accordingly set off, on a hot ride, to the place appointed, the next morning, and found there a little colony, in all thirty-one people, in the solitary, desert burning cave. Behind the tent of the overseer, I discovered the remains of an inscription, recently much longer, but still containing the name and title of the wife, so much honoured by the Egyptians, of the first Amasis, the founder of the eighteenth dynasty which drove out the Hyksos, engraved in clear, sharply cut hieroglyphics. These are the first alabaster quarries whose age can be proved by an inscription: upwards of 300 blocks, the largest eight feet long, two thick, have been cut out during the last four months. The Pacha informed me, by his dragoman, that I might have, on my return, a slab of the best quality, of whatever size I chose to fix on, as a testimony of his joy at our visit. The quarries as yet found lie all between Berseh and Gauita; one would, therefore, feel inclined to think El Bosra the old Alabastron, if one could reconcile with it the passage in Ptolemy; at any rate, Alabastron can have nothing to do with the ruins in the valley of El Amazna, with which the description in Ptolemy as little agrees.—*Correspondent of the Athenæum*.

**BRICKMAKING.**—The newly-patented brick-machine, invented by Mr. W. Hodson, of this town, for making and compressing (when in a wet state) bricks of every description for building purposes, is of very simple construction, and produces a compressed stock brick with the same number of hands as is employed when in making the common stock brick. The machine is worked by hand-labour, and not susceptible of derangement.—*Hull Packet*.



**ANTEILUVIAN REMAINS IN FRANCE.**—The construction of railroads promises to afford an inexhaustible source of valuable geological discoveries. Wherever the engineers have opened trenches, numerous remains of antediluvian animals have been found. Their number is often so great in different parts that it vies with that of the round pebbles among which they are lying. At Ferrign, near Dijon, it was deemed necessary to cut the road across a small hill, where bones of bears, elephants, rhinoceroses, jackals, wolves, horses, &c. were so multiplied that it is doubtful that our burying-grounds can contain so large a quantity of human remains. Among them were fragments and stumps of elephant's teeth of so enormous a size that the imagination is actually terrified at the idea of the stature of the animals to which those frightful arms belonged.—*Moniteur*.

**THE LATE FIRE AT BRAMAH'S PIMLICO.**—We are happy to observe that the premises appear from the road to be quite reinstated, and we are informed that advantage has been taken of the opportunity afforded (by the recent fire) for greatly improving the buildings, &c., for the more efficiently carrying on the business of the proprietor, Mr. Charles Robinson.

**HAMPTON COURT PALACE.**—Wolsey's splendid hall, or, as Evelyn termed it, "the moste magnificent room," is once again undergoing repair. The roof is about to be again gilded, and the spirit of renovation hovers over the venerable remains of the work of him whose blighted ambition has left a name to point a moral and adorn a tale.

### Current Prices of Metals.

March 29, 1844.

	£.	s.	d.	£.	s.	d.
SPELTER.—Foreign ton ..	0	0	0	22	10	0
" For delivery ..	21	5	0	21	10	0
ZINC.—English sheet ..	0	0	0	30	0	0
QUICKSILVER .....	per lb.	0	4	6		
IRON.—English bar, &c. ....	per ton.	5	15	0		
" Nail rods .....	0	0	0	6	5	0
" Hoops .....	7	15	0	8	0	0
" Sheets .....	8	10	0	15	0	0
" Cargo in Wales ..	0	0	0	5	0	0
" Pig, No. 1, Wales ..	3	5	0	3	10	0
" No. 1, Clyde ..	2	10	0	2	12	6
" For., Swedish ..	9	5	0	9	10	0
" Russian, CCND ..				16	10	0
STEEL.—Swedish keg .....	p. ton	18	10	0		
" Faggot ..	0	0	0	19	0	0
COPPER.—English sheathing, per lb. ....	0	0	0	9	4	
" Old .....	ditto.	0	0	8		
" Cake p. ton ..	0	0	0	84	0	0
" Tile .....	82	0	0	83	0	0
" S. American ..	72	0	0	75	0	0
TIN.—English, blocks, &c. cwt. ....				3	13	6
" bars ..	0	0	0	3	14	6
" Foreign, Banca ..	3	5	6	3	8	0
" Straits ..	0	0	0	3	4	0
" Peruvian ..	0	0	0	3	0	0
Tin plates, No. 1C, p. box 1 ..	5	0	0	1	8	0
" No. 1X ..	1	11	0	1	14	0
" wasters 3s. p. box less ..						
LEAD.—Sheet milled .....	per ton	17	15	0		
" Shot, patent ..	0	0	0	19	15	0
" Red .....	21	10	0			
" White .....	23	10	0			
PIG-LEAD.—English ..	0	0	0	17	0	0
" Spanish ..	0	0	0	16	10	0
" American ..	0	0	0	16	5	0

### ERRATA.

In the 20th line of the 3rd column, page 171, for "If he does he is not," read "If he does not he is."

### TO OUR CORRESPONDENTS.

We have had the truss and scarfing of the roof over the Princess's Theatre engraved, and will insert them in our next, if our correspondent will favour us with an account of the clear span of the roof and the scantlings of its timbers.

"Polygot" may send us any communication he likes towards an Architectural Glossary: a hint, a scarce word, an old reading, may be of service.

We have not received the communication of "Philo."

To "W. W. W.'s" "anxious inquiries" relative to our progress in collecting specimens of Gothic architectural details, we beg to reply that besides laying down general measures for their collection, we have at present in hand twenty-five such subjects.

To "A MEMBER OF THE WOODEN TRUSS SOCIETY,"—We beg to say that we have seen the trusses in question lately applied between the hip-rafters of two houses in the Westminster and Borough Road, opposite the Queen's Bench Prison. We did not measure them, but were told they were 90 feet long, with beams 2 feet 4 inches deep, in several layers, joined in their length with iron plates in their scarfings, and with only two iron queen-suspenders in the length. If any correspondent will furnish us with a draught of them, with the scantlings and full particulars of them and their iron-work, we shall with pleasure insert them in THE BUILDER.

"A Catholic Architect," who craves advice upon the use of cows, we refer to our advertisements.

The Irish Antiquities in our next.

We are sorry to say any thing disagreeable to our correspondent, Mr. CHASE-MORTISE, but we think "the less of his company the better," believing that he has cracked a great many ceilings in otherwise very good houses. When we come to treat more at large upon carpentry, he will find we have reasons enough against him.

To the appeal of "One cautious in his p's and q's," we beg to say the compound word, or appellation, should always be written Breast-summer, from "Breast," signifying a hanging-work of masonry or brickwork, as the front of a chimney, termed a "chimney-breast," and "Summer," an old English word signifying a beam of burthen, frequently called also "Summer-tree," equivalent to the modern term "Girder," which term not expressing the office of such a beam, ought to be exploded, and the old word "Summer" should be restored. The term "Bressummer" is a gross corruption.

### MEETINGS OF SCIENTIFIC BODIES.

To-day and during the ensuing week.

SATURDAY, APRIL 6.—Westminster Medical, 32, Saville-street, 8 P.M.

MONDAY, 8.—Medical, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 9.—Medical and Chirurgical, 53, Berners-street, 8½ P.M.; Zoological, 57, Pall Mall, 8½ P.M.

WEDNESDAY, 10.—Graphic, Thatched House Tavern, 8 P.M.; Pharmaceutical, 17, Bloomsbury-square, 9 P.M.; Ethnological, 8 P.M.

FRIDAY, 12.—Astronomical, Somerset House, 8 P.M.; Botanical, 20 Bedford-street, Covent Garden, 8 P.M.

SATURDAY 13.—Royal Botanic, Regent's-park, 4 P.M.; Westminster Medical, 32, Saville-street, 8 P.M.

BRITISH MUSEUM.—Open to the public every Monday, Wednesday, and Friday, from 10 till 7 during May, June, July, and August, and from 10 till 4 the rest of the year; except the first week in January, May, and September, Ash-Wednesday, Good Friday, and Christmas Day, and Fast or Thanksgiving Days. The Natural History Collections are open for study and comparison of specimens, to persons having permission, on Tuesday and Thursday from 10 till 4. The Reading Room is open to persons having tickets of admission every day (except Sundays, and when the Museum is closed, as above mentioned), from 9 till 7 in May, June, July, and August, and from 9 till 4 during the rest of the year. The Gallery of Antiquities is open to students having tickets every day in the week, except Saturdays and Sundays (and those times when the Museum is closed), at the same hours as the Reading Room.

ROYAL COLLEGE OF SURGEONS.—The Museum is open to visitors on Monday, Tuesday, Wednesday, and Thursday, from 12 till 4, except during the month of September; on Friday to gentlemen for studying in it; and on Saturday from 10 till 1 to gentlemen desirous of comparing specimens with those in the Museum. The Library is open to members and students of the college, and visitors having tickets of admission, daily (Sundays excepted), from the 1st of October to the 1st of April, from 10 till 4; and from the 1st of April to the 1st of September, from 10 till half-past 5.

LINNÆAN SOCIETY.—Library open on Monday, Tuesday, and Thursday, and the Museum on Wednesday and Friday, from 12 o'clock to 4 in the afternoon.

GEOLOGICAL SOCIETY.—Library and Museums are open every day from 11 till 5.

ROYAL ASIATIC SOCIETY.—Museum is open every Tuesday, Wednesday, and Thursday, from 11 till 4.

UNITED SERVICE INSTITUTION.—Museum open all the year, from 11 till 5 in summer, and from 11 till 4 in winter. Admission by members' tickets.

LONDON INSTITUTION.—Lectures will be delivered every Monday and Thursday evening, at 7 o'clock, until May 6.

BOTANICAL SOCIETY.—Herbarium open every Wednesday and Friday evening, from 7 till 10 (except September).

CIVIL ENGINEERS.—Library open from 9 A.M. to 9 P.M.

ENTOMOLOGICAL SOCIETY.—Museum open every Tuesday from 1 till 7.

SOCIETY OF ARTS.—Open every week-day except Wednesday, between 10 and 2. Admission by members' tickets.

The meetings of the following Societies are continued throughout the year, on the regular days:—HORTICULTURAL, ZOOLOGICAL, ENTOMOLOGICAL, BOTANICAL, ROYAL BOTANIC, and PHARMACEUTICAL.

### NOTICES OF CONTRACTS.

For executing certain extensive Additions and Alterations of County Gaol and Penitentiary at Gloucester, and of the several Houses of Correction at Horsley, Lawfords-gate, Littledean, and North-leach, in said county.—Plans, &c., at the Office of the County Surveyor, in Barton-street, Gloucester. April 8.

ERECTING A NEW SCHOOL-HOUSE AND BUILDINGS, ST. AUGUSTINE, BRISTOL.—Plans, &c., at Messrs. T. Foster and Son, Architects, Park-street, Bristol. April 8, 1844.

For Erecting a Gasholder, 80 feet in diameter.—Plans, &c., Commercial Gas Light and Coke Company's Offices, Stepney; farther particulars Mr. T. Mercer, Engineer on the Works. April 10.

For putting up Pipes, Boilers, &c., for heating the new Prison, Belfast, and for supplying 700 locks.—Plans, &c., at the Office of Mr. Lanyon, Belfast; John Coates, Carrickfergus. April 10.

For works required in the enlargement of the Liverpool Workhouse.—Day for sending in Contracts, &c., postponed sine die.

For making certain Repairs on the Church of Bethelvie.—Plan, &c., J. Smith, Esq., Architect, Aberdeen. April 17.

For Erecting a Church at New Radford, near Nottingham.—Plans, &c., H. J. Stevens, Esq., Architect, 16, Full-street, Derby.

For executing extensive Additions and Repairs to the Manse of Mortlach, and for Erecting new Offices there.—Plans, &c., at the Manse. Farther particulars T. McKenzie, Esq., Architect, Elgin. April 17.

CAMBRIDGE.—For the several works to be executed at the corner of St. John's and Bridge-streets. Mr. Clemence, Surveyor, Chesterton-road. The day for receiving Tenders not fixed.

### PREMIUM.

£150 for the best design, plans, and estimates for a Pauper Lunatic Asylum, Derby (unless the person furnishing the same be employed to superintend the execution of the works); £100 for the second best design, and £50 for that which may be considered next in merit.—Mr. Barber, Derby. April 20.

### ADVERTISEMENTS.

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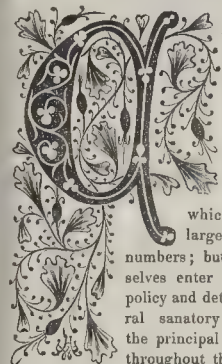
A Sample of each Size will be sent by Post to any part of the Kingdom on receipt of Postage Stamps equal to the amount.



# The Builder.

NO. LXII.

SATURDAY, APRIL 13, 1844.



**M**ORTALITY some most remarkable statistical & other evidences have been elicited by the inquiries which have been made, and from which we have quoted largely in our last two numbers; but before we ourselves enter minutely on the policy and details of any general sanitary enactment for the principal populous towns throughout the kingdom, we shall lay before our readers the first general

*REPORT of the Select Committee appointed to Inquire into the Circumstances affecting the Health of the Inhabitants of Large Towns and Populous Districts, &c.*

YOUR committee have inquired carefully into the matters submitted to them, and find that sanitary regulations in many of the principal towns of the realm are most imperfect and neglected, and that hence result great evils, suffering, and expense, to large bodies of the community. They have proposed several remedies; viz. general Acts to facilitate regulations in building, sewerage, and local improvements, applicable to populous districts; also the establishment of boards of health and local inspectors, and have made other suggestions detailed in their report.

Before entering into the result of their inquiries, your committee venture to lay before the house a few preliminary observations respecting the important subject which has been intrusted to their consideration.

By reference to the population returns, it appears that, from the beginning of the present century, the whole population of Great Britain has increased at the rate of nearly sixteen per cent. every ten years; from 1801 to 1811, thence to 1821, and again to 1831; and there is every reason to believe about the same rate of increase will be found to have taken place next year, when the next decennial return will be made. Whilst, however, such has been the increase in the population of the kingdom at large, reference to the same returns shews, that the augmentation of numbers in the great towns of the realm has been much more rapid: thus, whilst the increase of population in England and Wales, in thirty years, from 1801 to 1831, has been something more than forty-seven per cent., the actual increase in the number of inhabitants of five of our most important provincial towns has very nearly doubled that rate; being

Manchester . . . . .	109 per cent.
Glasgow . . . . .	108 —
Birmingham . . . . .	73 —
Leeds . . . . .	99 —
Liverpool . . . . .	100 —

giving an average increase of almost ninety-eight per cent. in five cities, whose united population in 1831 amounted to 844,700, and at the present time may be calculated at not less than 1,126,000. Far the larger portion of this vast body of persons are engaged constantly in occupations connected with manufactures or commerce.

In many other of our large towns the increase in numbers has been of a like nature, and though not so rapid in several of them, yet, from a document lately laid before Parliament, and compiled by authority, it appears that on a comparison of a large rural district with various provincial and other towns

(within or contiguous to it), the increase in population in the former, during ten years (1821 to 1831), was eleven per cent., and in the latter thirty-one per cent., shewing that the numbers in towns augmented almost three times as fast as in the country.

By reference to the Population Returns, we find that the proportion of the humbler classes occupied as manufacturers or workmen, and living in towns, is, as compared with the labourers in rural districts, completely changed.

It appears, by returns laid before the house, that the latter class was to the former, in 1790, about two to one; and now the town workmen and manufacturers, instead of being one-half, are nearly double the number of rural labourers.

It must be evident, that owing to this rapid increase in the population of great towns, the proportion of the humbler classes, of those with little leisure for education or improvement, will be augmented, as the more wealthy and educated gradually withdraw themselves from these close and crowded communities; which thus more and more stand in need of some superintending paternal care.

The difference in the proportion of numbers entirely occupied in labour is very different in different places. An account laid before your committee, and to which they believe due reliance may be given, states this proportion to vary from sixty-four per cent. in the borough of Manchester, to seventy-four in Salford, eighty-one in Ashton, and ninety-four in Dukinfield.

Your committee venture to remark, that the great towns of the realm may be divided into classes differing from each other in various circumstances, yet all requiring, more or less, the enforcement of sanitary regulations calculated for the benefit of their inhabitants. As,

1. The metropolis.
2. Manufacturing towns.
3. Populous seaport towns.
4. Great watering-places.
5. County and other considerable inland towns not being the seats of particular manufactures.

Besides these different classes of towns, there are various places, especially in the mining districts, in which a vast population of the working classes are spread irregularly over the face of the country, in some spots closely packed together, and in others dispersed in groups of dwellings more or less distinct from each other.

Your committee have only been able to inquire into the state of a portion of these towns; to have done more would have occupied them many months; but have thought they best fulfilled the trust committed to them, by confining their investigation to the condition of certain populous towns, or sometimes parts of towns, which might be considered samples of others similarly situated. They have especially directed their attention to localities in which the working and poorer classes chiefly reside, with a view, if evils are found to exist there within reach of legislative remedy, to make such suggestions of improvement as may appear practicable.

Before giving the result of their inquiries, and any abstract of the evidence adduced before them, they would say that considerable differences in the average state of the dwellings of the working classes, as might be expected, will be found to exist in different districts, arising sometimes from local causes, as the nature of the soil or situation, or the vicinity of a stream; and in others from the customs of the place, the nature of the occupations of the people, efficient or neglected municipal regulations.

Notwithstanding considerable allowance is to be made for these circumstances, your committee think it may be laid down as a general position, that persons of the same class, and engaged in the same sort of occupations in different populous towns, are subject, more or less, to the same evils (which are hereafter spoken to in evidence), that their health and comfort are affected by the same causes, and that the remedies suggested by your committee would be applicable to improve the condition of all or most of them.

Your committee, therefore, believe that the account given of the state of certain districts inhabited by the working classes in Manchester would be applicable to other great towns,

in which the people are chiefly employed in the cotton manufacture; that the same might be said of Leeds, with respect to those busied in the woollen fabrics, and such a general resemblance will be found in towns similarly situated, that the same suggestions which would be applicable to one might, with some variation, be beneficially extended to all.

By the report lately laid before Parliament, it appears that the mortality and diseases of cities vary greatly, and of parts of the same city. Thus, the annual mortality of Whitechapel is shewn to be nearly four per cent., whilst that of Hackney, Camberwell, and St. George's, Hanover-square, is less than half that amount, and is found, from a "comparison of the several districts, that, *ceteris paribus*, the mortality increases as the density of the population increases, and where the density of the population is the same, that the rate of mortality depends upon the efficiency of the ventilation and of the means which are employed for the removal of impurities."

Your committee now proceed to give an abstract of the principal points in the evidence submitted to them. They have made inquiries into the state of the dwellings of the poorer classes in various parts of the metropolis, in Dublin, Glasgow, Liverpool, Manchester, Leeds, Bradford, Hull, Birmingham, Coventry, and several other large towns, and though there is a great difference in many of the cases examined, they would state, as a general result, that evils of a most extensive and afflicting nature are found to prevail, affecting the health and comfort of vast bodies of their fellow-subjects, and which might be removed or much lessened by due sanitary regulations.

Evidence has been laid before them, depicting the miserably-neglected condition of the abodes of multitudes of the working classes in Bethnal Green, Whitechapel, portions of Wapping, Ratcliffe Highway, the parish of Stepney, and other districts in the east of London; an account of which has already been laid before Parliament in a "Report to the Poor Law Commissioners on the prevalence of certain physical causes of fever in the metropolis, which might be removed by certain sanitary regulations;" and which is printed in the Fourth Annual Report of the Poor Law Commissioners.

The same remarks apply, though with somewhat diminished force, to various other districts of London inhabited by the poorer classes, especially parts of the Holborn Union, of St. Olave's, and St. George's Union, Southwark, and to portions of Lambeth, Bermondsey, Walworth, Peckham, Vauxhall, and several other places.

The prevalence of fever and other disorders in these districts is attributed, in great measure, to the neglected state of the different localities, and is detailed in Dr. Arnot's evidence, p. 33, applicable more especially to the crowded eastern parts of London, viz.:

1. Houses and courts and alleys without privies, without covered drains, and with only open surface gutters, so ill-made that the fluid in many places was stagnant.
2. Large open ditches containing stagnant liquid filth.

3. Houses dirty beyond description, as if never washed or swept, and extremely crowded with inhabitants. "Heaps of refuse and rubbish, vegetable and animal remains, at the bottoms of close courts, and in corners."

In answer to the question, "Do you feel any doubt that the cases of fever and ill-health you noticed arose from some of those causes?" the answer of Dr. Arnot is, "I have not the slightest doubt of it." Reference was then made by the committee to the Report to the Poor Law Commissioners before alluded to, and the question is asked, "You state remedially at the top of page 14?" "We have no doubt that by proper sanitary police regulations, such as a board of health might decide upon, the typhoid fevers of London and other places might be made to disappear; and we think the remedial measures would cost less than it now costs to parishes and public charities to take care of the sick, and to provide for the helpless orphans and widows of those who die." "Is that your confirmed opinion?" Answer, "Yes, it is." This is stated to be applicable not merely to the crowded district east of London, but to any crowded districts of large towns in the realm.

Evidence of undoubted credit, and of the



most melancholy description, has been laid before your committee, shewing the neglected and imperfect state of the sewerage, paving, and cleansing in many parts of London inhabited chiefly by the working classes; and similar evidence applies with more or less force to many other great towns, the state of which has been investigated, as Dublin, Glasgow, Liverpool, Manchester, Leeds, Bradford, &c.

Your committee do not wish to go here into details as to the miserable and neglected state of the dwellings of the poorer classes in various districts of the metropolis and other large towns, but refer to the evidence for that purpose, in which statements of the most melancholy and appalling nature will be found. It will there be seen, that the sewerage, draining, and cleansing is (in many places inhabited by dense masses of the working classes) greatly neglected; that the most necessary precautions to preserve their health in many cases appear to have been forgotten; that, in consequence, fevers and other disorders of a contagious and fatal nature are shewn to prevail to a very alarming extent, causing wide-spread misery among the families of the sufferers, often entailing weakness and prostration of strength among the survivors; and becoming the source of great expense to the parishes and more opulent classes.

On these points your committee would refer to the evidence of Dr. Arnott, Dr. Southwood Smith, Mr. F. Moseley, and Messrs. J. Miller, Wagstaffe, Evans, J. Clarke, J. Wood Wilkes, E. White, Walker, &c. Many details will be found in the testimony of these gentlemen well worthy the attention of the legislature, and exemplifying the severe and extensive evils borne by the humbler classes from neglect of proper sanitary regulations and precautions.

Your committee would also refer to the valuable report of Dr. Arnott and Dr. Kay on the sanitary state of the labouring classes before alluded to, the substance of which has been verified before them on examination. They cannot refrain from quoting a few lines from a paper laid before them by Dr. Southwood Smith, whose valuable evidence on the state of several districts of the east of London will be found well worth perusal. It is headed, "Abstract of a Report on the Prevalence of Fever in Twenty Metropolitan Unions, during the year 1838," and is printed in the appendix.

Dr. Smith (who has personally inspected the districts alluded to) shews by returns stated, that in 20 metropolitan unions, giving nearly 14,000 cases of fever, above 9,000 were "afforded by seven of the unions only, namely, Whitechapel, Lambeth, Stepney, St. George-the-Martyr, Bethnal-green, Holborn, and St. George-in-the-East." These are at once the most populous and the poorest districts; and it is here that fever is "constantly committing its ravages. It is utterly impossible for any description to convey to the mind an adequate conception of the filthy and poisonous condition in which large portions of all these districts constantly remain."

(To be continued.)

F.

**THE ANCIENT ROMAN WALL.**—In the course of excavations which are making adjoining Sir J. Cass's charity, to the east of St. Botolph's, Aldgate, the workmen came on the foundation of the ancient Roman wall, at a depth from the surface of about 15 feet, which was of the usual strength and width. The portion discovered was built upon a solid brick foundation, strongly cemented together. The bricks were in a condition apparently as perfect as when they were originally laid down. A short time ago another part of the same wall was discovered, at a similar depth, in Duke-street, Houndsditch, from which it appears that it passes across the lower end of Houndsditch, under the burial ground of the church of St. Botolph. A quantity of fused metal, which is supposed to have been melted in the fire of London, was discovered among the earth. There was a depth of made earth of from 15 to 20 feet, which was of a fine loamy quality. It is supposed that when the Tower ditch was excavated that a large quantity of the soil was brought there. The same sort of soil is found in many other parts adjoining London-wall, leading to the site where Winchester-house formerly stood. The ground is being dug for a sewer, and there is a depth of about 20 feet of made earth,

#### BENEVOLENT INSTITUTION OF AGED AND INFIRM CARPENTERS.

The half-yearly meeting of the subscribers and friends to the Benevolent Institution for the Relief of Aged and Infirm Carpenters was held at Radley's Hotel, Bridge-street, Blackfriars, on Monday, April 8, 1844, Thomas Grissell, Esq., vice-president, in the chair.

The minutes of the last annual meeting having been confirmed, Mr. W. Wood, the secretary, read the report, which stated that the institution was in a prosperous condition, having at the present at the banker's 131*l*. 10*s*., and in the treasurer's hands 35*l*. 10*s*., being an increase on the funds of upwards of 30*l*. within the last six months. Mr. Shunell, Jun., moved that it be received and adopted, which being seconded by Mr. Munyard, was carried.

Mr. T. W. Tomkins moved a vote of thanks to Messrs. J. Holtezafield, J. Buck, Moseley & Son, Huntsman, and Cox, toolmakers, for their kind support of the institution, and that they be requested to urge others to do likewise; carried.

Mr. W. Wood was then elected one of the directors in the room of Mr. Burrill, deceased.

Mr. W. Wood having addressed the meeting in a feeling manner, proposed an active canvass for increasing the funds of the institution; which proposal Mr. H. T. Munyard seconded, and added there was only one thing that the directors had in view in not calling meetings oftener, and that was the expense attending such meetings. Carried.

Resolved unanimously, that the directors do form themselves into missionaries, and call meetings in various parts of London, at least once a month.

The chairman, in putting the motion, said that as the subscribers had found fault with the expense, they might put his name down for 5*l*. towards that object.

Mr. Shunell, Jun., moved, and Mr. T. W. Tomkins seconded, that a vote of thanks be given to Thomas Grissell, Esq., for his kindness in taking the chair on this occasion.

The meeting then separated.

#### APPENDIX TO THE REPORT OF THE COMMITTEE TO THE SOCIETY OF MASTER CARPENTERS.

*Alterations recommended by the Committee to be made in the New Buildings' Bill.*

Page 16, sec. 21, line 31.—Instead of the word "six" the word "three" to be inserted.

Page 17, sec. 22, line 14; and page 19, sec. 25, line 14.—The same alteration.

Page 20, sec. 27, line 2.—After the word "operations" an insertion of the words "or sooner, with the consent of the adjoining owner."

Page 24, sec. 37, line 33.—At the conclusion of this section, the addition of "or on so much of the adjoining land as may be directed by the official referees." This would prevent a litigious withholding of permission to build or rebuild.

Page 27, sec. 42, line 43.—The words "be deemed by the surveyor to" ought to be taken out, leaving to be proved the danger of falling.

Page 34, sec. 51, line 33.—The word "first" ought to be altered to "fifth."

Page 34, sec. 51, line 34.—The words "already built or" ought to be taken out, and the words "to be" inserted between "hereafter" and the word "built."

Page 34, sec. 51, line 37.—Schedule I. ought to be K.

Page 34, sec. 51, lines 38, 42.—From the word "nor" to the word "room" ought to be taken entirely out, or very great injustice will be done to owners and occupiers of thousands of houses of all rates and classes, but most especially of the third and fourth rates under the present Act, and with but very problematical benefit to the parties occupying

rooms, although the area thereof may be a little more or less than one square.

Page 46, sec. 75, line 26.—This section relates to the appointment of referees, and the committee think that the word "two" ought to be taken out, and the words "not less than three" be inserted; they would also suggest that after the words "being architects" that the words "or other competent persons" ought to be inserted, by this insertion extending the appointment of the Home Secretary to all persons who may, from their practical knowledge, be competent to fill the office.

Page 54, sec. 97, line 13.—The committee object generally to informations by common informers; they therefore suggest that the words "any party" be taken out, and at that place be inserted the words "the surveyor of the district."

Page 54, sec. 97, line 15.—The word "surveyor" be inserted for the word "person."

Page 54, sec. 97, line 16.—The words "the amount" to be taken out, and instead thereof the words "a moiety" be inserted, and, at the end of the section, the following words to be added, "and the other moiety to the poor of the parish in which the offence is committed."

Page 58, sec. 97, line 16.—Power ought to be given to the official referees to take evidence upon oath.

#### APPENDIX, NO. 2.

*The Schedules or Second Part of the proposed Bill.*

**SCHEDULE A.—Bottom line—3 & 4 Vict., ch. 85, 1840.**—This provision or enactment ought to be relaxed so far as to permit boys duly licensed, and not less than 14 years of age, to cleanse chimneys, by climbing, as formerly; the sweeping by machinery being, in many cases, very imperfect and likely to cause much damage to the flues.

**SCHEDULE C. PART I.**—The committee strongly recommend that the names of the rates be reversed, and that the fifth rate in the schedule be called a first rate, especially as no possible good can be obtained by thus calling things out of their proper names.

They also recommend an extension of the several superfluous, as

1st. from 4 squares to 4½ squares.
2nd. " 6 " " 7 "
3rd. " 8 " " 10 "
4th. " 10 " " 12 "
5th. " 12 " " 15 "

and also two intermediate rates between the second or third, and the third and fourth, so as to permit an addition story to each of these rates, provided the dwelling does not cover more than squares. If the limit of 4 squares was to remain, it would be difficult to arrange the back apartment of a dwelling so as to have a square of flooring.

**SCHEDULE C. PART 2.—Party Walls.**—The committee recommend that the party wall of the highest rate be reduced half a brick in the second story, and half a brick in the part above the gutter-plate.

In the next rate (designated the fourth), but which ought to be called the second rate, they recommend the reduction of half a brick in the first and fourth stories.

In the third rate, properly so called, they recommend a reduction of half a brick in the second story, and also in the part above the gutter-plate.

In the fourth rate (miscalled the second rate), they recommend a reduction of half a brick in all the stories.

In the fifth rate (miscalled the first rate), they recommend in both the stories a reduction of half a brick.

In the external walls, they agree in the thicknesses as set out, but with the same objection as to the misnomer in the respective rates.

**SCHEDULE C. PART 3.**—The committee agree in the several thicknesses, both as to external and party walls, but cannot agree to the misnaming the several rates.

**SCHEDULE C. PART 4.—Openings in party walls.**—For the words "six" and "eight," your committee recommend the words "seven" and "nine." And they strongly recommend that the regulation regarding the piers proposed to be built at the openings in party-walls, be entirely taken out, as an useless provision, and for the words "four feet" be inserted the words "one foot."



**SCHEDULE C. PART 4.—Buildings and Offices.**—The words "now built or" should be taken out, as it is impossible to deal with buildings already built. The word "external" ought also to be taken out, and also all that part of the second paragraph from and after the word "separately" to the end.

**SCHEDULE D.—Foundations.**—The whole of this ought to be taken out, as compelling the builder to go to an unnecessary expense, especially in the smaller description of houses; and the same in the bottom regulation of Walls generally.—And here it may be remarked, how could this enactment be carried out in houses already built? Also, with regard to Breast-summings, surely a builder ought to be left to his own discretion in determining their scantlings, and also the method of fixing them; this is a partial return to the objections in the proposed Act of last session.

**SCHEDULE D. PART 3.—Site of Walls.**—To this part of the Schedule ought to be added the words "and also for the additional brick-work."

**Openings in Party-walls.**—The privilege of making openings through party-walls ought, in justice, to be extended to all persons subject to the permission of the referees. The committee, therefore, recommend the taking out all the words from "with regard" to the words "first class."

**SCHEDULE E.—In the Projections.**—One of the regulations permits projections, if built of incombustible materials, while in a further regulation nothing is to project beyond the general line of building.

These regulations ought to be much better defined, as, in fact, one contradicts another.

No projection ought to be permitted, (shop-fronts or architectural decorations excepted,) beyond the general line of fronts.

The heights of shop-fronts and sign-boards might be improved by an additional three feet being added to the respective heights.

**SCHEDULE F.—Rules Concerning Chimneys.**—Chimneys ought to be permitted to over-sail sideways, such oversailing to be restricted to an angle of about 135 degrees: no danger whatever could arise by this permission.

**Chimney Tubes**—if inserted one foot into the chimney-shaft, are quite as secure as if inserted two feet. The word "two" might then be altered to "one."

**SCHEDULE I.—Rules Concerning Streets and Alleys.**—The width of every street upon any new site ought to be regulated by the number of stories of which the houses in such street are intended to be built. Thirty feet is much too little in a street, the houses of which are three, four, or five stories high above the footway.

**SCHEDULE K.—Under-ground Rooms.**—The committee cannot clearly understand that by this schedule only under-ground rooms are intended, nor if this be intended only to apply to such under-ground rooms, or to any other, whether let separately or not.

Your committee strongly recommend that the area of a room be not made to govern or restrict its use and occupation; but that every room having sufficient light and a chimney, be permitted to be occupied, even if not containing a square of flooring. Your committee beg to repeat and impress that if this become a law, thousands of houses, or parts of such houses, would be put out of use as dwellings, although built and controlled as to area by an Act of Parliament of nearly three-quarters of a century standing.

**SCHEDULE L.—Fees Payable to Surveyors.**—The fees in this schedule are fixed fees, to be paid upon the respective rates of buildings. They are, in four of the rates, similar to the fees under the old Act, but with this difference, that under that Act the fees were not fixed at the respective sums, but they were not to be exceeded, although they might be diminished, and which was often the case.

The committee have no objection to the scale of the first six fees; but to the seventh fee, "that for inspecting and reporting to the official referees upon party-walls," they cannot submit, the more especially as this fee will be included in the district fees.

**To New Buildings.—To Alterations or to Rebuilding.**—The committee consider that if an additional building be covered in within one month instead of twenty-one days after the

principal building, that such buildings ought then to be free from additional fees.

The word repairs, in this schedule, ought to be taken out, as repairs, generally speaking, are not intended to be surveyed by the district surveyor.

**In this schedule (L.) the Fees for Special Duties** appear in several of them as exceedingly objectionable, inasmuch as they are included in the alterations and rebuilding of new houses on old foundations.

The whole of the fees "for attending to the cutting away Chimney-breasts for External Walls."—These fees are included in the fees receivable for the new house about to be built against such "external wall."

The fee for condemning party-fence-walls would be amply paid for by a fee of ten shillings instead of a guinea.

The fee for inspecting arches or stone floors over public ways is also included in the fees for building the dwelling-house, and ought not to remain in the schedule.

**For Measuring the Width of Streets.**—This is a fee for a trifling incidental service, and although only ten shillings, yet it is not set out whether it is to be a charge upon every house in the street; if so, in a street of fifty or sixty houses, your committee must say that the work for which this fee is provided is much overpaid; but if it is to be distributed among all the houses, it would be of no very great consequence, amounting only to two-pence or two-pence-halfpenny each house.

**Fee for Inspecting Openings in Party-walls.**—This fee is also paid either at the first formation of the wall, or if at any future period, it would be payable under the scale of fees for alterations and additions.

**Fees for Drains and Cesspools.**—As these would be for surveys incidental with the foundations of the new buildings, no fees ought to be payable for so small an addition to the duty of the district surveyor.

**Fees for Inspecting Chimney-pots, &c., above a certain height.**—As this duty is of so very indefinite a character, and the fee might become a very oppressive and unjust charge, having been in no previous instance levied upon the public, your committee would strongly recommend that it be expunged.

**Fees for Special Services, not expressly provided for.**—Your committee think it is hardly possible that, following out the fees as set forth in this schedule, there are any duties, however small, that have not been fully provided for; they therefore recommend that this proviso be taken out altogether.

**SCHEDULE M.** relates to forms of notices, &c., and to which it will be unnecessary to call your attention, these being merely such as the several parties, surveyors, builders, referees, owners and others, are to have served upon them previous to any of the provisions in the Act being put in operation.

Your committee having thus brought under your notice the most material parts of this important proposed enactment, recommend to your serious consideration its several provisions, together with the amendments recommended in this report.

(Signed) H. BIER, President.

March, 1844.

**THE MANCHESTER GAS WORKS.**—These works, at the present moment, are no doubt the most extensive in the kingdom; what they are destined to become in a few years more, should the demand continue to increase as it has done for the last three or four years, it would be a hard guess. Some idea may be formed of their magnitude when it is stated that there is now 1,100,000 cubic feet of gasometer space, and the directors have just completed contract for an additional gasometer, to contain 200,000 feet, so that when this is in operation, which will be beduring the present year, there will be gasometer room for 1,300,000 cubic feet.—*Westmoreland Paper.*

**A COSTLY WINDOW.**—Messrs. Kendall, Milne, and Falkner, the eminent haberdashers, at the Bazaar, Deansgate, Manchester, have just had a window completed of costly description. It is 42 ft. long, and 12 ft. high, and contains upwards of 650 ft. of the best plate glass, and its entire cost is said to exceed 500/.

## ON THE INFLUENCE OF ATMOSPHERIC AIR IN EFFECTING CHANGES IN ORGANIC AND INORGANIC BODIES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

No. I.

A CORRECT knowledge of Nature enables men to think and speak with mathematical precision, to demonstrate truths, and to impart instruction to others: it enlarges their mental capacities and powers, excites and directs their inquiries, and regulates their acts and determinations. Without that necessary knowledge of Nature which strictly appertains to his profession, the civil engineer finds insurmountable obstacles in the way of his inventions and discoveries; the architect finds his stately building totter to its fall, or exhibit premature decay; and the youthful aspirant to professional fame performs his Sisyphean-like task until his young hopes withering by repeated disappointments, he sinks unnoticed, and unknown, into the stream of oblivion. In this varied and highly intellectual pursuit, each of them must bear in mind, that there are natural obstacles to be overcome, temperature and association to be guarded against, and that the varied material of the earth is called into requisition on all occasions, and under varied forms and combinations; it is therefore essentially necessary that MINERALOGY take a prominent position in the education of youth, embracing METALLURGY, or a knowledge of the metals; PETROLOGY, or the knowledge of rocks and stones; and such portions of GEOLOGY as embrace the earths, in their varied chemical and mechanical combinations, passing by the numerous absurd speculations and unmeaning phrases of the latter branch of mineralogy; and confining their studies to the several conditions under which mineral bodies and mineral beds exist,—to the affinities of bodies,—their powers of cohesion, elasticity, or expansion,—and to the manifest and demonstrable causes which compel them to change in their character and individuality.

To assist the aspiring mind, and to awaken inquiry, by holding up the mirror of nature—to teach the youthful student to avoid the shoals of induction and false philosophy—and to divest science of its forbidding features, its technicalities, and its mysticisms, will be my object in this and the succeeding articles which I purpose laying before the enlightened and studious readers of THE BUILDER.

The atmosphere, the ocean, and the earth, are the three grand divisions of this planetary body, mutually united and uniting with each other, and increasing and diminishing in the sum of their respective volumes perpetually, forming one vast laboratory, in which nature operates immense analyses, assolutions, precipitations, and combinations, in and by which organic bodies are generated, elements and elementary compounds are elaborated, and the phenomena of the fossil and mineral kingdoms are produced. Each of these grand divisions is a chaos of contending elements and elementary bodies, of conflicting and discordant material, indeterminate in their mixtures, quantities, and qualities, conflicting in their local motions, but united by one general base, and by the general motions which embrace within their revolutions all the lesser systems.

To the conjoint elements of the air and waters the varied and complicated phenomena of the latter owe their origin; to the conjoint action of the air, the waters, and the gaseous, aqueous, and consolidated matters generated within the waters, the varied and still more beautiful phenomena of the earth owe their origin, birth, and being: again, to the action and re-action of these mechanical combinations, each is indebted for its peculiar phenomena. Upon the surface of the earth as within the waters, the powers of atmospheric action are palpably manifest to all men as being derived from the sun, and communicated to the earth, by which the atmospheric volumes are enabled to combine with the compounds termed earth, being the co-operative causes of generation and multiplication of animal and vegetable species, and of fossil and mineral bodies, in their almost endless diversity of character, form, and composition. It is by atmospheric action generally manifest over the whole earth that general results are produced, and by local action or temperature that local results are produced.

The local effects of temperature are strikingly manifest in the production of the animals and



vegetables of the ocean and of the earth; and to this cause is chiefly to be ascribed the multiplication of the varied classes of animal and vegetable existence, the continued spontaneous production of species, their gradual or sudden changes, and the sudden and total extinction of many peculiar and extensive tribes and families. Thus the oak, the monarch of the British forests, transplanted to the rank soil of Bengal, degenerates into a miserable stunted shrub, and the giant banyan of that country, a forest of itself, when introduced into our greenhouses, becomes the ornament of a garden-pot. Again, the vine loses its fruitfulness in the one country, the mango, the tamarind, and the plantain, cannot exist in the other. Again, even under the same latitudes, a similar diversity prevails. Excess of heat, without moisture, causes the earth to lie bare and desolate, and to remain desert for ages; excess of heat and moisture produces rank fertility inimical to humanity, but favourable to the generation and multiplication of immense varieties of animal and vegetable species: moisture, without heat, is entirely wanting in the power to generate life. The same law governs the distribution of animal species; the marked effect of temperature, dip, and inclination, is manifest in and throughout the ocean: thus the lime-secreting polypes can only exist within or near the tropics, and species become more beautiful and more abundant as they approach towards the surface waters. Within the seas, disposed under the northern and southern hemispheres, the polypes are generally wholly divested of their calcareous covering, and all kinds of molluscous animals are less supplied with this material, the pearl oyster, and many other species, wholly disappear, and those which remain appear to be short of their fair proportions. Every region boasts its peculiar organic phenomena: it is the same on dry land; the llama loves its Peruvian heights; monkeys, elephants, buffaloes, rhinoceroses, hyenas, all have their climates marked out—all exist by suzerainty of temperature and association alone, the boundary of their existence being fixed and permanent.

This law of nature is carried into and directs the formation of the fossil and mineral kingdoms—the preservation, change, or destruction of the one, and the generation of the other, depending upon temperature and association; the nature of the fossil beds is determined by the nature of species locally disposed, or of motions locally manifest; and the nature of the fossil bed and of atmospheric action, locally exercised, determines the after changes of the fossil into the mineral aggregate: thus to the varied phenomena of life we are indebted for the equally varied fossil formations, and consequently for those peculiar earths, mineral bodies, and gaseous products, which, in totality, form the superficial crust of the earth. But although the coral formations of tropical seas have no analogy in northern seas, the forests of India and South America have no analogy to the forests of Europe; still, formations analogous to the one and the other, are to be found in the lands of the north, and constituting its elevated and inhabitable parts.

Land disposed within the tropics abound with gems, precious stones, the most valued metalline bodies, the most highly crystalline rocks: but, as we approach the polar circles, these phenomena either wholly disappear, assume a marked character of climate and association, or else they exist as unerring witnesses of causes of effects no longer manifest in these latitudes. Silicates are common to all countries, but local temperature and association are co-operative causes of species being produced; thus also of the phenomena of common flints in this country, of the jaspers of Egypt, the bole of Turkey, the porcelain clay of China, the diamonds of Peru, the East Indies, Borneo, and Malacca; the gold of Africa, the quicksilver of Spain; the platina of the Oral Mountains, and of Oriental and Occidental gems. In all warm latitudes the act of change is so exceedingly strongly marked and well defined, that it appears a matter of wonder, modern men of science should be entirely ignorant of these changes: all rocks, stones, and earths, subject to atmospheric action, undergo changes in conformity to the nature of their material, and the force of heat alone, or heat and moisture acting upon them: while fossilizing, we behold organic bodies go through the process of oxidating, which process con-

sists in the fixation and absorption of vital air by combustible bodies, and the decomposition of atmospheric air by these bodies. The vital air is the body acting, the fossil or combustible body is the patient acted upon, and having the capacity to receive, and by the force of affinity and cohesion to retain, this elastic gaseous element in certain proportions, to fix it, and to cause it to assume a solid form; the vital air thus precipitated imparting its calorific power to the compound with which it unites; and thus distributed, the calorific passes into the latent form; saturated *per se* with oxygen, the fossil body being in change a thing of another nature, having undergone a re-arrangement of its atomic particles. But this change is far from being permanent, for local influences cause further changes, by which its primary organic form and qualities become wholly obliterated as they pass by transition into the mineral kingdom: thus silicious bodies, consisting of two or more earthy constituents, under certain atmospheric influences, give up those compounds, or otherwise a further remodification of their atomic constituents takes place: the common flints and pebbles of this country, if exposed to local tropical influences, would soon become things of another name; for, here exposed in the beds of shallow streams, the grosser earths are in the course of time abstracted from the silica, or silica-aluminous base, and the silicic base is gradually converted into pure crystalline quartz, amethyst quartz, topaz, agates of varieties, and other beautiful products, known and valued as precious stones. Exposed upon the surface soil to direct atmospheric action, the changes are in conformity to the nature of the action exercised upon them; thus the coarse siliceous pebble becomes converted into carnelion, the siliceous sands and aggregates become transparent or crystalline—as jacinth, caruncle, and garnet; or having an aluminous base, as sapphire, ruby, emerald, crysopraxe, &c.: thus every region has its peculiar mineral products, the nature of the compound being determined by local temperature and association. The most beautiful marbles are the oriental and occidental, the most sonorous sienites, marbles, and porphyries, are found in the rainless regions of Egypt; and even in the mild temperature of Italy, the ignorant quarrymen, taught by experience, are guided in their choice of quarries by the peculiar dip and inclination of the beds, a southern aspect being always found to develop the most valued kinds of marble.

As regards the metals, although generated in many regions of the earth by electro-chemical action within the lower beds, yet it is apparently palpable that the causes of effects may in numerous instances be ascribed to the immediate action of the sun upon the earth. In temperate or cold countries metals are generated within the bowels of the earth, embracing in local extent the several beds in which their elements exist; but in Asia, in Africa, and other portions of the globe, they are almost invariably found superficially disposed; and where generating, as in the deserts, they are generated on the surface so fast as the inflammable bodies of which they are compounded become saturated with oxygen. Gold is most abundant in hot regions within the tropics, and is generally found united with iron, emery and aluminous earths, or gypsum—the latter being in Western Africa converted into red marble. Elevated regions are always more abundantly supplied with metallic veins than plains, because the conditions of their generation are internal heat constantly supported, and supporting electro-chemical action; it is therefore requisite that the lands be drained of their superfluous waters, which, where present in quantities, form weak solutions with the acids, and thereby destroy their chemical powers. The metalliferous regions are therefore disposed in the high lands of South America, India, and Birmah, or in low lands, where rains are infrequent and the atmospheric heat very great.

It is not denied that orient gems and gold are found disposed within the soils of Europe, and that even in the British strata we find the most beautiful crystalline products, and the precious metals: thus the elevated regions of Scotland are analogous in composition and character to the Ghauts or hill regions of Northern India, the one and the other abounding with caltr, gorums, agates, cornelians, &c. The Wicklow mountains also contain gold, and

marbles are very abundantly diffused over the United Kingdom; gold is also found in Germany, and silver in Spain: these are facts well known; but, still, the question remains unanswered as to whether the causes of effects thus manifested to us exist in the present day. Geologists will tell you that the causes which produced crystalline rocks, gems, and gold, do not exist at present in our northern hemisphere, and that the causes of the phenomena of crystalline rocks have ceased from over the whole earth. Is this the fact? Most assuredly it is not; else why those local dispositions of peculiar species? Why this uninterrupted disposition of sedimentary beds scattered over the surface soil, which include and pass into crystalline bodies? Why should the most beautiful mineral productions be confined to the superficial beds of the earth? Why should bodies and aggregates of bodies become more highly crystalline as they approach or cover the surface of warm and tropical regions? Can the geologist, rooted to his native soil, by bygone prejudices and fashionable theories, explain why beautiful marbles, sonorous granites and porphyries, basalts and sienites, are never found disposed in the lowest beds? The singular simplicity of elements and composition of bodies composing the lowest beds has long attracted the attention of men of science, and it gave the first intimation of the progressive development of species, therein being little or no trace of animal or vegetable organization, so palpably manifest in almost all the superficial beds of the earth.

Granted that many highly crystalline rocks are often found disposed in the lower beds, and that granite often forms the basis of mountains, still it will be found that the chemical characters of granite are identified with the chemical constituents of sand, simple in the lowest beds, more complex, and branching into numerous varieties, as they are disposed on or near the surface or in the bosoms of mountain; in Ceylon, Borneo, Madagascar, Africa, and many parts of Asia, the rocks of the upper series are so exceedingly confused in their mechanical mixtures, that it is an utter impossibility to classify them, and in all these regions they may be observed in various stages of formation, as influenced by atmospheric heat and atmospheric heat conjoined with water; atmospheric air enters largely into the composition of them all. On the other hand, many of the crystalline and metalline phenomena of European strata bear evidence in their internal structure, and the configuration of their organic remains, of having been once disposed beneath the tropics. Many of the beds of the British strata are palpably wholly composed of animal exuvie, peculiar to warm and tranquil seas, and of species analogous to those now living and generating in the Pacific, Southern, and Indian Oceans; others are found of this material united in variable proportions with the animal and vegetable products of a like warm climate, the reliques of rhinoceroses, tapirs, lizards, hyenas, elephants, intermingling with arborescent ferns, giant reeds, palms, and grasses; the one and the other existing by suzerainty of climate and association only. Is this disposition of organic remains ascribed to the carrying powers of water? If so, we turn from them to still stronger testimonies, to still more undeniable proofs of change, and changes which have taken place in the earth's plane of revolution—to hill and hill ranges of chalk formed of the bodies and comminuted particles of organic bodies, to the vast limestone ranges abounding with madripores, to shell marbles and varieties of earths formed even within the polar circle. It is therefore evident that local influences ever determine local results; that the causes in active operation in one portion of the globe produce certain effects peculiar to the temperature of that portion, the sum of action and the qualities of matter determining the result; that the like cause produces the like effect; that in local transitions, causes and effects modify and in general change; many causes cease to exist in one region, and make their appearance, being re-generated, in another.

It is to atmospheric action, locally or generally exhibited, that we are indebted for many singular and apparently inexplicable phenomena; rocks are the products of slow combustion, or rather they are oxydized bodies, their oxygen being abstracted from water or atmospheric air; the bases of all rocks, and



many of their compounds, are combustible, being organic products, but these combustible properties are negated in these permanent combinations with oxygen. A mass of mixed organic matter no sooner becomes exposed to atmospheric action within or near the tropics, than it commences a series of changes in conformity to the nature of its material, the gelatinous parts of the oceanic animals unite with oxygen in definite proportions, and become *SILICA*; silica is therefore the animal matter found in all species united with oxygen, in definite proportions of each; lime in like manner becomes oxydized or saturated *per se* with oxygen, being exhibited in its calcareous state; bodies united by the common base silica, or alumine, or both in union, remain united and enter into the more consolidated state in consequence of their absorbing and fixing oxygen; and every body, according to its homogeneous or mixed qualities, has peculiar powers of its own, all differing from each other in the quantity of oxygen they absorb, the rapidity with which they absorb it, and the proportion of caloric which they disengage from the oxygen absorbed. All rocks are therefore results of slow or rapid oxydation, or otherwise they are formed by the force of cohesion, the abstraction of oxygen, and lateral pressure; *no crystalline rock can possibly be formed by the heat of fusion*. Kerman found 32.42 grains of fixed air in 100 grains of marble; and the experiments of Dr. Priestley demonstrated the presence of fixed air in many mineral bodies. Thus, from 7 ounces of whiting, the most simple form of calcareous matter, he expelled 630 ounce-measures of air; from 34 ounces of lime fallen in the air, he expelled 375 ounce-measures, of which about one-fifth was fixed air. These and innumerable experiments made in later times demonstrate that atmospheric air is the co-operative cause, and an essential ingredient of all rocks, stones, minerals, and earths, and that in its fixed state it constitutes a vast portion of this planetary body. The effect of an intense atmospheric heat upon a fossil bed is to oxydise the alkalies and alkaline earths exposed to its continuous influence, to convert clays by abstracting their hydrogen, into rock, and to render rock more opaque and sonorous by the gradual re-arrangement of its particles. The action of the atmosphere in this country has the effect of destroying rock by corroding its surface, or abstracting its oxygen from some one component of the rock; the action of the atmosphere in Upper Egypt is to form rock, to preserve it when formed, and in the slow progress of time to render it harder and more sonorous. Thus the ancient monuments of this country are preserved uninjured through a long succession of ages; but not so in Lower Egypt when exposed to the sea-breeze; here corrosion takes place, and all monumental stones suffer desquamation more or less. The white marbles on the heights of South America, although partially affected by running streams, are preserved from desquamation otherwise by atmospheric influences. A few hundred years pass away, and castles, palaces, and cathedrals built in this country moulder into dust.

Chemists are gradually, but unwillingly, acknowledging these truths, are gradually enlarging their conceptions of the organic origin of all inorganic bodies formed from, and perpetually united and uniting with, atmospheric air, and the luminous caloric and electric fluids which pervade and traverse it continually. It is everywhere present: the mine is no sooner opened, than, following the steps of the miner, it acts, and is immediately re-acted upon by the mineral substances composing the bed; interchanges of elementary constituents take place, its oxygen combines in variable proportions with the metals and semi-metals; and inflammable gases, held in mere mechanical union, are liberated and unite with its volumes: thus in numerous decompositions and re-combinations new results are generated, and former things are destroyed. It is from this admission of the atmospheric volumes that the choke-damp and explosive mixtures are liberated. Without atmospheric air the miner could not live—its presence and searching action too often bring destruction and desolation to wives and families. In vegetable earth atmospheric air is invariably present in its unfixed state; but when this earth passes into the state of clay, air enters into chemical combination with the plastic mass in its fixed

state, changing with the changing mass, the excess being carried off with the hydrogen. In the first stage it rapidly corrodes and decomposes all animal and vegetable remains, causing them to pass into the state of earth; in the latter state its powers are strikingly manifest in the preservation of organic matter, and in causing it to assume the mineralized form.

## SOCIETY OF ARTS.

APRIL 3.—William Pole, Esq. V.P., in the chair.

The secretary read a paper by Mr. C. Tetley, on certain phenomena of steam, and on his plan of economising fuel in the boilers of locomotive engines.

The evaporating power of a boiler, says Mr. Tetley, is dependant chiefly on three causes:—1, The amount of boiler surface exposed to the reception of heat; 2 (and very materially), on the shape of the boiler; and, 3, on the intensity of the heat. The heat derived from that part of the boiler immediately over and above the fire he calls (according to usage) "radiating heat;" while the heat derived from the tubes or flues he calls "carried heat." After detailing a very elaborate theory of certain phenomena of steam, he describes his improvement in boilers, for the rapid evaporation of water and for the economy of fuel, which consists of a division of the boiler into two or more compartments of different heating temperatures, having channels for feeding the compartments with water from that of those containing water of a lower temperature.

The first partition is placed vertically over the water space at the back of the boiler, the top of which reaches somewhat above the water line, and the bottom below the level of the fire-bars, but leaving a passage for the water beneath it.

The second partition reaches from the bottom of the tubular part of the boiler to a little above the level of the fire-box, and is removed but a short distance from the first partition. The third partition is placed in the middle of the tubular boiler, and, as the first, runs up, above the water level.

A communication is formed for a supply of water, by a pipe running from the compartment nearest the chimney-box into the middle compartment, the top of the pipe being just under the top water level, and the bottom of the pipe entering the middle compartment at or near the bottom of the boiler.

On evaporation taking place, the steam diffuses itself over the top of the partitions, thus maintaining the same pressure on the surface of all the water.

Evaporation commences in the compartment over the fire-box, and the water converted into steam is reinstated by the surface water from the second or middle compartments, which is delivered almost or entirely at the evaporating point.

In like manner the middle compartment is kept continually fed from the top layer of water in the third compartment, which is supplied by a pump in the usual way.

By this arrangement, a saving of fuel, equal to about 21 per cent., is obtained—the prevention of a deposit of sediment is effected—the steam is got up more rapidly; and the action of a float for regulating a feed apparatus is rendered much more certain.

Mr. Wroughton explained his self-acting glass ventilator, which consists of a mahogany vertical frame, 17 inches high and 14 inches wide, standing on a platform, 14 inches long and 18 inches wide. In the frame is fixed a plate of glass, in which are ten horizontal apertures, each  $2\frac{1}{2}$  inches long and  $\frac{1}{2}$  inch wide. On the internal side of the glass are four vertical brass slides, in which work as many pieces of glass fixed in a brass case as there are apertures in the plate, but somewhat larger, in order entirely to cover them when necessary.

The two sets of glass covers are suspended from a small brass beam working on a pivot attached to the glass.

A small ivory piston, working with a nut and screw, in a glass bent tube, is attached to one set of glass covers. The glass tube contains a column of mercury altogether about 12 inches

in length, but divided at top into two arms, over which are two vertically placed glass tubes about 10 inches in length, and bent over at the top and returning down to the bottom of and close to the first tubes; these tubes are filled with spirits of wine, which, when expanded by heat, acts in conjunction with the mercury (with which it is in contact), and elevates and depresses the glass covers so as to admit fresh air in proportion to the amount required to keep the temperature of the apartment at a fixed point, which is ascertained by a scale marked on the glass plate.

The society's repository was lighted for two hours and a half with six of Young's Vesta Lamps, at a cost of 9d. for a pint and a half of highly rectified spirits of turpentine. Two additional lamps would have rendered the lighting complete.

Several specimens of Messrs. Wood and Co.'s stamped wood, in imitation of rich carving, were placed in the Repository, as also one of Mr. Varley's single lever stage microscopes.

## RAILWAY INTELLIGENCE.

*The Lancaster and Carlisle Railway.*—On Monday last, the surveyors and their assistants commenced marking out the line, which, in all probability, will be that adopted for the continuation of the railway from Lancaster to Carlisle. They started from the engine-house, and the route staked out is directly across the turnpike-road, thence behind Greenfield, and above the Bath Houses. The canal will be crossed at some distance from the aqueduct bridge; and a slanting bridge is to be built over the Lune, commencing about the Ladies'-walk, and to come out near Skirton Mill. It will then be carried through a portion of Slyne, and will be about half a mile from Kendal. The statement, that it was intended to take the line through the Kendal Fields, and then to cross the Lune near the Ford, is wholly without foundation. The bill has passed the House of Commons, and is now only waiting the sanction of the House of Lords, which will not be obtained until after the Easter recess, when the works will be immediately proceeded with. Mr. Locke and Mr. Errington are now in London, expediting the undertaking as much as possible.—*Lancaster Guardian*.

*Atmospheric Railway.*—The *Journal des Debats* publishes an analysis of the report of M. Mallet, the celebrated engineer, who was sent specially by the French government to study the system of atmospheric railroads at Dublin, and who states the advantage of that system to be, all danger of accidents from fire is avoided, an almost impossibility of the carriage running off the road, and the utter impossibility of a collision between two trains. All the objections raised against the atmospheric system have been examined by M. Mallet, and this distinguished mathematician asserts that none of them are insurmountable; but one of the principal advantages of this system consists in its preventing the necessity of levelling the soil according to the present method. M. Mallet has likewise made a comparative calculation of the expense of the two systems, and he demonstrates that the atmospheric plan offers an economy of 140,000*f.* a league, or 2,000*f.* British per mile. M. Mallet concludes his report by recommending the government to make a trial of the atmospheric system, which the *Journal des Debats* believes will be carried into effect.

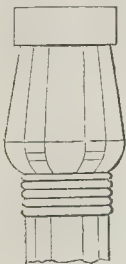
Athens, a city not much larger than Liverpool or Bristol, and all whose inhabitants might have been lost in Syracuse, produced, within the short period of two centuries, reckoning from the battle of Marathon, a greater number of exquisite models in war, philosophy, patriotism, eloquence and poetry; in the semi-mechanical arts, which always accompany or follow them, sculpture and painting; and in the first of the mechanical, architecture,—than all the remainder of the universe in six thousand years.—*Walter Savage Landor*.



## COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.—No. III.

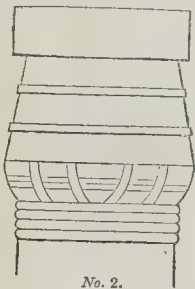
**ANNULET.**—Having noticed the signification of the abacus and echinus, two of the leading features of a Grecian Doric capital, we proceed to define the meaning of the word annulet, which is so closely connected with the above-named members. Mr. Gwilt's definition is,—“ANNULET (Lat. annulus), a small fillet, whose horizontal section is circular. The neck, or under side of the Doric capital, is decorated with thin fillets, listels, or bands, whose number varies in different examples. Thus, in the Doric of the Theatre of Marcellus, at Rome, there are three, whilst in the great temple at Pæstum, they are four in number, and in other cases as many as five are used.”—(*Encyclo.* p. 893.)

In attempting to illustrate this member, which is well expressed by its name *annulus*, being the diminutive of *annus*, a ring or circle, we must look to Egypt for its origin, for we shall find no corresponding feature in the timber construction, to which some writers would refer us for every detail of architecture. In an Egyptian column composed, to appearance, of a certain number of reeds tied together near their tops by a filleting of willow or cane passing two or three times round the clustered shaft, we shall not hesitate to recognize the origin of the annulets in a Grecian Doric column, and that such an opinion is not an assumption, we have only to look at a granite column now in the British Museum. A sketch of that column, whereof I do not recollect that any other writer has even taken notice, was given in No. 37 of *THE BUILDER* (p. 449), and to illustrate the present argument, the head of the column is again introduced, No. 1.



No. 1.

This column is very slender in its proportions; but in columns of more massive dimensions, more especially where the capital is bulbous,



No. 2.

as No. 2; the same arrangement of rings may be seen round the neck of the shaft, exactly like the hoops of a meal-barrel; and I conceive that the drawing together very tightly of these bands below, with the pressure of the heavy square tile above produces that swelling out of the part between, which, it is just possible, gave to the Greeks a hint for the echinus moulding, an opinion which will obtain by an attentive observation of several specimens of Egyptian capitals, wherein the oval shape of the lower part of the capitals is too obvious to escape notice.

The annulets in Grecian Doric columns vary as well in their profile as in their number. Some examples may be interesting, to shew the exhaustless genius of the Greeks, even in

details the most minute, and that although the general principles of art in their Doric order are the same, yet that they could produce great variety in their details. In the Parthenon, that best and purest of all examples, we find, under the echinus of the capitals in the porticos, five rings, placed on a slope, continued, as it were, from the lower link of the echinus, as shewn in No. 3; and in the columns of the



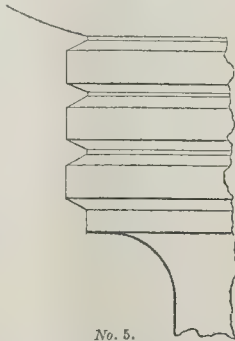
No. 3.

pronaos of the same edifice, there are but three rings. In the Temple of Theseus, the profile of the annulets is somewhat similar to that of the Parthenon; the rings are four in number, and the under side of the lower arris of each ring is slightly undercut; No. 4 is the



No. 4.

section of these annulets of their full size. In the example from the portico at Athens, presumed to belong to the Agora, or market-place we see (No. 5) how widely the artist



No. 5.

departed from the graceful and flowing outline of earlier patterns; this, of the age of Augustus, is one of the latest known examples of Grecian Doric, yet in many points it cannot be safely recommended for modern imitation.

In the Temple of Apollo Epicurius, at Bassæ, a building of the pure age of Greek art, the annulets are four in number, resembling in their contour those in the Parthenon, excepting that the second and third rings recede a little from a line drawn from the first to the fourth. At Rhamnus, where are two temples, at Sunium, and in the Dodecastyle portico of Ceres at Eleusis, the rings are three in number, profiled like the best

examples at Athens; at Ægæa and Selinus they are three in number; at the Temple of Jupiter Olympius, at Agrigentum, of Apollo in the Isle of Delos, and in the portico of Philip, at the same place, at Corinth (where the annulets have a great projection and are very deeply undercut), in the Hypæthral Temple at Pæstum, in the Temple of Diana, in the Propylæa at Eleusis, in the Propylæa at Athens (an excellent example), and at Thorius the rings are four in number. At the latter place, the annulets are remarkable, and probably singular in their way, as shewn by



No. 6.

the figure, No. 6. By figure No. 7 are shewn



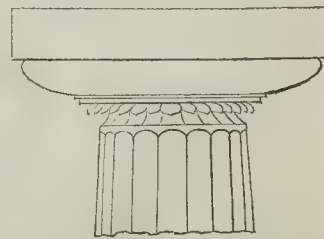
No. 7.

the annulets of a small column found in the Temple of Ceres at Eleusis, and supposed to have belonged to an upper range of columns. No. 8 is from the Temple at Cadachio, and



No. 8.

presents a very unusual arrangement. At



No. 9.

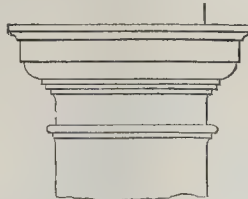
No. 9 is shewn a capital from the Pseudo-



dipteral Temple at Pæstum, in which many peculiarities are observable; the immense size and projection of the abacus seem to crush the echinus, which has beneath it two rings, under which the flutings curl in the form of leaves. At Selinus, Mr. Woods noticed some remarkable features in the capitals:—"The shape of these capitals is very peculiar; I have seen nothing like them in Greece, except a fragment on a very small scale which I noticed at Corfu. The common Grecian Doric capitals in the best examples form a sort of ogee, and we find this curve at the third temple, but in the great temple, and in two of the three smaller ones, a deep hollow interrupts the flow of the lines." These capitals were each cut out of a block of stone thirteen feet square.

In the two colossal Doric columns at Rome, erected in honour of Trajan and Antoninus, a carved bead and a fillet are placed beneath the echinus, which in these two columns is also enriched with the egg-and-anchor ornament, the only ancient instances, I believe, in which that member is found enriched in its position under an abacus.\* Sir C. Wren carved the echinus of his famous monument on Fish-street-hill, London, in the same way. In the Tuscan capital, but one fillet is placed beneath the ovolo, and in the Roman Doric usually adopted, three fillets are found, as shewn by

figure No. 10; these, like the annulets of the



No. 10.

columns of the Agora, appear to surround the neck of the shaft, instead of being placed on a slope continued from the echinus, as in the best Greek examples. It would appear, therefore, as if those who sought to improve (as they thought) the contour of Doric capitals, were content to take for their patterns examples of the latest and most debased period of Greek art, but it is difficult to conceive how any one, with the least pretension to taste, can prefer the vertical stiffness of the fillets in Roman and modern Doric capitals before the easy flowing of the annulets in the more antique examples, wherein the graceful sweep of the echinus gradually dies against the shaft of the column, a practice never lost sight of, although, as we have seen, the detail may be carried out with slight deviations. In the next paper, the word "*Hypotrachelium*" will be defined, which will conclude the description of a capital as far as the Grecian Doric order is concerned. G. R. F.

#### TIMBER SCARFING.

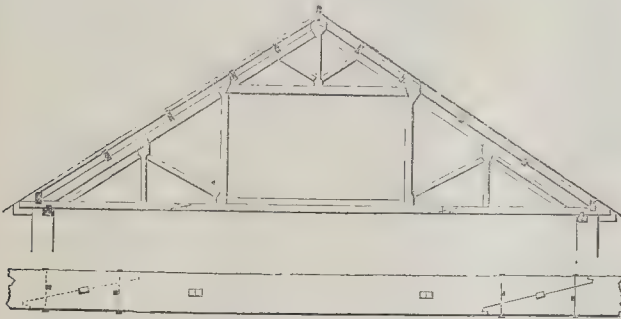
TO THE EDITOR OF THE BUILDER.

SIR,—Permit me to submit to you a sketch of a roof-truss at the Princess's Theatre to the tie-beams of which I more particularly wish to call the attention of your readers. As timbers of the required length were not obtainable in London, I had them sawn in halves, each half

extending to its required length, scarfed and bolted with oak keys through both flitches, to prevent expansion. This mode of scarfing I consider preferable to any in Mr. Wylson's paper on the same subject.

Wishing you to make all allowance for imperfection, I am, Sir,

A PRACTICAL CARPENTER.  
March 22, 1844.



(The Heading-Joints to a larger scale.)

#### SCANTLINGS OF THE TIMBERS.

	INS.	INS.		INS.	INS.
Tie-beams .....	14	11	Relieving principals .....	8	10
Principals .....	15	10	Struts to ditto .....	7	10
Crown-piece .....	14	10	Straining-sills .....	8	10
Upper principals to king-posts .....	9	10	Purlins .....	8	6
Oak king-posts (in shaft) .....	8	10	Hips and ridges .....	14	3
Struts to ditto .....	5	10	Rafters .....	6	2½
Oak principal queen-post (in shaft) .....	12	10	Extreme length of tie-beams 68 feet.		
Oak minor queen-post (in shaft) .....	7	10	Span, clear of walls, 63 feet.		

CROSS, BISHOPSTONE CHURCH, WILTS.; GARGOYLE, ST. PETER'S CHURCH, SHAFTSBURY.

TO THE EDITOR OF THE BUILDER.

SIR,—Your acceptance of my last contribution to your pages has induced me to forward for insertion in your useful periodical two more architectural details from my sketchbook.

The first is a stone cross on the eastern gable of Bishopstone Church, Wilts, which is a gem of the fifteenth century, lately brought into public notice, on account of the beautiful window, designed by Mr. Willement, placed in its south transept, to the memory of the Rev. — Montgomery. Now that the temporary prejudice



against the use of such a Christian emblem has disappeared, this might be employed in any ecclesiastical building with better effect than many which I have lately observed, so crowded with enrichment as to lose their original and obvious simplicity of form. If your numerous correspondents would make a point of each sending you the outline of at least one architectural beauty (as a cross, a crocket, a boss, a finial, &c.) from every village church that might come beneath their notice, I imagine that with the least possible trouble a collection might soon be formed both interesting and valuable; and THE BUILDER, in addition to the authority of practical weight which it at present possesses, would acquire the features of a "museum," from which the architectural designer, the sculptor, the wood-carver, &c.,

might always glean hints for the improvement of their details.

My second sketch represents what I take to be a "GARGOYLE" from the ancient Church of St. Peter, Shaftsbury and which I merely send you as a bold and spirited specimen of



the grotesque, worth preserving, however its applicability to buildings of the present age may be contested by some.

I am, Sir, yours respectfully,

Great Newport-street,  
March 25, 1844.



#### METROPOLITAN IMPROVEMENTS.

The following is the first report of the commissioners appointed by her Majesty to inquire into and consider the most effectual means of improving the metropolis, and of providing increased facilities of communication within the same:—

#### TO THE QUEEN'S MOST EXCELLENT MAJESTY.

We, the Commissioners appointed by warrant under your Majesty's sign manual, bearing date the 23rd of November, 1842, "to inquire into and consider the most effectual means of improving the metropolis, and of providing increased facilities of communication within the same," having held our first meeting on Thursday, the 9th of February following, at the office of your Majesty's Commissioners of Woods, &c., in Whitehall-place, and having continued our sittings from time to time up to the present date, humbly beg leave to lay before your Majesty this first report of our proceedings.

We have commenced these proceedings with a deep sense of the importance of the trust reposed in us, and at the same time with a conviction of its difficulties,—difficulties belonging not only to the extent, but to the nature of the inquiries which we are instructed to pursue.

The point to which in every kingdom a native looks with pride, and a foreigner with curiosity, is undoubtedly its metropolis. Other cities may be the especial depositories of learning, of science, of the arts, of manufactures, or of commerce, but the foreigner expects to find these all more or less represented in the chief city of the kingdom; and no enlightened native considers his acquaintance with his country complete till he has visited her capital.

London, as the chief city of England, from the period of its occupation by the Romans, has been gradually augmented in population and extent until it has attained to a magnitude exceeding that of any other European capital, and surpassing, in the number of its inhabitants, many of the smaller European states. With the increase of its limits, there has been a corresponding, perhaps more than corresponding, accumulation of wealth. It has become the central point of the commerce of the world; and, owing to its position in that respect, as well as to its being the seat of government and legislation of this vast empire, there have arisen, and become established within it, classes of interests—municipal, commercial, and professional—associated and represented in various ways (in accordance with our popular institutions), the magnitude and weight of which are without example in any other great city. These necessarily exercise, in their several spheres, an extensive influence on the public opinion; and as those influences are infinitely various, and often conflicting in their tendencies, they would present the greatest difficulties to the labours of this or any other commission that might be required to devise or to adopt any one general and systematic scheme for the re-construction of those parts of the capital of which the existing imperfections or deformities appear to call for removal or cure. And, even when confined to the task of selecting the most useful and practicable from the numerous plans for local improvements which have been referred by your Majesty's commands to this commission, in addition to which



many others have since been presented for our consideration, the difficulties arising from the same cause are by no means inconsiderable.

It is, however, our duty to pursue the latter course, and after bestowing upon these numerous proposals and plans our most deliberate consideration, and after carefully weighing, not only the intrinsic merits and comparative advantages of each, but also the difficulties and the cost of carrying it into execution, to lay before your Majesty our humble recommendation of those which to us appear to be the most worthy of adoption.

We are instructed by the terms of your Majesty's warrant under which we are appointed with respect to the general class of improvements which should chiefly occupy our attention, viz. those of which the object is to provide "increased facilities of communication within the metropolis." This description of improvement is, perhaps, at the same time the most useful and the most difficult. It necessarily involves the invasion of private rights, and often, to a great extent, of private comforts, by the compulsory acquisition of property for which the pecuniary indemnities may not always be an adequate compensation. It also unavoidably requires some outlay of the public money. But recent experience has fully demonstrated how extensive have been the advantages of such changes to the community in general, and how much exceeding the sacrifices made to obtain them. The general acquiescence in the acknowledgment of these useful consequences is in nothing more manifest than in the demand created, by what has already been effected, for further improvements of the same description. The plans before us are many in number, some being the suggestions of individuals, others emanating from district, parochial, or other public bodies. They are, as might naturally be expected, not unfrequently conflicting in their objects; but they are all entitled to that careful consideration which they will not fail to receive from us under the authority of your Majesty's warrant. We must, however, at the same time observe, that they present collectively designs for such a vast field of alteration, and would require the application of such enormous sums of money, that all hope of effecting, even with the most liberal disposition of Parliament, any considerable portion of them within any reasonable time must be abandoned. The utmost attention will be required in selecting such of them as may appear to possess the highest claims, and to be at the same time within the limits of practical, and not too expensive execution.

The plans of Sir Christopher Wren and of Sir John Evelyn for the restoration of London after the great fire are familiar to all who are acquainted with its history. The object of those plans was to effect a recast of the city under circumstances unusually favourable to the success of such an undertaking. But the fate of these attempts bears witness to the truth of the preceding observations, concerning the difficulty of effecting great and systematic changes in such a metropolis. They were thwarted by public bodies and individual interests. Although some improvements were undoubtedly made, the event itself appears to have had comparatively little influence upon the improvement of London, except that of accelerating probably the current westward of the nobility and the wealthier classes of the community, whose dwellings had fallen a prey to that calamity. Many of these erected edifices on the northern shore of the river, between Blackfriars and Westminster-bridges, upon the site of the present "Strand," and in the localities of Westminster and Soho, which in turn were abandoned for other and more eligible districts, in which few vestiges of their original appropriation remained at the commencement of the present century.

The vast and densely peopled space comprising the cities of London and Westminster, with the adjacent parliamentary boroughs and suburban districts, all now blended together under the common term of "the metropolis of the British empire," has been undergoing, however, between the commencement of the current century and the present time, more extensive and rapid changes than at any former period of its history since the great fire of London.

Of these it might be difficult to say whether the most remarkable were those which con-

sisted in the great extension of its limits by the addition of new buildings in all directions, or those which appear in the shape of improvements in the more ancient portions of it, by the alteration and re-construction of considerable districts.

The former of these have been effected entirely by private resources, or by the spirit of enterprise of individuals or associated bodies, which in the east has supplied the increasing wants of commerce, by the construction of splendid docks and warehouses, together with spacious lines of communication and corresponding habitations, in the vicinity of the port of London; and has ministered in other directions—more especially in the west and in the north—to the demands of expanding wealth and luxury, by the formation of new ranges of habitations, which in extent and beauty are not inferior to the capitals of many of the secondary states of Europe.

But with respect to the changes under the second head—the improvement of the more ancient portions of the metropolis,—these were not of a character to be accomplished, upon any extensive scale, by private means, nor without the intervention of the state and the authority of Parliament. They were, moreover, in every sense proper subjects for public aid, as they were not designed solely, or even especially, for the benefit and enjoyment of the more opulent inhabitants, but for the advantage and gratification of every class of the community. It is to this description of metropolitan improvement, and to the numerous plans which have recently been under the consideration of the government and of Parliament with relation to it, that the attention of this commission should, as we have already observed, be chiefly, if not entirely directed.

The immediate objects of these plans of improvement are, the accommodation of the public, by the amendment of inconvenient thoroughfares, the opening of new lines of communication, the substitution of spacious and handsome streets for tortuous, unsightly, and intricate lanes and alleys, inadequate for the traffic passing through them, and, in many instances, injurious to the health of those who inhabit them, by reason of deficient drainage and imperfect circulation of air. To such a city as London, with its immense wealth, its commercial circulation, its retail traffic, its mechanical industry, and its manufactures, far surpassing in these particulars every other capital in Europe, all such increased facilities for social and commercial intercourse must be matter of interest and advantage to every portion of its dense and varied population.

The constantly-growing necessity for some improvements of this description has at all times led to occasional and partial adoptions of them. On the part of the corporation of London, improvements of a highly convenient and beneficial character were made at former periods; but the first attempt to accomplish an extensive renovation of a considerable portion of the metropolis upon a great scale and a systematic plan, was made upon the suggestions and designs of the late Mr. Nash, under the immediate auspices of his late Majesty George IV. (then Prince Regent), and, under the authority of his government, carried into effect as a part of the ordinary management of the Crown property; and although the extensive improvements of a different character in Regent-street, at Charing Cross, and in the Strand, involved the purchase of private property to some extent, and necessarily, therefore, became subjects for especial legislative provision, yet they were devised in the same department, in connection with the property of the Crown, paid for out of its revenues, and involved in their accomplishment the sacrifice of a large portion of its estate.

We think it quite sufficient to advert to these circumstances to account for the locality in which these great improvements originated, especially when it is added that the Crown had, at that time, no estate at the eastern extremity of the town to which it could extend the same liberal policy. But they have proved the means of suggesting similar improvements on an extensive scale in other parts of the metropolis, so that both in themselves, and by their example, they have added greatly to the embellishment and to the substantial comforts of the town: and to the diffusion through all classes of society of that earnest feeling for

measures of this nature which is now admitted to prevail.

The considerations which governed those improvements from their commencement to their completion are set forth in documents already before Parliament and the public, and stated with a detail to which it would be impossible to do justice by any recapitulation in the present report. No one, we conceive, can read the reports of Mr. Nash upon the formation of the Regent's Park and Regent-street, and survey not only the immediate site of these improvements, but the improved condition of all property in the vicinity, without feeling how completely time has given confirmation to his opinions and justified his views, and without finding embodied in those opinions and those views nearly every principle which should govern the conduct of similar undertakings.

The facilities of which the government had thus availed itself, in devising and effecting these extensive undertakings on the estate of the Crown, were followed by the adoption of a system of improvement, upon a similar scale, by the corporation of London, with the aid of Parliament. Commencing with the removal of old London-bridge, and the substitution of the present structure, a series of improvements has been effected, and others are yet in progress, which reflect great credit on that body for the zeal with which they have been undertaken and the manner in which they have been conducted. Further plans, on a very extensive scale, for the continuation and extension of these improvements east of Temple-bar, have been recently prepared by the corporation, submitted to this commission, and will receive its early consideration.

The improvements now in progress in other parts of the metropolis, together with those which have been sanctioned by Parliament, though not yet commenced, may be shortly enumerated. Of the class first mentioned plans have been laid before us by the Commissioners of your Majesty's Woods, &c., who are themselves members of this commission, and under whom, by virtue of powers given, and with funds provided by Parliament, communications in the undermentioned lines of thoroughfare are now in progress of execution; viz.—

1. From the end of Oxford-street, at its junction with Tottenham Court-road, to Holborn, at its junction with Southampton-street.
2. From Hanover-street, Long-acre, at its junction with Bow-street, through Belton-street to Charlotte-street, Bloomsbury.
3. From the east end of Coventry-street, through Leicester-square, to the western termination of Long-acre; and
4. From East Smithfield, near the entrance to the London Docks, through Leman-street to Spitalfields.

By the improvements of which the expediency has been recognized by Parliament, but which are not yet begun, it is proposed to open new lines of thoroughfare in the following directions; viz. :—

1. From Farringdon-street West to Clerkenwell.
2. From Westminster-bridge to Southwark; and
3. From the neighbourhood of the Houses of Parliament to that of Belgrave-square.

Of these, however, the first is the only undertaking of which the details have been definitively sanctioned; the lines of the remaining two have yet to be arranged, and will, we presume, be brought under the consideration of the commission.

To defray the expense of these improvements, the committee of the House of Commons by which they were recommended submitted, in the first instance, that they might be provided for without any sensible addition to the local burdens of the inhabitants of London and its vicinity, by charging them upon existing funds assigned to the corporation of London for improving the approaches to London-bridge, inasmuch as the duty of 8d. per ton upon coal imported into London, which constitutes by far the larger portion of those funds, having proved much more productive than had been anticipated when they were thus appropriated, the charge upon them would be liquidated at an earlier period than had been contemplated; viz. in the year 1858, instead of the year 1862. The committee therefore recommended that in



lieu of allowing the appropriated funds to cease when the first incumbrance upon them should be paid off, they should be continued positively until the year last mentioned, and that such further sum as could be raised upon the credit of their surplus produce within that period should be made available to these new improvements. The committee having, however, been subsequently induced to recommend for early adoption some other plans, the cost of which could not be brought within the compass of that arrangement, they ultimately recommended to Parliament the extension of the several duties composing the fund in question for four years, viz. until the 5th of July, 1862, a recommendation which Parliament adopted. By means of the resources thus created, provision was made for the final cost of the four first-mentioned plans. But with regard to the three last enumerated, the sums applicable to them are only to be advanced in aid of monies to be provided by other parties, and on the express condition that they should be completed by those parties with that assistance. Upon that principle 25,000*l.* is to be assigned to the Clerkenwell line, 30,000*l.* to the proposed communication between Southwark and Westminster-bridge, and 39,000*l.* to the proposed improvements in Westminster.

It may be proper, however, that we should here observe, that as the nature of these improvements involves not only the ultimate cost thus to be provided for, but also an intermediate outlay of very large sums for the purchase of existing interests, a part only of which will be hereafter recovered by the disposal of new sites for building, the Commissioners of Woods, &c., were authorized by Parliament to raise the sums required for these advances on the credit of the land revenues of the Crown, without which measures the works could not have been executed.

The purchases authorized by Parliament out of monies, part of those revenues for the formation of a park, to be called "Victoria Park," in the neighbourhood of Hackney and Bethnal-green, are now in progress, in conformity with a plan which is annexed to the eighteenth report of the said Commissioners to her Majesty and Parliament. From the peculiar nature of the occupancy of much of this ground, which is held by market-gardeners, the purchases and clearings of the respective properties have been necessarily dependent upon seasons, but the formation of the park, we are informed, will be begun in the course of the present year.

#### EMBANKMENT OF THE THAMES.

Upon a careful review of the many subjects of improvement for which plans had already been before the public, or were subsequently submitted to us, we considered an embankment of the river Thames to have the first claim to our attention.

For a considerable period the condition of a large portion of the river in its passage through the metropolis has been the subject of observation and complaint; and although measures have at different times been submitted to Parliament, having its improvements for their object, yet nothing of a comprehensive nature has been effected.

The causes of the great change which has taken place in the bed of the river Thames, in that portion of its course which lies between London and Westminster-bridges, may be shortly stated. Among the first, if not the very first, of these in recent times, may be considered the removal of old London-bridge—a measure, no doubt ultimately beneficial to the interests of the river as a whole, but prejudicial for a time to the navigation immediately above it.

The operation of this change upon the condition of the river, and especially in the portions between the bridges, though great, and, as already observed, no doubt the immediate cause of the present embarrassing condition in its effects, and consistent in its character. It has produced, as was also to be expected, and is producing, a higher rise and lower fall of the tide than heretofore, and a general, though not uniform, lowering of the level of the river bed.

While the first of these consequences, however, has been immediate and manifest, the second, it is obvious, if left to the operation of natural causes, must necessarily be the work of time; and hence, in the interval, the navigation of the river must be difficult at certain

states of the tide.

The shoals and irregularities, however, which constitute the greater portion of this difficulty, are, in the evidence before us, attributed to other causes. We are referred to a want of uniformity in the bends and curves of the river, to the disproportion between the breadth and volume of its waters, and probably to the varying nature of the material forming its bed, as natural agents in working out these results, and, as artificial causes, to projections and recesses in the shores, irregular dredging, and other evils alleged to have arisen from imperfect conservancy.

The conservancy of the river Thames is a privilege and a trust vested in the corporation of London by very ancient charters, confirmed and renewed at various periods. The exact extent of the rights and of the duties thereby assigned to that body have been the subjects of much diversity of opinion, and of dispute and controversy both in and out of Parliament, strongly shewing the necessity for some legal decision, or legislative adjustment, upon a matter of so much practical importance. Upon these points, however, it does not appear to us that it is within the province of this commission to express an opinion; we therefore conceive that we shall sufficiently discharge our duty under this head, by soliciting the attention of your Majesty to the information furnished on this subject (extracts of which are annexed to this report) by the Commissioners on Municipal Corporations, by the committee of Parliament on the port of London, and by the City of London Navigation Committee.

Under the authority of the corporation of London, and, on some occasions, under special authorities obtained from Parliament, the river has been extensively, though not systematically embanked, and its water-way irregularly contracted, as will be seen by a plan, annexed to this report, of that portion of the river which flows immediately through the centre of the metropolis.

Other embankments we find are in progress at the present time, under licences granted by the corporation, of which embankments plans are also appended.

The effect of these partial and occasional embankments has been from time to time to alter the currents of the river, and to impair its navigable channel.

The embankments constructed under the authority of Parliament are few. The first of these was projected by Sir Christopher Wren immediately after the fire of London. The object of this embankment was "to make a commodious quay on the whole bank of the river from Blackfriars to the Tower;" and under the authority of the Act of Charles II. for rebuilding the city, and a subsequent Act of the same reign, it was partially carried into effect.

Under the first of these acts no house, out-house, or other building whatsoever, was to be erected from Tower-wharf to Temple-stairs, within 40 feet of the river, cranes and sheds for present use only excepted.

Although few traces of such a way are at present to be found, yet a portion of it, from the Tower to Castle Baynard, was actually executed. Encroachments, however, were subsequently made upon it from time to time, and in the year 1821, "notwithstanding a very decided opposition to the measure in both Houses of Parliament, on the part of the corporation of London, and the inhabitants of Upper Thames-street and its vicinity," the Act in question was repealed.

No further plan for regulating or improving the banks of the river was entertained till the year 1767, when a measure was submitted to the corporation of London for raising 300,000*l.* for the completion of Blackfriars-bridge by embanking the north side of the river between Paul's Wharf and Milford-lane, upon a line extending about half a mile in length. Arrangements were subsequently entered into with the societies of the Middle and Inner Temple, and other parties, by which this embankment ultimately included the frontage of the Temple-gardens.

The terms in which this proposal was submitted to the corporation would apply with very little variation to many parts of the river at the present day; and considering that a century at least had then elapsed since any measure has been attempted for the "regula-

tion and improvement" of its shores, and that another century has very nearly arrived at its completion, the statement is not undeserving of attention. "The wharfs," it is observed, "within those limits, by their different and very unequal encroachments, not only form an irregular and disagreeable outline, but afford the owners of some an undue preference and advantage over others; at the same time that the reflected set of the tides, both ebb and flood, throws the force of the stream upon the Surrey shore, opposite to Blackfriars, and of consequence slackens the current on the London side; this, together with the large sewers that empty themselves in the neighbourhood, occasions a constant accumulation of sand, mud, and rubbish, which not only destroys great part of the navigation at low water, but renders the wharfs inaccessible by the loaded craft, even at high water, unless at spring tides; the mud and filth thus accumulated, notwithstanding the frequent expense the wharfingers are at to clear it away, is, when not covered with water, extremely offensive, and in summer time often dangerous to the health of the neighbouring inhabitants."—The corporation of London, it is presumed, acquiesced in the correctness of these statements, inasmuch as they adopted the plan; and powers were subsequently given by Parliament for carrying it into effect.

The next embankment of importance took place at Durham-yard and the places adjacent, now known as the site of the Adelphi-terrace, and the buildings connected therewith. In the years 1768, 1769, and 1770, Messrs. Adam and other parties applied to the corporation of London for their consent to this embankment, but without effect. The Court of Common Council not concurring, the parties applied to Parliament for an Act enabling them to effect a large embankment in that vicinity, not in the lines originally proposed, which Act was subsequently obtained, notwithstanding the most decided opposition on the part of the corporation in every stage of the bill, and notwithstanding that the clauses subjecting the ground to be gained from the river to the acknowledgment originally offered to the corporation were not inserted in the Act.

Within a comparatively recent period, further embankments, upon a scale of considerable magnitude, have been effected in the same portion of the river. We refer especially to the embankment which forms a part of the present site of Hungerford-market, and which was sanctioned by the legislature in connection with that measure; and to the projection devised for the enlargement and rebuilding of the palace at Westminster for the accommodation of the new Houses of Parliament.

"During the last fifty years," it appears, "numerous grants have been made, under the sanction of the corporation, for embankments in various parts of the Thames, throughout the jurisdiction of the city of London, by which the general line of the river, to a certain extent," is alleged to have "been regulated and improved." It was not, however, until within the last fifteen years, and under an order of the common council, that the balance of monies received on this account, and for other accommodations on the river, after deducting the expenses applicable thereto, were brought in aid of the conservancy.

The insufficiency of the funds strictly applicable to the purposes of the conservancy appears to have long formed a subject of complaint on the part of the corporation, and we presume, that to this, among other causes, is to be attributed the fact that, as far back as there is any evidence of the defective condition of the river, previously to the year 1840, there is no trace of any measure for a general and systematic improvement of the navigation, or regulation of its banks, having originated with that body.

Of the attempts made in Parliament to apply a partial remedy to this state of things, mention will be made hereafter. They failed, as it appears to the commission, from causes which need not any longer operate:—In the first instance (in 1825), under an apprehension that the removal of old London-bridge was too recent to admit of any accurate opinion being formed as to its effects; in the second (in 1840), from the indefinite character of the measures proposed, and from the opposition of the wharfingers, and others in trade, to the plan



upon which those measures were to have been founded.

The first of these plans bore date in 1824, and was projected by Sir F. Trench. Its object was to embank a portion of the northern shore of the river between London and Westminster bridges, and to make it available as a public thoroughfare. The proceedings consequent upon that plan, including the formation of a public company to carry it into effect, are detailed at some length in his "Collection of Papers relating to the Thames Quay," published in 1827.

Sir Frederick Trench, and the other promoters of the undertaking, after memorializing the corporation as to its rights of conservancy, and the Crown as to its rights over the soil, petitioned Parliament for a Bill on the 15th of February, 1825. On the 18th of the following month the question, that leave be given for its introduction, was carried by a majority of 40 in a house consisting of 130 members. It was suggested, however, that the information then possessed, as to the effect which the removal of the bridge might produce, was too imperfect for immediate legislation, and after a petition against the measure, presented on the 15th of April, it appears to have been dropped.

On the 23rd of March, 1840, the corporation of London applied to Parliament for power to embank both sides of the river between London and Vauxhall bridges. Adverting to the proceedings in 1835 before the select committee on the building of the new Houses of Parliament, to the embankment immediately consequent upon those proceedings, and to the expediency of the continuation of an embankment at Westminster for the improvement of the navigation of the river, it was the object of the application in 1840 to shew that, upon considerations irrespective of the navigation, an embankment so continued would be beneficial to the metropolis at large, and as such deserving the aid of Parliament. On the 30th of the same month a select committee was appointed, "to report its opinions and observations thereupon to the House, together with the best means of carrying the same into effect."

The plan which formed the basis of this petition had been prepared by Mr. Walker, under the direction of the corporation, and embraced the embankment on both sides of the river, between London and Vauxhall bridges. On referring to the copy of this plan appended to our report, it will be found to differ from the later suggestion of the same gentleman, in including in the embankment on the Surrey shore two arches of Waterloo-bridge, and in other particulars of minor interest and importance, which it is not essential to specify.

The committee suspended its sittings on the 29th of July, 1840, without bringing its inquiries to a close. It reported that "several petitions both for and against the measure having been referred to the committee of the House, and many witnesses, both for and against the intended plan, being proposed to be examined, it was obliged, by the near approach of the prorogation of Parliament, to conclude the inquiry without the examination of many plans for the embankment of the river, or the consideration of any plan for the improvement of the navigation without any alteration of the present lines of shore; and that upon the general subject, therefore, of the improvement of the navigation, with or without any embankment, in the present state of the inquiry, it gave no opinion." From that period all further notice of the subject ceased in Parliament.

In July, 1841, Sir Frederick Trench addressed a letter to Viscount Duncannon, then Chief Commissioner of your Majesty's Woods, &c., stating the means by which the plan of Mr. Walker and his own might, in his opinion, be combined. At that period, however, a general survey of the river was understood to be in progress, from Putney to Gravesend, under the direction of Mr. Walker, on the part of the corporation, Captain Bullock, with the sanction of the Admiralty, Mr. Saunders, the water-bailiff to the city, and Mr. Leach, the clerk of the works to the Navigation Committee. The reports and plans, the result of this survey, together with a report from certain members of that committee, were laid before a common council holden on the 20th of Jan.,

1842, and subsequently printed for the use of the court. On application to the Navigation Committee we were furnished with copies of these documents.

Upon the appointment of this commission, Sir Frederick Trench addressed a letter to our chairman, expressing his desire to lay before us his plan for "a railroad between Dowgate-dock and Hungerford-market, with a second line from Hungerford to Westminster-bridge." His object, as stated in that letter, was "to connect this plan with the erection of an embankment for the improvement of the navigation of the river, and combining these with the removal of existing nuisances, to confer immense advantages upon the inhabitants of the metropolis, not only without any demand upon the public purse, but so as to produce a large surplus after defraying the whole expense of the embankment proposed by Mr. Walker."

In compliance with his desire, the commission requested the attendance of Sir F. Trench, and examined him at some length as to the objects and alleged advantages of his plan, its practicability, and its probable expense. In doing this, it was necessary to assume the adoption of the principle of Mr. Walker's plan of embankment, Sir F. Trench's calculations and arrangements having been adapted to that plan.

#### PLAN OF SIR FREDERICK TRENCH.

The plan of Sir F. Trench is explained in a statement addressed to his commission at the commencement of his evidence. Referring to the terraces at Nice and Genoa, he observes, "Between those terraces and that which I propose, there would be this difference—that, instead of a promenade, the top of the colonnade along the north bank of the Thames would be occupied by that which would be the source of all the profit which I anticipate, namely, a railway of communication. Mr. Walker's line of embankment is before the commission. My proposal is to adopt that line, with some trifling alterations, and on it to erect a terrace, supported by columns, upon which a railroad shall be constructed. I suppose the columns to be 14 feet high, and a covered promenade under the terrace of that height. Between this covered walk and the river there may be a trottoir, with steps descending into the river where required. On the other side will be a passage for carriages and horses; and commercial operations may be carried on under the covered way. Wagons can back to the river between the columns; machinery can lift the coals from the barges, which will be moored in deep water at the bank; and the occasional interruption to passengers along the promenade will not be one tithe as much as that which occurs every hour of the day from the traffic of omnibuses in Cheapside and the Poultry." The proposition of Sir F. Trench thus contemplated uninterrupted lines of communication, both for foot passengers and the ordinary traffic of a railway, extending from Westminster-bridge to Dowgate-dock—the former at an elevation of 4 feet, the latter at an elevation of 18 feet above Trinity high-water datum, without traversing the roadways of the respective bridges, without hindrance to the trade of the river shore, and without prejudice to the navigation.

Practical difficulties, it appeared to the commission, presented themselves to the execution of this plan, and these were not lessened by Sir Frederick Trench's assumption of Mr. Walker's line and principle of embankment for its basis. Of Mr. Walker's plan, as explained in his evidence before the select committee of 1840 (to which only Sir Frederick Trench could be referring in his address to the commission), the line of the embankment was the only point to be positively fixed upon. The execution of it was to be left to the voluntary determination of individual proprietors, and its projector could assign no definite or even probable time for its completion.

Assuming the commission, however contrary to Mr. Walker's design, to be prepared to recommend the compulsion and other course inevitably associated with any other course of proceeding, the proposal of Sir Frederick Trench to carry his railway under Blackfriars-bridge suggested the first difficulty. The embankment of Mr. Walker was to include only the northernmost, and consequently the lowest of its arches on the Middlesex shore, the

centre of which above Trinity high water datum is only 16 feet 6 inches. Allowing some provision to be made against the occasional occurrence of higher tides, it would be necessary, therefore, in the construction of the embankment, to abridge this headway by at least three feet (Mr. Walker had taken four), leaving a disposable elevation, for the colonnade, together with the traffic upon the roadways beneath and above it, of something between 12 and 13 feet.

As the average height of the embankment and colonnade would, according to the proposal of Sir F. Trench, be 18 feet, it became evident that even the line of the railway on the colonnade, independently of the space required for the carriages intended to be moved upon it, could not be made to pass under the arch without material deviation from the height assigned to it. It was manifest, indeed, that unless the line of the railway were actually brought down to the same level as that of the road upon the embankment itself, the traffic upon it could not be carried under the bridge; and further, that in order to effect this object, a gradual depression of the railway, occupying on either side of the arch a space of 1,000 feet, must be resorted to. Such was, in fact, the proposal ultimately made by the projectors for overcoming this difficulty.

But it was obvious that, by these depressions of the upper line, the continuity of the lower roadway must be destroyed, and the advantages of a promenade as well as of a carriage-way be thereby excluded. The use of the embankment for the purposes of trade would also be taken away within a considerable space adjacent to the bridge; and this circumstance created an objection of so much the greater importance, as the business transacted at that part of the river is considerable.

These difficulties, inseparable from the adoption of the first arch of the bridge for the purposes of this plan, led to the suggestion by its promoters of substituting the second arch for the same object. This would not, indeed, have been in accordance with the plan of Mr. Walker, upon which that of Sir F. Trench professed to be grafted, but it was observed, in reply to that objection, that "the line of that embankment might be the best for Mr. Walker's plan, but not for an embankment with a railway."

Little doubt, we conceive, can exist, that whether for the railway, the continuance of a public promenade, or the important interests of the trade in this locality, the second arch of Blackfriars-bridge would in all respects suggest the less objectionable expedient; it would give additional headway, and if a line of solid embankment were adopted, offer less interruption to all those purposes to which wharfage is generally applied. But interests of much greater importance, as it appears to us, intervene to determine this part of the question. The width of the river at Blackfriars-bridge is only 978 feet; the deductions from its waterway for an embankment including one arch only, and for piers, may be taken at 270 feet; its navigable channel, consequently, would remain little more than 700 feet. It would be impossible, therefore, we conceive, at this point, to project any solid embankment into the river beyond the arch in question, with a due regard to the interests of the navigation.

A further difficulty opposed to the plan of Sir F. Trench we have, perhaps, in some measure anticipated, when we referred to the uncertainty attending the completion of that of Mr. Walker. Mr. Walker's plan comprised recesses of considerable width. To carry a railway across these, at an elevation of 18 feet, might of course be practicable; but it is obvious that a public promenade of the character, in the direction, and upon the level proposed by Sir Frederick Trench for his quay, would be adverse to all the objects for which these recesses were designed; and that, if the two are to form part of the same measure, the embankment throughout its whole line must be completed in the first instance.

Having pointed out these preliminary, and, as it appears to us, insuperable objections to the plan of Sir Frederick Trench, we deem it to be superfluous to advert to minor difficulties affecting the expediency, the utility, or the financial details of his suggestion, combined with those of Sir Frederick Smith and Mr.



Bidder. The evidence relating thereto is annexed to this report, and estimates will be found in the appendix. These will, no doubt, be perused with the attention which they deserve, and with that which is due to Sir Frederick Trench as the early proposer and persevering promoter, through a long period, of an embankment of the river.

(To be continued.)

## Correspondence.

SHAM SURVEYORS.

SIR,—I have observed in your last week's number of *THE BUILDER* an article under the head of "Disgraceful Practices of Sham Surveyors," signed "Z." From having been brought up to the profession and practising in it, I have ventured to correct some of your correspondent's statements. I am well aware there are many persons practising as surveyors who have not the least pretension to the name of surveyor, and have not been in any way educated or brought up to the profession. I have endeavoured to shun such men, and have always been at a loss to know upon what capabilities persons who commence business as auctioneers attach to their calling that of surveyor. I believe there are some few exceptions; such as where auctioneers are qualified and have had professional tuition, and can claim to be surveyors; but unfortunately on every auctioneer's card, will be found the word surveyor, and perhaps many of them may have been brought up as farmers, greengrocers, milkmen, &c., and in a variety of businesses quite contrary to that of a profession so intricate as that of a surveyor. It is of this class of surveyors the profession have most to complain.

Your correspondent is most decidedly wrong in his remarks on the very useful (and as may be termed the professional) body of builders' clerks, the major part of whom are men of respectable families, and have been regularly educated and brought up to the profession, both as architects and surveyors, and at great cost to their friends, though by some unforeseen occurrence or for want of sufficient interest to get their abilities put forward in the world, they are obliged to seek employment in builders' offices, and doubtless have been found by builders a very useful body of men. Generally they are persons who derive much practical knowledge (in addition to the theory they have before acquired) from the diversity of business, and in the superintendence of works connected with first-rate men as architects, surveyors and engineers. I do not think the profession has a right to complain of this class of men, unless they will for the future object to take any pupil who would be bound not to act in the capacity of clerk to a builder, which would be quite impossible.

I have known instances of men who have turned surveyors from some separate trade connected with the building business, such as masons, plumbers and bricklayers, and have presumed to take off quantities for builders, and have through some interested friend been put forward to the detriment of the surveyor of long-standing. I boldly say it is such men as these that the profession and the respectable builder have to exclaim against. Trusting the time will arrive when such nefarious practitioners will cease to exist, I am, Sir,

April 1, 1844.

A.

### METROPOLITAN BUILDINGS REGULATION BILL.

SIR,—Verily, we poor men engaged in building must be a strange race, if it be absolutely necessary to consider and punish us as common felons. It would seem to be quite enough to visit us with penalties varying from fifty shillings up to twenty pounds for peccadilloes; but it seems that we are capable of crimes so enormous as to require a little severer castigation; and two justices of the peace, whether they be Solons or Sir Andrew Aguecheeks, are to have power to fine us from 5*l.* to 100*l.* a day for one kind of offence, and from 5*l.* to 500*l.* a day for another kind of offence; and further, if this mild and fatherly correction should not be enough to bring us to our senses, or should we be so poor that the seizure of all our sticks will not raise money enough to liquidate these merciful visitations, we are to be thumb-screwed a little more by imprisonment in the "common gaol or house of correction"

for three months or six months, according as we shall be more or less wicked, or more or less poor, and all this at a time when "humanity" is the watchword of the day. It is very difficult to conjecture in what school the concocter of the bill has been bred; but it requires no lantern to find out it was not in the school of lovingkindness. It is to be hoped this loathsome blot will be wiped away, and such penalties only enacted as, while they ensure obedience to the law, will breathe somewhat of the spirit of Christianity. There is indeed some consolation for builders. If they are to be curbed in with bit and bridle by district surveyors, these same gentlemen are shewn not to be a whit more trustworthy, but are to be themselves curbed in by the official referees, and to be subject to correction, fine, and dismissal. They will have a nice life of it, and I fancy that the official referees will find themselves not quite in a bed of clover, at least as far as work goes. But they are to be well paid, and rightly so, if the payment were all righteous; but why the district surveyor is to be paid ten shillings for measuring the width of a street, and which fee he may demand and get from every house in every street, young or old, I am quite at a loss to conceive. Nor can I readily conjecture why justices (who may be fathers or uncles of district surveyors) are to have power to order the district surveyors to be paid for loss of time, or why district surveyors and official referees are to be empowered to assess their own charges. (See clauses 14, 18, 40, 46.) I can suppose that some strippling in legislature may have vanity enough to fancy himself wiser than his forefathers, and set down a new order of rating, and a new enumeration of the stories of a building; and I

can laugh at his sapient folly. But when I see the meditated destruction of an enormous amount of house property, which has not only grown up under the fostering care of a solemn Act of Parliament, but which has also been stunted in its growth by that act of the legislature which compelled builders not to make fourth-rate houses of more than 350 superficial feet, and as a necessary consequence, not to make the back rooms 100 feet superficial, I can scarcely suppose that I live in a land where justice has a local habitation. I must hope that this cruel wrong will not be persisted in. This is too serious for a smile; but we may indulge in a little mirth over clause 49, of which the indefiniteness is so perfectly ridiculous, that truly our worthy friend "Punch" must have tried his very funniest hand at it:

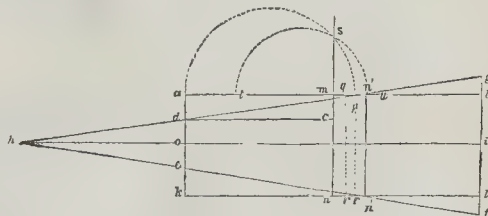
"Sometimes to sense, sometimes to nonsense leaning,  
And blundering somehow round about a meaning."

However, Sir, as a whole, the Bill is a very great step in advance of all late attempts, and if it be made just, if it be made merciful, and if it be made easily comprehensible, as with some correction it may be, the metropolis will owe some thanks to its promoters.

I am, Sir, your much obliged servant,  
April 9, 1844. BRICKBAT.

### CUTTING A TAPERED PLANK.

SIR,—Your correspondent, S. Huggins, says he believes this question, though seemingly simple, cannot be solved but by an algebraic equation of two unknown quantities, I beg to submit the following solution without assuming any quantity, but by simply working the given quantities:—



Let the annexed figure, *defg*, represent the plank whose length, *oi*, is equal to *l*, breadth, *fg*, equal to *B*, and *dc* equal to *c* by the question; produce *gd* and *fc* till they meet in *h*, and draw *hi*. Then, by similar triangles,  $B - c : l :: c : \frac{cl}{B - c}$  or the length *ho* required to complete the triangle *fhg*, for which put *p*.

Then will  $\frac{p \cdot c}{2}$  = the area of the triangle *dhe*.

And  $\frac{B + c}{2} \cdot l$  = the area of the plank, for which put *a*.

Then  $\frac{a}{2}$  = the area of each piece.

Euclid 6 and 19,  $\frac{p \cdot c}{2} : p^2 :: \frac{p \cdot c}{2} + \frac{a}{2} :$

$$p^2 + \frac{a}{c} \cdot p.$$

And  $2\sqrt{p^2 + \frac{a}{c} \cdot p}$  = the distance from the point *h*, where the plank must be cut.

$\therefore 2\sqrt{p^2 + \frac{a}{c} \cdot p} - p$  = the distance to be measured from the narrow end.

And  $l + p - 2\sqrt{p^2 + \frac{a}{c} \cdot p}$  = distance to be measured from the wide end.

And  $p : c :: 2\sqrt{p^2 + \frac{a}{c} \cdot p} : c$  : the width of the plank where cut.

$$= \frac{c}{p} \cdot 2\sqrt{p^2 + \frac{a}{c} \cdot p} = 2\sqrt{C^2 + \frac{a}{p} \cdot c} =$$

width of the plank where cut.

$$\text{But } p = \frac{cl}{B - c}$$

$\therefore 2\sqrt{\frac{c^2 l^2}{(B - c)^2} + \frac{a \times cl}{B - c} - \frac{cl}{B - c}}$  = the distance to be measured from the narrow end, from which we have the following rule:—

Divide the product of the length and narrow end by the difference between the two ends<sup>a</sup>, and call it a certain sum; then the area of the plank multiplied by this certain sum and divided by the narrow end, added to the square of the certain sum, and from the square root of the sum last found, subtract the certain sum; the remainder is the distance to be measured from the narrow end, and the square root of the sum last found multiplied by the narrow end and divided by the certain sum, the quotient will be the width of the plank where cut; or, Geometrically—

Let the figure, as before, represent the plank, divide the length in two equal parts by the line *mn*, and through *m* and *n* draw the lines *ab*, *kl*, parallel to *hi*; now as the triangle *dgm* equals the triangle *gbm*, and the triangle *ken* equals the triangle *fen*, it is clear if the two triangles were cut off the larger trapezoid *mngf*, and put on the smaller one *dgm*, and the plank cut on the line *mn*, the two areas would be equal; it is therefore evident, to answer the conditions of the question, the areas of the two triangles must be taken from the larger trapezoid *mngf*, from which complete, the parallelogram *dgm*, which will equal the area of the two triangles *gbm*, *fen*, make *mp* equal *mc*, and describe the semicircle *asp*, cutting *mn* produced in *s*, bisect *mp* by the line *qr*, then it is evident, if the line *qr* equals the line *am*, a line drawn through *p* would answer the condition of the question; make *mt* equal to *qr*, and describe the semicircle *tsu* through the points *t* and *s*, bisect *um* by another line *qr*, and make *mt* equal to *it*, and repeat the operation until the line *qr* shall coincide with the middle of *mn*, then a line drawn through *u*, parallel to *mn*, will be the place where the plank must be cut.

For  $qr \times mu$  = the area of the trapezoid *mnwv*, but  $mt = qr$ .

And by Euclid—2nd and 14th,  $mt \times mu = m^2 s^2 = qr \times mu$ ,

and  $ma \times mc$ , or  $(mp) = m^2 s^2$ ;

hence  $qr \times mu = ma \times mc$ , Q. E. D.

I remain yours, &c. P. A. R.



## CHIMNEYS AND CLIMBING-BOYS.

Sir,—In the report of the Master Carpenters on the proposed new Building-Act, it is suggested that "the wearing away of flues would be greatly diminished if the legislature would permit climbing-boys, say of not less than fourteen years of age, and duly licensed, to sweep chimneys as formerly, instead of the very imperfect method of cleansing them by machinery."

Now, it does appear to me that boys of the age of fourteen could never ascend the existing old flues 14 inches by 9 inches, to say nothing of many only 9 inches by 9 inches. The next question to be considered would be, what size flues should be made in order to admit climbing-boys of that age. But I trust and hope the legislature will never permit the revival of an occupation so inhuman and degrading. Surely some plan may be adopted for the future construction of that portion of building which will admit of machine-cleansing, and that the legislature will give the subject their consideration in framing the new Act. HUMANITUS.

Sir,—Perhaps you or any of your scientific readers would inform me of the best mode of building a brick column. I want to form an Ionic colonnade in the interior of a church, which is to support the roof; the diameter of the columns is two feet. Hoping this is not too great a trespass upon your columns,

I am, Sir, your obedient servant,  
Waterford, April 5th, 1844. J. T.

## Current Prices of Metals.

April 4, 1844.

	£.	s.	d.	£.	s.	d.
SPELTER.—Foreign ton ..	0	0	0	23	0	0
" For delivery ..	21	5	0	21	10	0
ZINC.—English sheet ....	0	0	0	30	0	0
QUICKSILVER ..	0	4	6			
IRON.—English bar, &c., per ton ..	5	10	0			
" Nail rods ..	0	0	0	6	0	0
" Hoops ..	7	15	0	8	0	0
" Sheets ..	8	10	0	8	15	0
" Cargo in Wales ..	0	0	0	5	0	0
" Pig, No. 1, Wales ..	0	0	0	3	5	0
" No. 1, Clyde ..	0	0	0	2	10	0
" For, Swedish ..	10	5	0	10	10	0
" Russian, CND ..				16	10	0
STEEL.—Swedish keg ..	p.	ton	18	10	0	
" Faggot ..	0	0	0	19	0	0
COPPER.—English sheathing, per lb. ..	0	0	0	9	2	
" Old ..				0	8	
" Cake p. ton ..	0	0	0	84	0	0
" Tile ..	0	0	0	82	0	0
" S. American ..	0	0	0	75	0	0
TIN.—English, blocks, &c., cwt. ....				3	13	0
" bars ..	0	0	0	3	14	0
" Foreign, Banca ..	0	0	0	3	8	0
" Straits ..	0	0	0	3	4	0
" Peruvian ..	0	0	0	3	0	0
Tin plates, No. 10, p. box ..	1	5	0	1	10	0
" No. 12 ..	1	11	0	1	16	0
" wasters 38 p. box less ..						
LEAD.—Sheet milled ..	per	ton	17	15	0	
" Shot, patent ..	0	0	0	19	15	0
" Red ..				21	10	0
" White ..				23	10	0
PIG-LEAD.—English ..	0	0	0	17	0	0
" Spanish ..	0	0	0	16	10	0
" American ..	0	0	0	16	5	0

BISHOP FARRAR'S MONUMENT.—The subscribers are respectfully informed that this monument has been erected in St. Peter's Church, Carmarthen, as intended, and the expenses paid by the original proposer. That gentleman also begs leave to acquaint the piously and generously disposed subscribers that by reason of the talented and judicious execution of the work by the sculptor, no further funds are required, and therefore they may please to receive back their subscriptions on applying to the bankers to whom such subscriptions were originally paid.—Lansdown-parade, Cheltenham, April 10.—Morning Post.

NEW CATHOLIC CHAPEL.—The ceremony of laying the foundation stone of a new Catholic Chapel took place in the retired village of Blackbrook, near St. Helen's, on Monday last. The church will be in the style of Catholic architecture of the fourteenth century. It will consist of a nave 75 feet by 24, a chancel 30 feet by 18, with a chantry chapel, sacristy, and porch, and will be surmounted by a bell gable over the east end of the nave. The design is by Mr. Hadfield, and the decorative part will be executed by Mr. Bulwer.

## Tenders.

TENDERS delivered for building a pair of Cottages at Brentwood, Essex, for Ammon Mount, Esq., James Edmeston, Esq., Architect, April 8, 1844.

Winter (Brentwood) ..	£1,548	0	0
White (ditto) ..	1,530	0	0
Ashmole (Ilford) ..	1,496	0	0
Curtis and Sons (Stratford) ..	1,448	0	0
Hill (Brentwood) ..	1,278	15	8
Norris (Hackney) ..	1,247	0	0

Opened in the presence of the parties.  
TENDERS delivered for a house at the same place, for Mr. Thompson, same Architect.

Winter (Brentwood) ..	£1,445		
White (ditto) ..	1,442		
Norris (Hackney) ..	1,127		
Curtis and Son (Stratford) ..	1,094		

## NOTICES OF CONTRACTS.

For works required in the enlargement of the Liverpool Workhouse.—Day for sending in Contracts, &c., postponed sine die.

For making certain repairs on the Church of Bethelvie.—Plan, &c., J. Smith, Esq., Architect, Aberdeen. April 17.

For Erecting a Church at New Radford, near Nottingham.—Plans, &c., H. J. Stevens, Esq., Architect, 16, Full-street, Derby.

For executing extensive Additions and Repairs to the Manse of Mortlach, and for Erecting new Offices there.—Plans, &c., at the Manse. Farther particulars T. M'Kenzie, Esq., Architect, Elgin. April 17.

CAMBRIDGE.—For the several works to be executed at the corner of St. John's and Bridge-streets. Mr. Clemence, Surveyor, Chesterton-road. The day for receiving Tenders not fixed.

For certain alterations about to be made at the Bath Gaiety.—Plans, &c., at the Gaiety, F. George, Esq., Town Clerk, Guildhall, Bath. April 20.  
For Paving with Wood a portion of St. Andrew's-street, Cambridge, containing 352 superficial yards or thereabouts.—F. Randall, Clerk to Commissioners. April 23.

## PREMIUM.

£150 for the best design, plans, and estimates for a Pauper Lunatic Asylum, Derby (unless the person furnishing the same be employed to superintend the execution of the works); £100 for the second best design, and £50 for that which may be considered next in merit.—Mr. Barber, Derby. April 20.

## MEETINGS OF SCIENTIFIC BODIES.

To-day and during the ensuing week.

SATURDAY APRIL 13.—Royal Botanic, Regent's-park, 4 P.M.; Westminster Medical, 32, Sackville-street, 8 P.M.

MONDAY, 15.—Statistical, 11, Regent-street, 8 P.M.; British Architects, 16, Lower Grosvenor-street, 8 P.M.; United Service Institution, Middle Scotland-yard, 9 P.M.; Chemical, Society of Arts, Adelphi, 8 P.M.; Medical, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 16.—Free-Traders of the Church, St. Mark's Chapter, 8 P.M.; Linnaean, Soho-square, 8 P.M.; Horticultural, 21, Regent-street, 3 P.M.; Civil Engineers, 25, Great George-street, 8 P.M.

WEDNESDAY, 17.—Society of Arts, Adelphi, 8 P.M. (anniversary); Geological, Somerset House, 8½ P.M.; Microscopical, 21, Regent-street, 8 P.M.

THURSDAY, 18.—Royal, Somerset House, 8½ P.M.; Antiquaries, Somerset House, 8 P.M.

FRIDAY, 19.—Royal Institution, Albemarle-street, 8½ P.M.

SATURDAY, 20.—Westminster Medical, 32, Sackville-street, 8 P.M.; Asiatic, 14, Grafton-street, 2 P.M.

## TO OUR CORRESPONDENTS.

"Aqua."—We do not know of any premium having been offered.

"H. Y."—We recommend to make a selection of particular prints from the collection of Evans, Great Queen-street, Lincoln's-Inn-Fields. We do not know any cheap work of the kind. Shaw's are the proper works, but from the cost of their execution and their necessarily limited circulation, they cannot be low-priced.

"Mr. Bare-faced Tenon" is an obtrusive fellow. We cannot suffer him to enter our house, but shall confine him to our stables, or certainly not let him approach nearer than the side garden-gate.

"We have received the letter of 'L. Law.'"

"An Architect," 25th March.—Good or bad the window possesses originality, and if it had been an old work, would have found admirers on that account. Its author promises to become, by sending us delineations of local architectural antiquities, a valuable correspondent.

"We have received the contribution of 'Restorer,' and intend paying a visit to St. Helen's."

We should be obliged by all correspondents who transmit to us algebraical subjects, sending us also their real names and addresses, in order that as their manuscripts are not always quite clear, they may have proofs transmitted to them for their own correction.

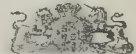
We should like to be made acquainted with the name of our correspondent at King's Langley, in order that we may write to him privately.

"G. Morris."—We have no such intention.

## ADVERTISEMENTS.

GREAVE'S LIAS CEMENT is particularly recommended as being manufactured entirely from BLUE LIAS STONE—does not vegetate—never cracks—is a better colour (resembling stone) than any Roman cement, hardens by exposure to the atmosphere; and will set as hard as stone under water, possessing advantages over any other light cement, being cheaper—more easily worked—carrying so much sand, and well adapted, from its quick-setting quality, for any description of modelling or casting, however elaborate. Sold in casks, of five bushels each, at 10s. 6d., or 1s. 6d. per bushel; 2s. 6d. allowed for casks if returned, in good condition.

R. HOULDER, Agent, BLUE LIAS LIME WHARF, 2, South Wharf, Paddington.  
—Warrickshire Blue Stone for Floors and Hearths, Diamond Paving for Halls, and every description of Marble in Slab.



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PAVING TILES, Manufactured by SAMUEL MAYER,  
Burslem, Staffordshire. Specimens and prices may be obtained at Mr. Charles Long's, No. 1, King-street, Portman-square, and also at the Manufactory.

## PAPER HANGINGS.

R. CHATER solicits the attention of  
BUILDERS, SURVEYORS, and others to his  
extensive assortment of Paper-hangings which he has constantly on Stock at very reduced prices, adapted to the decoration of Bed-rooms, Parlours, and Drawing-rooms. Also his imitations of Marbles, Granites, and Oak Papers for Halls and Staircases.

Patterns sent to any part of Town or Country for inspection, and estimates given free of charge.  
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LINEN, oil, ditto .. .. 2s. 9d.  
SHEET LEAD, in sheets, per cwt. .. 18s. 6d.  
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of Best and Seconds quality, will be sent (gratis) upon re-  
ceiving the address. Builders, Glaziers, and others having  
to Contract, sending a copy of their specifications, with a  
list of dimensions to R. COGAN, will receive by return of  
post the lowest prices for all qualities and sizes of Crown  
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OTHERS requiring Small Glass, will find a greater variety  
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is kept by any other House in London.

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of Common Sheet over Crown for Glazing Sky-lights is  
decidedly great, and is generally used where strength or  
superior appearance is required; a light 6 feet 6 in. long,  
with openings of any width, needs only one lap. This Glass is  
considerably stouter than Crown, and may be had from 1s. 3d.  
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which effects a great saving in the consumption, produces a  
more brilliant light, prevents smoke, and is cheaper than  
any other Patent Chimney sold.

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ARCHITECTS, MODELLERS, AND OTHERS, sup-  
plied with FRENCH ORNAMENTAL SEAIERS, for covering  
Models of Public Buildings, Geological Curiosities, &c., &c.,  
of all sizes and shapes. List of Prices may be had on applica-  
tion, French Table Vases, China Vases, Fancy Glass Ware,  
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R. C. having just completed his Show Rooms for the above  
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Discount to Business keepers and others.

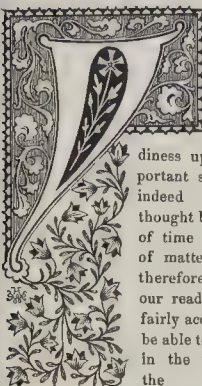


# The Builder.

NO. LXIII.

SATURDAY, APRIL 20, 1844.

IELDING to the necessity of the case, we this week postpone our own observations which we have in readiness upon the same important subject; profiting indeed in maturity of thought by greater extent of time for consideration of matters so vital; we, therefore, in order that all our readers may become fairly acquainted with and be able to judge accurately in the matter, continue the



REPORT of the Select Committee appointed to Inquire into the Circumstances affecting the Health of the Inhabitants of Large Towns and Populous Districts, &c.

THE returns shew that out of 5,692 cases of typhus in all the 20 unions, 4,002 were yielded by the seven unions specified as pre-eminently malarian districts.

Dr. Smith continues: "It appears that out of 77,000 persons who have received parochial relief, 14,000 have been attacked with fever; one-fifth part of the whole; and that 1,300 have died. It should be borne in mind that there is no disease which brings so much affliction on a poor man's family as fever; it commonly attacks the heads of the family, upon whose daily labour the subsistence of the family depends." The present returns afford melancholy evidence of the pauperising influence of this wide-spreading and mortal disease. They shew that while one-fifth of the whole pauper population in the year in question was attacked with fever, in Bethnal-green the proportion was one-third, in White-chapel it was nearly one-half, and in St. George-the-Martyr it was 1,276 out of 1,487.

"Placing out of consideration (continues our benevolent informant) the suffering of the individual attacked with fever, which however is one of the most painful maladies to which the human being is subject; placing out of view also the distress brought upon all the members of the family of the sick, it is plain that this disease is one of the main causes of pressure upon the poor-rates. That pressure must continue, and the same large sums of money must be expended year after year for the support of families afflicted with fever, as long as those dreadful sources of fever which encompass the habitations of the poor are allowed to remain. They would not, they could not be allowed to remain, if their nature were really understood, and if the ease with which the most urgent of them might be removed were known.

"But there do not appear to be any practicable means of removing them without legislative interference; and if the care of the public health be a part of the duty of the legislature; if in the metropolis unions, which alone include a population of 851,000 souls, it be certain that conditions exist which are absolutely incompatible with the public health, and which conditions are to a very considerable extent removable; and if it shall be found that similar conditions exist in all the large towns in Great Britain, here would seem to be a proper and legitimate field for the exercise of legislative wisdom and power."

The prevalence of fevers and other diseases arising from neglect of due sanitary regulations, is by no means confined to the populous

districts of the metropolis above described; but the same causes appear to produce the same effects, in a greater or less degree, in all our great towns. In some of them these evils, and the misery consequent upon them, is much increased by peculiar faults in the form and construction of the humble dwellings of the poorer classes. This seems owing to the want of all proper regulations in any general Building Act, applicable to the poorer class of houses in these crowded districts, for preserving due space and ventilation.

Thus in Liverpool there are upwards of 7,800 inhabited cellars, occupied by upwards of 39,000 persons, being one-fifth of all the working classes in that great town; and an account of undoubted veracity states, "that the great proportion of these inhabited cellars were dark, damp, confined, ill-ventilated, and dirty."

In Manchester also, nearly 15,000 persons, being almost 12 per cent. of the working population, live in cellars; and in the adjacent town of Salford, 3,300. Such a habitation must almost necessarily be unhealthy, as it implies the impracticability of proper drainage and ventilation.

Another form of construction of houses for the working classes, which your committee considers highly injurious to the health of the inmates, prevails extensively in many large towns, and especially in Liverpool; viz. the position of rows of small houses in close courts, built up at the sides and end, and having only one entrance, frequently under a narrow archway.

The evils arising from this cause are much increased when it is found, as in Liverpool, that it is combined with another error in the construction of rows of these houses, viz. that they are placed back to back, so as to exclude the possibility of thorough ventilation.

It has been stated to your committee, that there are in Liverpool about 2,400 courts, chiefly of this construction, containing an estimated population of about 86,000 of the working classes, in addition to 38,000 living in cellars. Independent of this faulty construction, so injurious to the health of the inhabitants, the state of most of these courts is described as almost utterly neglected, with no underground sewers, and no attention to cleansing, with no inspection of any kind, and the surface gutters frequently almost choked with filth.

These courts are thus described by Dr. Duncan, an intelligent physician resident at Liverpool:—"Very few have an entrance wider than four feet, and that is by an archway built over it; the width is from 9 to 15 feet between the rows; there is one only six feet. The backs of the houses in one court are built against the backs of houses in another court; at the further end there is generally an ash pit between two privies: they are in the most abominable state of filth."

It is scarcely possible to conceive any construction more prejudicial to the health of the inhabitants.

"The stench arising from these causes is such, in some of the courts, as to render it almost impossible to remain for any time in them."

The great mortality of Liverpool is noticed, and a question is asked, "Do you know whether fevers have prevailed in Liverpool?" to which the answer is, "Yes, fever is the great complaint of these people."

"Does that arise in any measure from the want of ventilation and cleanliness in these dwellings?—A. There can be no doubt of that; I found fever most prevalent in those districts where there is most neglect of cleanliness and ventilation."

"Can you give any facts with respect to any particular localities where fever has been for a length of time, or where it frequently prevails?—A. I can state the average number of cases of fever attended annually by the dispensaries, and the proportion of those occurring in courts; the average number during the last five years was upwards of 5,000, exclusive of the cases occurring among the members of clubs and friendly societies, of which there are many in Liverpool; that is about one in 35 in all classes of the population; that in the courts is about two-fifths, and between one-half and one-quarter in the cellars."

Again, it is said, "The proportion of cases of fever occurring among the inhabitants of

cellars is about 35 per cent. more than it ought to be, calculating the proportion of the inhabitants of the cellars to the whole population; the mortality of Liverpool was last year one in 33."

It appears that this kind of property is constantly increasing; is a very profitable and tempting investment; is the cause of great cost to the community, but contributes but little to the parochial burthens, as it is stated there are 16,800 cottages in the parish of Liverpool assessed under 12 $\frac{1}{2}$  per annum, and of that number only 900 contribute to the rates, and their contribution is 700 $\frac{1}{2}$  on a levy of 10,000 $\frac{1}{2}$ .

Your committee would pause, from the sad statements they have been obliged to make, to observe, that it is painful to contemplate, in the midst of what appears an opulent, spirited, and flourishing community, such a vast multitude of our poor fellow-subjects, the instruments by whose hands these riches were created, condemned, for no fault of their own, to the evils so justly complained of, and placed in situations where it is almost impracticable for them to preserve health or decency of deportment, or to keep themselves and their children from moral and physical contamination; to require them to be clean, sober, cheerful, contented, under such circumstances would be a vain and unreasonable expectation. There is no Building Act to enforce the dwellings of these workmen being properly constructed; no Draining Act to enforce their being efficiently drained; no general or local regulation to enforce the commonest provisions for cleanliness and comfort.

It appears to your committee, that where such evils are found to follow from the neglect or inability in these respects of local authorities, that it is the duty of the legislature to take efficient steps to protect so numerous and valuable a portion of the community.

These evils, arising from the malconstruction and crowded state of their dwellings; the absence of a good system of sewerage, and all adequate inspection and cleansing of the courts and alleys in which they reside, are found to exist in like manner in many parts of the metropolis, in Manchester, Leeds, Bradford, Glasgow, and other large towns.

Thus, in Manchester, the capital as it may be called of the cotton trade, with a population of not less than 240,000, nearly 15,000 of the poorer inhabitants, constantly inhabit cellars. Though the habitations of the working classes are described as better than those of Liverpool, the want of proper building regulations, and any effectual sewerage and cleansing, as applicable to the localities inhabited by the workmen, is most justly complained of.

Your committee would here beg to quote a few lines from an able letter written by J. Robertson, Esq., an eminent surgeon, residing in Manchester, to the chairman. After advertising to the former disgraceful state of the streets and drains, he bears testimony to the zeal of the authorities in carrying on salutary improvements in these respects, "especially when it is known that no street can be paved and sewered without the consent of the owners of property, unless a certain large proportion of the land on either side is built upon. Owing to this cause, several important streets remain to this hour disgraceful nuisances."

"Manchester," continues the writer, "has no Building Act, and hence, with the exception of certain central streets, over which the Police Act gives the commissioners power, each proprietor builds as he pleases. New cottages, with or without cellars, huddled together, row behind row, may be seen springing up in many parts. With such proceedings as these the authorities cannot interfere. A cottage row may be badly drained, the streets may be full of pits, brinful of stagnant water, the receptacles of dead dogs and cats, yet no one may find fault."

"The number of cellar-residences you have probably learned, from the papers published by the Manchester Statistical Society, is very great in all quarters of the town; and even in Hulme, a large portion of which consists of cottages recently erected, the same practice is continued. That it is an evil must be obvious, on the slightest consideration; for how can a hole underground, of from 12 to 15 feet square, admit of ventilation, so as to fit it for a human habitation?" "We have no authorized inspector of dwellings and streets."

After remarking that, when well fed, the



families of working people maintain their health in a surprising manner, even in cellars and other close dwellings, he states, "That in 1833, 1834, 1835, 1836 (years of prosperity), the number of fever-cases admitted into the Manchester House of Recovery, amounted to only 421 per annum; whilst, in two pinching years, 1838 and 1839, the number admitted was 1,207 per annum."

"It is," adds this benevolent gentleman, "in such a depressed state of the manufacturing districts as at present exists, that unpaved and badly sewered streets, narrow alleys, close unventilated courts and cellars, exhibit their malign influence in augmenting the sufferings which that greatest of all physical evils, want of sufficient food, inflicts on young and old in large towns, but especially on the young."

"Manchester," he adds, "has no public park, or other ground where the population can walk and breathe the fresh air, and, in this respect, is disgracefully defective, more so, perhaps, than any town in the empire."

Your committee have dwelt longer on the state of Manchester and Liverpool than they should otherwise have done, because these great towns are so much supported by and connected with the cotton manufacture, which employs a greater amount of capital and workmen than any other in this empire, or, perhaps, in any other quarter of the globe, and which is rapidly increasing in importance, and the number of persons occupied in it is constantly augmenting.

It seems alike a matter of duty and policy in the Legislature to take care that the industrious classes, by whose hands the great riches derived from this trade are chiefly formed, should be protected from evils (such as have been described) by the Government and the more opulent ranks, who owe so much to their unwearying exertions.

If from the great towns connected with the cotton trade your committee turn their attention to those where the population is chiefly employed in the woollen manufactures (the second in point of extent), they regret to have to report, that the evidence adduced before them shows nearly the same neglect as to any effective regulations to provide for the comfort or insure the health of the labouring community.

Thus, in Leeds, with a population of above 80,000 persons, the state of the streets, courts, and dwellings inhabited by the working-classes appears greatly neglected; paving, sewerage, and cleansing (as applicable to the health and comfort of these workmen) seem seldom thought of, and never enforced.

The Report of the Statistical Committee of the Town Council of Leeds, giving a detailed account of the state of the town, has been fully confirmed by Dr. Williamson, a physician long resident in Leeds, and well acquainted with the facts; the details are given in evidence, p. 96, &c. A few extracts will give a sample of the rest.

Referring to the condition of one ward (a populous district) the question is put, "All the streets and dwellings in this ward are stated to be more or less deficient in sewerage, unpaved, full of holes, with deep channels formed by the rain intersecting the roads, and annoying the passengers, sometimes rendered untenable by the overflowing of sewers and other more offensive drains, with ash-holes, &c. exposed to public view, and never emptied; or being wholly wanting; as is frequently the case, the refuse is accumulated in cellars, piled against the walls, or thrown into the streets; is that an accurate description?—A. It is an accurate description of the condition of the streets."

Referring to one neglected and filthy locality, the witness says, "From that yard I have reason to know cases of malignant fever are continually sent to our Fever Hospital." The district called the North East Ward (in which out of 16,269 inhabitants, 15,399 are of the working-classes) is thus described: "As containing numerous streets, 'having dangerous excavations, bad drainage, little or no sewerage, here and there pieces of stagnant water, ash-holes exposed, out-offices, without doors or seats, very unsafe,' &c."

(To be continued in our next.)

#### BUILDERS' FOREMEN'S INSTITUTION.

A GENERAL meeting of the members of this institution, Mr. Allard, president, in the chair, took place on Wednesday evening last, for the purpose of considering the report of the committee appointed to inquire into the best means of forming an asylum for ill, aged, and infirm members. It also being the quarterly-meeting, the business more immediately connected with the evening was the election of president, vice-president, secretary, &c., for the ensuing six months. There was a very full attendance of members, whose number now amounts to upwards of sixty of the principal foremen of the builders of the metropolis.

The Secretary having read the minutes of the last meeting, which were confirmed, Mr. Trow was unanimously elected a member.

Mr. Kimberley was elected president by the casting vote of the chairman.

Mr. Smith was elected vice-president.

Mr. Rowe was re-elected a secretary.

A managing committee of three members was then elected.

Mr. Stephens then proposed that the recommendation of the committee be received, and that a committee be appointed to form an asylum for its aged and infirm members.

After some remarks from the members, a high eulogium was passed on the committee who drew up the report. A committee was appointed accordingly.

#### FREEMASONS OF THE CHURCH.

##### SEVENTEENTH (ST. MARK'S) CHAPTER.

APRIL 16.—The Rev. George Pocock, B.C.L., one of the Chaplains, in the chair.

The minutes of the last meeting were read and confirmed.

It was ordered, that the subject of a letter from Mr. R. Hopton, of Leamington Priors, be referred to, and be at the next Chapter reported on by a deputation consisting of the following members:—

Rev. F. P. Pocock, (Latin Secretary); Messrs. A. Bartholomew, (English Secretary); W. P. Griffith, (Baptistoreographer); G. Aitchison, sen., (Cementarius); R. Cull, (Professor of Architectural Acoustics); G. Perry; F. East; A. A. Winterbottom; H. Smith, (Professor of Hydraulics); and J. W. Archer, (Monumental Brasser).

William Franck Elliott, Esq., of No. 15, New Cavendish-street, and of Taunton, in the county of Somerset, was elected a Lay-Fellow.

William Papineau, Esq., (Professor of Architectural Chemistry), presented to the Museum a stone tablet, bearing a Chinese inscription, brought from Chusan.

J. W. Archer, Esq., presented to the Library a Tract intitled "*Remarks on the Value of Decorative Church Architecture*."

James Wilson, Esq., F.S.A., Architectural Fellow and Correspondent Delineator for the county of Somerset, presented the following lithographic prints of edifices designed and erected by himself:—

View of Cheltenham Proprietary College.

View of St. Stephen's Church, Bath.

View of Holy Trinity Church, Milton, near Gravesend, Kent.

It was ordered, "That in case of application being made to any member of the College for information relative to the means of joining the College, the English Secretary shall be empowered to send to any applicant a minute of the laws concerning the admission of members."

Mr. Joseph Jopling, architect, exhibited his apparatus for generating lines by simple continuous motion, and is to explain his invention on Tuesday evening, the 30th instant.

Mr. W. P. Griffith, F.S.A., presented two rubbings from a curious sepulchral-brass, engraved on both sides, in the parish church of St. Margaret, Rochester, to the memory of Thomas Cod, Vicar of that church, who died A.D. 1465.

Mr. W. G. Rogers exhibited two magnificent drops, 7 feet high, and 1 foot 8 inches wide, consisting of fruit, corn, fish, and other subjects, carved by him for the Earl of Oxford, in the style of Grinling Gibbons, embossed 11 inches with a free and perfect imitation of nature. Also three masterly specimens of grotesque paneling of the sixteenth century, 3 feet long and 11 inches wide, apparently

from the designs of Giovanni-da-Udine (the pupil of Raffaello), who was employed in decorating the Loggia and other parts of the Vatican; and who, with the exception of Morto-da-Feltro, was the first who attempted that style, which, in his time, had been but recently discovered in the subterranean chambers at Rome, Puteoli, and Cuma, it being nothing unusual for Raffaello himself, Udine, Clovio, Romano, Parmigiano, and other artists, to design subjects both for sculpture and wood carving; many noble families of Italy still boasting of marriage-chests originally executed under the superintendence of some or one of the above masters; but a specimen being no where found more beautiful than the one in the collection of the Earl of Cadogan, who possesses two pillars from the bedstead of Pope Leo the Tenth, the composition of which is attributed to Giovanni-da-Udine.

Mr. W. H. Rogers presented a beautiful original drawing of grotesque ornaments, formerly in the museum of Count Caylus, and attributed to Giovanni Nanni, or Ricamatori, commonly called da Udine.

Mr. T. Whilmsburst presented a lithographic interior view of Plymouth Church, and also exhibited a quatre-feuille painted window, 1ft. 7in. diameter, of the Flight into Egypt; also drawings of stained-glass windows, executed by him, viz.:—

For the altar of St. Botolph's, Bishopsgate, London (the Ascension).

For Penzance Church,

For Plymouth Church,

For Radcliffe Chapel, Lancashire (Christ bearing the Cross).

I. J. Thomas, Esq., of No. 1, Berkeley-place, Brecon, was elected Correspondent-Delineator for South Wales.

Applications to become members were received from nine gentlemen.

Adjourned till Tuesday evening, the 30th instant.

#### INSTITUTION OF CIVIL ENGINEERS.

APRIL 16.—William Cubitt, Vice-President, in the chair.

The first paper read was an account of the railway from Amsterdam to Rotterdam, by the Chevalier F. W. Conrad, M. Inst. C. E., translated from the French by C. Manby, Sec. Inst. C. E.

This railway, which is the first which has been constructed in Holland, was commenced under adverse circumstances, and the works languished until the appointment of the author as engineer director, when it appears that although from the defective state of the law of expropriation, great difficulty was experienced in obtaining possession of the land for the railway, the works were carried forward so vigorously, that the four divisions of the railway, extending from Amsterdam to the Hague, were completed between March 1839, and December 1843, leaving only the fifth division between the Hague and Rotterdam to finish the line, and of that, the works were proceeding rapidly. The length of the line, when the whole is finished, will be about 32½ English miles, and the cost of the single line of rails laid is about 1,475*l.* per mile.

The detail was given of all the conditions of the contracts, the prices and quantities of materials, the methods of execution, the forms and dimensions of the buildings, and of the bridges, some of which are of cast-iron of large sizes, and very ingeniously contrived for opening for the facility of the navigation. The iron beams of one of these bridges were 73 feet long, cast in one piece. Other bridges of timber, on the American trellis-work principle, and of very large scale, were also described.

The mode of construction of the permanent earth-work was then described. Almost the whole line, being through marshy ground, was laid upon fascines, and in some places it was carried entirely by these means through water of considerable depth.

An ingenious mode of cutting off the heads of the piles under water was then described, and it was thought that its simplicity would induce its introduction into English engineering works.

All the other particulars of the railway-works were given in the most minute detail,



with tabular statements of the number of passengers conveyed, the receipts, the number of miles traversed by the locomotive engines, and the paper was illustrated by a large collection of maps, sections of the line, and drawings of the construction of all the bridges and other works of the line.

The paper is a valuable addition to the effects of the institution, and reflected the highest credit upon its author, for the skill displayed in the conduct of the works, and for the able and candid manner in which he has described it.

A description was then read of the mode adopted at the Montrose Harbour for driving piles by steam power. This machine, which could not be well understood without a drawing, was described by Mr. James Milne, who had used it, and was the author of the paper, as being very efficacious, and having done its work rapidly and well. In the discussion which ensued, Mr. Rendel, under whose directions it had been used, approved fully of it, and it appeared to be the unanimous opinion that it was generally applicable to engineering work, particularly as piles can be driven either very rapidly with a light ram in sand or in silty ground, or with a heavy ram, and a low fall in hard ground, and that the pile-heads would be rarely injured by it.

The papers announced to be read at the meeting of April 21, were:—

No. 678. "Account of a series of Experiments on the comparative strength of Solid and Hollow Axles," by C. Geach.

No. 667. "An account of the Scaffolding used in erecting the Nelson Column, Trafalgar-square," by T. Grissel, Assoc. Inst. C.E.

No. 680. "Description of the system of Scaffolding employed at Paris for the repairs of Public Buildings, Obelisks, Chimneys, &c., and of the Machine for raising Building Materials, in use at the Houses of Parliament and other Buildings," by Pierre Jourin.

No. 577. "Description of the Method employed for Repairing a Chimney, 120 feet high, at Messrs. Cowper's Cotton-mills, Glasgow," by J. Colthurst, Grad. Inst. C.E.

## ELEMENTARY ESSAY ON MORTAR AND CEMENTS.

BY JAMES WYLSON, KON. SEC. B.A.A.D.

**DEFINITIONS.**—1. **MORTAR** is the compound employed to unite the masonry or brickwork of buildings erected in dry situations into a hard, compact, and tenacious mass—its ordinary constituents being lime and sand, and the former essential in all cases. **CEMENT** is a composition similar to mortar, which is adapted for and used in the construction of such works as are wholly and constantly wet or damp, or are so circumstanced as to be alternately moist and dry. These names and definitions would be sufficiently distinctive were there not some other terms unavoidably in use, which, if no reference were here made to them, would seem vague and even somewhat conflicting in their meaning, and, perhaps, tend to perplex. Mortar and Cement are the proper denominations of two separate classes; but among the limes employed in composing the former, there are some which, though they do not possess the peculiar attribute of the cement-stones so strongly as to be qualified for fulfilling their use, unaided by the admixture of other ingredients, yet have that property to so important a degree, when so combined, as fully to justify the distinctions of *Common lime* and *Water-lime*, as well as the consequent ones of *Common mortar* and *Aquatic or Hydraulic mortar*. The phrase *Water-cement* is also used, and might appear ambiguous, were it not explained that besides the way in which the term "cement" is applied in reference to subaqueous construction, it is the designation given to a number of compositions for uniting substances which, though accessories in architecture, are merely decorative, or of a character too delicate to be classed with building-materials. The meaning of this nomenclature being thus preliminarily indicated, the reader can proceed without further guidance.

2. As the ingredients in these compositions are exceedingly various, both as to kind and quality, and their different properties involve a diversity of proportions, it is absolutely necessary that we be familiar with them before undertaking to practise their use; however

subordinate and unimportant the daily seeing them mixed up by unskilful labourers may make the subject appear.

3. **LIME** is the product obtained by the calcination of calcareous substances, namely, such as contain *calx*, or lime—combined with carbonic acid; and which abound in a variety of forms in the earth's crust as well as on its surface—including marble, alabaster, many building-stones, basalt, spar, chalk, shells, coral, &c. These, however, do not afford an equal supply of lime, neither is that which is obtained from them of an identical nature: limestone, for example, are seldom pure, that is, composed solely of lime, but usually contain one or more foreign matters, such as granules of quartz, silica, silice, argil or alumina, magnesia, manganese, iron, bitumen, &c.; and how far the limestones are suited to the purposes of the builder depends upon the presence or absence, and the relative proportions, of these adjuncts, in the various combinations in which they occur. Limes which contain silica are frequently termed *silicious*; when comprising silice or flinty sand, silty, sandy, or arenaceous; magnesia, *magnesian*; manganese, *manganesian*; bitumen, *bituminous*; alumina, *clayey*, *argillaceous*, or *aluminous*; and iron, *ferruginous*. The most pure generally burn to the whitest lime, and are suitable only for mortar; the argillite-ferruginous kinds are dark when burnt, and are those possessing the invaluable property of hardening under water.

4. Limestone may readily be distinguished from sandstone, and other non-calcareous rocks, by placing a small piece in a glass, covering it with water, and adding a little of almost any acid; the latter combines with the lime and expels the carbonic acid, causing it to rise to the surface, more or less briskly, in bubbles of effervescence: this is a ready and unfailling test. It may also be scratched with an iron point.

5. **BURNING.**—Limes are not efficacious in their natural state, but must be burnt to render them available for the composition of mortar; and they are of a very infusible nature; the purpose of the calcination is to dispel the carbonic acid associated with the lime; for the reason that the latter will not combine with water if the former is present. To effect this separation thoroughly—on which the goodness of the lime so much depends—requires a red heat; for although the greater portion of the acid is readily expelled, its disengagement being facilitated by the earthy matters contained in the limestone, the latest lingering remains are tenacious and not easily evolved. The more compact limestones of course require the longer continuation of the burning. When the acid has been slowly driven off, the limestone or chalk has lost about 3ths, or 44 per cent. of its weight, and, whatever may have been its colour before burning, has changed more or less to a dun or buff hue with that operation. Attempts have been made to form a cement by burning old mortar, but without any success. It is understood that the goodness of lime does not depend on the hardness of the stone from which it is obtained, as was long supposed. As the disunion of the acid begins on the exterior of the lumps of limestone, gradually progressing to the centre, it is evident that they should be as small as is compatible with the cost of fuel and of breaking them into smaller fragments. Manganese gives to lime a brown colour when burnt: a deep brown or red colour before, and a yellowish hue after burning, generally denotes the presence of iron; silicious limestone gives a buff colour; silice renders it, before burning, sufficiently hard to scratch glass, and prevents its effervescing freely on the application of acid. This substance is so far changed in its nature by calcination as to dissolve in acids, which it does not before undergoing that operation. Magnesia also causes lime to effervesce, but very slowly, and gives to the acid a milky appearance; in hot acid, however, it effervesces as vigorously as common limestone. Some of these substances combine with the lime in burning, and thus give to it properties which it had not before that operation.

6. An easy test whereby to judge at the kiln whether lime is sufficiently burnt, is to withdraw some from the midst, and drop a piece about the size of a pea into a glass containing some dilute muriatic acid—if perfectly calcined there can be no effervescence, but if not, it is sure to present that phenomenon in some degree.

7. The white, granular, or *statuary marble* furnishes, when sufficiently calcined, the purest lime of all the calcareous stones, containing sometimes only a very little silicious earth; on analysis it has been found to contain 64 per cent. of lime, 33 of carbonic acid, and 3 of water. It is this which the chemist employs when a lime of superior purity is required; although the lime is but rarely made use of in the arts, because the stone falls into a granular powder when heated, thus rendering the ordinary lime-kiln unsuitable for its due preparation; a paste made of it and placed in a humid situation will not harden. Plymouth marble is also very pure, and, indeed, furnishes lime almost identical with that of common chalk; like the statuary, it is not at all adapted for a water cement; but for the construction as well as finishing of common buildings, in dry situations, it is sufficiently good. The plentiful shell-marble of Derbyshire affords lime of a very superior description for common mortar; but compared with the Barrow lime of Leicestershire, it is inferior for subaqueous purposes; it is of a good colour, slakes well, and does not discolour masonry. In some places on the Continent, where marble is abundant, it is extensively used for lime, and its quality is said to be excellent.

8. **GYPSEUM** (the sulphate of lime in chemistry), or, as it is more generally called, **PLASTER OF PARIS**, is a species of alabaster, dug at the village of Montmartre, near that city, and, indeed, abounding in its vicinity; it is used there to a considerable extent as lime mortar; but for building it is much inferior to the latter, being liable to decay with age, and its durability depending on its total exemption from damp; it is also rather plentiful in our own country in Nottinghamshire, Staffordshire, Derbyshire, and other parts; and it has been stated that the best and most expensive that is used in Paris is from Newark, in the first-mentioned county. Its principal use for buildings is in interior plastering, with its moulded work and enrichments. Immediately before use it is reduced to a thin paste with water, and it sets and hardens very quickly, slightly swelling at the same time; if made too thin, however, it is apt to continue of a light and friable structure.

9. It is rendered fit for the purposes to which it is applied by calcination, and grinding or pounding. Its quality is said to be judged of by taking up a handful, the good being known by its retaining the impression of the fingers, and the bad by running through them like fine sand. It is only acted on by sulphuric acid, in its natural state.

10. There is a very superior and valuable species of gypsum used in the island of Minorca, called **GUENSH**; with which partitions of stones, on edge, and only 3 or 4 inches thick, are built, so powerful is its cementing property. Like plaster of Paris, however, it must not be exposed to wet, which soon softens it to a pulp. For use, the powder is mixed with water to a fluid state. It sets almost instantly, and acquires a hardness like that of marble.

11. The **Kentish-rag**, Portland, Purbeck, Painswick, and Bath stones, all afford lime of very good quality; those which are hardest and most durable as building-stones, furnishing limes of relative corresponding value in these respects. Kentish-rag, which is the hardest, supplies, when properly calcined, a lime approaching in quality the Barrow lime.

12. **Oolite** is one of the purer sorts of lime, and therefore white when burnt. Its natural formation is an aggregate of small round grains resembling the eggs of fish, and from which appearance originates its name.

13. Grey limestone is of a slightly scaly tendency, but compact, hard, and rather difficult to quarry: it takes considerable time and quantity of fuel in burning, and becomes a white lime: the darkest calcines whitest. It contains very little foreign matter, and not exceeding five per cent. of clay and sand.

14. **Swinestones** (called by the French *Pierre Puante*, and by the Germans *Stink-stein*), are so denominated on account of the fetid odour they emit on being rubbed against any hard body, and which is compared to that of a pigsty, Harrowgate-water, or rotten eggs: it is attributed to the presence of sulphur of hydrogen. These stones, which include the different black marbles, may be deprived of their carbonic acid at a lower heat, and in a shorter



time, or with the consumption of less fuel than any other carbonate of lime. When burnt, the colouring matter has entirely departed, leaving a snow-white and perfectly caustic lime, of an open and friable structure, more so than that produced by any other compact limestone, and which falls down into an almost impalpable powder, either with slaking, or if left exposed to the air. These remarks apply generally to the bituminous limestones, which may be considered as identical, but for the fetid smell above referred to. These stones are of a dark hue, varying from brown to a duskiness almost black.

15. Magnesian limestone is, in its structure, a concretion of small crystals, having the appearance of fine sandstone, and consisting of about two-fifths parts magnesia and three-fifths parts lime: its usual colour is a pale yellowish brown, occasionally approaching red.

16. Basaltic rocks are found by chemists to contain the same components as the best hydraulic cements; it is therefore reasonably supposed that they would, on calcination, afford cements of very good quality. The Giant's Causeway, on the coast of Antrim, in Ireland, is the most famous: the Calton-hill of Edinburgh is almost an entire mass of it. The celebrated Tarras stone of Germany, so much used by the Dutch in their great water-dykes, is a species of cellular basalt.

17. Stone limes of almost any kind are durable and excellent, if properly burnt and used immediately; or, failing the latter, kept very close. Those should be selected which slake most readily, accompanied with the greatest heat; also which dissolve in distilled vinegar with the slightest effervescence, and leaving behind the least residue of insoluble matter. Many stone limes, however, are apt to stain the masonry with which they are brought into contact, rendering them somewhat unsuitable for superior ashlar-work, if the first cleanness of the work weigh much with the architect.

18. Although chalk lime is unquestionably inferior to that produced from limestone; there are, nevertheless, vast quantities of it made, and it is extensively employed even where the other is not difficult to obtain. In the south-eastern parts of the kingdom it is the principal kind in use; and in London large quantities of it are consumed in every possible description of building, and by the most eminent architects and engineers. Unfortunately it is seldom sufficiently burnt, which indeed is said to be a general fault with the lime-trade in this country; probably owing to the high cost of fuel in some parts; and from this circumstance it often presents the disadvantage of containing, after slaking, small unburnt, or superficially-burnt lumps, or "cores," which are, without difficulty, pounded down with the spade in making mortar, although they ought to be scrupulously excluded, being manifestly quite unsuitable and injurious. The common white chalk is composed of very pure calcareous matter; therefore, though furnishing a good white lime very suitable for ordinary building as well as for interior finishings, not at all adapted for water-cement. It is soft, porous, and easily quarried; it contains about 53 per cent. of lime, 2 of alumina, 42 of acid, and 3 of water. The Sussex Clunch-lime obtained in the neighbourhood of Lewes, the Berrinton grey lime procured near Petersfield in Hampshire, the grey lime of Guildford, Dorking and Merstham in Surrey, of Purfleet, and of Halling in Kent, the extensive quarries of which supply the London market, are all of chalks, but distinguished from the preceding by their dark shade, and by their possessing the essential properties of water-cements; they are harder than the common chalk: their proportion of clay varies from about 5 to 25 per cent; in the Dorking lime it is ascertained to be about  $\frac{1}{10}$ th of the whole; and the others of that district differ very little from it: they are all, after burning, of a pale brownish-yellow colour.

19. Shell lime, which is said to be the most extensively used in America for architectural purposes, is in England scarcely known. This may be owing in a measure to the circumstance of shells requiring to be more highly calcined than common limestone, and which probably is in consequence of their being purer carbonate of lime; but the chief reason of its being so little known among us, no doubt, is the abundance in which limestone and chalk are

found. It has been ascertained that the lime of cockles, &c. is the worst of all for hydraulic cements, for although it has the property of rapidly hardening it soon decomposes under water; yet, it is said, a good cement may be produced by tempering, with water, powdered oyster-shells and about  $\frac{1}{4}$ th of clay, forming the mixture into small lumps, letting these dry in the air, and then burning them for about 96 hours. The lime of oyster-shells is also said to endure fire well, and has been suggested as suitable for such purposes as the setting of furnaces, ovens, &c.

20. The substance of the Coral islands and reefs, is lime, but whether experiments have been made on that product, inquiring its adaptation to building-purposes, or whether it has actually been made available in that way the writer is at present unware.

(To be continued in our next.)

## PETROLOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

UPON the surface of the earth, in the valleys, upon the mountains, plains, in the air, and in the waters, man finds abundant evidence of a beginning of things, of a time or times when the phenomena before him were not: he beholds that beginning in generation, regeneration, decay, and death; in the gradual development of capacities and powers, quantities and qualities; in the simple and complex structure of the organic body; and in the characteristic marks noted in each succeeding stratum. In and throughout the earth there is not a rock, stone, or mineral aggregate, which does not attest the gradual and progressive development of general orders, and species, the consequent gradual development of these earths, fossils, and species. United or disintegrated, as calcareous matter, clay, vegetable earth—or beds of mixed qualities, as rocks, stones, or minerals—we behold the same material varying in its unions, but definite in its nature, or the subject of change produced by local or general influence. In the living fountain, we see the earths generate; in the fossil kingdom, we see the earths thus elaborated, preserved in the characteristic form of the animal or vegetable; in the mineral kingdom, we behold the vegetable body, and acknowledge it in change and decomposition.

To have a correct understanding of natural phenomena, is a means whereby we are enabled to render nature more immediately subservient to our wants and purposes, and to apply its varied products to practical purposes. It is not sufficient that we become acquainted with the names, and are therefore enabled to classify rocks; it is not sufficient that we know what they are resolvable into by the tortuous means of fire, their expanding, contracting, or absorbing powers, their weight, and density: we must go still further, we must study the laws of Nature and her *modus operandi*, physical condition, and the changes likely to be undergone by materials when used for architectural purposes. It is from a want of this knowledge that men unite, in buildings proposed to immortalize themselves, the elements of destruction; from generalizing, without the appliances of sterling science, architects fall into the common error of using materials containing within themselves the elements of dissolution, or dispose them in places equally inimical to their continuance. Why do buildings so soon fall into decay in this country? Why but from the use of ill-made cements and the use of ill-chosen materials, the want of knowledge of locality in which such buildings are disposed, and of the bed on which they rest?

The difficulty of mastering the technical phrases of geology, of attaining a knowledge of its fundamental principles, and still more of reconciling its endless contradictions and palpable absurdities, has determined many practical men against the study of this science. It is indeed to be lamented that the many crude and ridiculous speculations of modern geologists should render this fair and beautiful field of Nature unapproachable by common observation, and inutile to the practical appliances of life. The operations of Nature are simple, whether we consider them in life, or consequent of living action: the laws which regulate change, and by which the varied phenomena of the earth are produced, being brought into existence, still continue to exist

in place and disposition; and it is not because the closet speculator cannot see them in operation, that we are bound to discredit their existence in the present day. Rocks, stones, minerals, and earths are still forming in every region of the earth, not at all times palpably manifest to observation, but still, ever demonstrable from existing causes; and the having correct ideas of the nature, origin, and properties of these bodies, brings with it a knowledge of the conditions under which they continue to exist, and the purposes to which they ought to be applied.

The substances of which the earth's strata are principally composed are siliceous, calcareous, bituminous, and argillaceous earths. Of these, silica is the most abundant, and the first or primary material of this earth, composing in entirety the lowest beds, as pure sands or sandstone, in which all traces of organic species are entirely obliterated, and forming the exclusive or mixed material of every stratum disposed on or near its surface. Upon this general, nay, universal, siliceous base, we find the calcareous masses and limestones locally disposed; the several varieties being distinguished by their uniformity of character and composition, by the nature of their earths, and by their organic remains. The third story of this beautiful fabric is composed of argillaceous and bituminous beds, homogeneous, or of mixed qualities, crowning the preceding beds, or variably blended with them; the crowning deposits forming *terra firma*, and all the singular and varied phenomena produced under atmospheric influences. The silica generated within the waters is the primary material in the sequence of events; but inasmuch as this particular earth is still producing, both within the waters and upon the earth, so it must be borne in mind that, besides being primary, it is secondary, recent, and still producing; in like manner with calx rocks and calcareous bodies and beds, calx is a secondary and still existing effect of the continuance of existing causes. The same remarks apply to bituminous, argillaceous, and other rocks.

Petrology, or the knowledge of rocks and stones which occur in large masses, embraces in the order of their development, according to my system, as derived from observation of natural phenomena,—

1. Siliceous rocks.
2. Calx rocks.
3. Carboniferous rocks.
4. Magnesian rocks.
5. Argillaceous rocks.
6. Composite, or aggregated rocks.
7. Siderous rocks, or those in which iron predominates.
8. Diamantiferous rocks, in which the substances are equally blended.
9. Anomalous rocks, presenting unusual combinations and singularities.
10. Transition rocks.
11. Decomposed rocks.
12. Volcanic rocks.

Under these several heads are embraced the endless varieties produced by the accidental union of one with another.

Professor Brande, in his first of ten lectures on agricultural chemistry, delivered in January last at the Royal Institution, gravely informs the student, that originally the surface of the earth was composed of hard rocks, which by the influence of moisture, or other agents, have gradually become disintegrated, and fitted to the growth of plants. This singular theory, which at once places the origin of rocks beyond the discovery of man, is not only inconsistent with observation and the rules of analysis, but actually reverses the natural order of events. Rocks are compound bodies, simple in their mixtures, as quartz, limestone, and slate; and compound when two or more minerals enter into their composition, as gneiss, granite, sienite, porphyry, &c.: they are results of agglutination, being held together by one or more mineral bodies, which form their common bases or cement; silica and alumina, together or separate, being the cementing bases of most of the rocks of the earth. They are sometimes formed from the decomposed rocks and soils of ancient lands, but primarily they are formed and are still forming by the agglutination of parts of calcareous, siliceous, and aluminous beds; the nature of the earths determining the composition and material of these rocks, and the peculiar structure they assume



depends upon the local influences to which the changing masses may be subject. The coral polypes, building their stupendous edifices within the waters of tropical seas, consolidate as they form the outer or barrier reef, as limestone rock; every succeeding generation of these minute existences contributing, during life and in death, by the addition of its organic body, to the increase of the general mass. Other species decompose and fill up the valleys and troughs with ocean marls, uniting with shell-fish and the relics of the myriads of the deep thus locally disposed. These submarine mountain ranges of limestone, embracing in their consolidated state the reliques of countless species, are analogous to many of the limestone ranges composing the British strata, the latter having manifestly been produced under the same influences. From this one fact we learn that limestone forms, under certain conditions, in sea-water; and that so long as these conditions exist, and it maintains its local position and influences, so long will it maintain its aggregated masses unimpaired: but, although this is one Cause of a manifest Effect, we must not thence infer that it is the sole cause, for there is no other class of rock which forms under such a variety of aspects. The calcareous masses, when abstracted from the element which gave them being, and exposed to the local action of intense atmospheric heat, change according to the accident of association, becoming converted into sulphate of lime or gypsum, carbonate of lime or common brown limestone, and, with the addition of water, into marbles of varieties. A dry heat, and the saline waters of the ocean are, therefore, both favourable for forming limestone rock; heat and moisture are favourable for the generation of marbles, and under these influences the finest marbles of the world are produced. In acquiring this knowledge we are, therefore, enabled to apply it to practical purposes in those regions where it is formed, with the surety that the same causes which produced it, will, so long as they continue in action, preserve it from the ravages of time. The ancient Egyptians used limestone largely in the building of their mighty pyramids, in their palaces and temples; and the catacombs are invariably formed in this material, the hills bounding the upper portion of this country being wholly calcareous. They are still, many of them, in their several stages of transition from a soft carbonate, resembling chalk, to the most ponderous brown limestone rock; and the beds in which the catacombs are disposed are, even now, where sealed from atmospheric influences, in this condition, being of a dazzling whiteness, uniform in composition and character, and hardening by long exposure to the atmosphere. As we approach the northern hemisphere we still find that the calcareous beds pass, by gradual transition, into limestone, embracing numerous varieties; but the conditions of change now vary, the change being effected by chemical action generated within the lower beds, and all kinds corroding on exposure to atmospheric air. In the British strata we find numerous species of calcareous rocks, many of which have been formed by causes now no longer in existence in this country; but few of them, without the influence of the atmosphere for any considerable length of time, can wisely be applied to buildings which it is proposed shall laugh to scorn the ravages of Time, and those few are confined to those compound rocks termed magnesian limestone. The presence of calcareous matter in any considerable quantity is to be deprecated, for it is readily affected by the atmosphere, and, in decomposing, causes rocks which contain felspar and mica to decompose also, by setting free the alkalis.

Linnaeus, in his classification of stones, speaks of calx or the earth of lime as originating from animal bodies, and by the presence of calx in polypes, he defined the divisions of the animal and vegetable kingdoms. In the state of nature, calx is whitish, absorbent, farinaceous when dry, penetrating, and effervescent with acids; it is elaborated in the living system of numerous genera of the ocean, and becomes a portion of the animal frame-work of many creatures of dry land, being abstracted from the earth, or entering the system through the medium of their food or drink. It is an elementary compound, generated by the direct action of light and heat, and mechanically uniting with the albumen and gelatine that form the basis or cement of the animal frame.

It is a distinguished characteristic of animal life, being exclusively of animal nature, and is always found united with mucilage, gelatine, albumen, and other parts of the organic frame, forming bones, shelly coverings, and, in coral formations, stony concretions, resembling, in appearance and mechanical and vital action, fungi and other vegetable species of dry land; it is secreted in the stony madrepores much in the same manner as the constituents of the blood are generated in the higher orders of animals. Every limestone, chalk, oolite, marble, and other calcareous bed, owes its origin to this one common formation; many of them, as the mummellite hills of Egypt, and the shell limestones and marbles of this country, being wholly composed of tribes and families in aggregated masses; and although entire decomposition has obliterated all organic traces, still we have the certain facts before us, to identify the one and the other proceeding from the same source.

Having marked out to the student in natural philosophy the origin of limestone and of calcareous beds, I now direct his attention to that very important class of rocks and earths denominated siliceous, and previous to giving their practical application, must draw his attention to their origin, and of the changes consequent on climate and association.

SILICON is a compound of 8 parts of oxygen combined with 8 parts of the earth *stictium*, to form 16 parts of oxide of stictium, or silica. Sir Humphry Davy's experiments demonstrate that it is composed of a combustible body united with oxygen; for on bringing the vapour of potassium in contact with pure silicic acid heated to whiteness, a silicate of potassa resulted, through which was diffused the silicic acid in the form of black particles like plumbago. Thomson, Berzelius, and others, conceive it to be a non-metallic body. Berzelius tells us that if presented to water while in its nascent state, silicic acid is dissolved in large quantity; and on evaporating the solution gently, a bulky gelatinous hydrate separates, which is partially decomposed by a moderate temperature, but does not part with all its water at a red heat. In its chemical relations it manifests all the properties of an acid, and displaces carbonic acid by the aid of heat from the alkalis. Silica may be said to be the first generated product of all the earths composing this planetary body, the elementary constituents composing its basis being generated in and throughout the great scale of life, from animalculæ to the most complicated structure of man. It is almost the sole constituent of gelatinous animals, and a component part of the consolidated texture of all others, and is primarily manifest in the slime of oceanic animals and plants; it is elaborated by naked polypifers in a state of purity, is found as crystalline spicula in sponge, translucent as water in hyalonemide, and in tropical reeds and other land vegetable species.

SANDS, which are thus produced by decomposition of the organic body, or by transition of the aggregate particles or entire bodies, are hyaline, without moisture, scintillant, of the same permanent hardness, and, united with other earths, fusible into glass: it accretes as

SANDSTONE.—In and throughout the ocean waters, the elaborated and elaboratory matter which forms the basis of silica is exceedingly abundant, generating and elaborating within the living system of animals and vegetables. The nature, form, and composition of the inorganic compound depends, of necessity, on the nature of the material of the compounds which form the animal or vegetable body, or otherwise on the nature and qualities of bodies with which it unites in the fossil and mineral kingdoms. In the lower depths of tropical regions, or in temperatures where naked polypifers and cold-blooded animals can exist, sands only are formed, unless other material is carried into these depths by the force of running streams, and these sands are of homogeneous qualities: thus, the lower depths are ever found to be composed of siliceous bodies, and sands and sandstone form the natural basis of all the undisturbed strata covering the superficies of the earth. The presence of iron, such as is manifest in the red sands and sandstones said to constitute the primary beds of the British strata, is demonstrable proof that

these sands are of secondary qualities; for iron is not a primary product, but is elaborated within the system of animals of red blood, and is secreted in shallow, warm, and tranquil regions. Entering into the organic structure of many species, it is a secondary result. Mollusca and polypifers locate in groups and families in the various regions of the deep, and their nature and combined qualities, when the deposits are exclusively local, ever determine the nature and qualities of the sand. Thus, for instance, along the shores of the Red Sea, where the deposits, forming sea-beaches, are exclusively oceanic, various localities present varying phenomena of sands: some are formed entirely of young mollusca, almost invisibly minute in their particles; others are blended with the bodies, and fragments of bodies, of larger shell-fish, forming sands and pebbles; others are united with radiati, broken coral, and calcareous matter, varying in its mixtures—the accident of local disposition and of local union determining the result. In the decomposition of larger mollusca, the combined elements very often separate; the carbon and calx being carried away by occasional washings, the cartilaginous and outer epidermis separating as they mineralize into sands or siliceous bodies. This change is within the observation of all who choose to throw a common oyster-shell upon the earth, and leave it exposed to the action of the atmosphere for a season.

In general, the result depends upon the sum of local influences of heat and moisture. Within rainless regions, the larger mollusca thrown upon the shores, seldom decompose if thrown above the ordinary action of the waves; but they gradually consolidate, or rather become oxydated, the mechanical combination of their elements and atmospheric air being productive of the result. As they silicify, so the organic matter gradually disappears, the more delicate portions of the shell fall away, the protuberances separate, and in a very short time the main trunk of the animal becomes what is termed a petrification. If the shell become buried in moist sand it soon decomposes, and becomes one with the mass; if embedded in ocean marl, it also generally decomposes, unless arrested by local changes, the bed of marl being, by the circumstance of gradual change, abstracted from the dominion and influence of the waters. The shores of the British Isles can give little idea of the transformations taking place in distant lands, in composition and character widely dissimilar. Everywhere around England we behold the wreck of ancient strata: beds which have, age upon age, resisted the changing hand of time, washed by the ocean waves are rent asunder, their lighter particles being carried far into the bosom of the deep, their heavier aggregates remaining as barriers to further encroachments, or as warning to the inhabitants of the cliffs. Not so in other, and vastly more extensive, regions of the earth: it is true, the destroying hand is everywhere manifest, but the creative power is more sensibly and extensively exhibited; for the one locality, for the one solitary island, destroyed by the waters, thousands of miles are gradually abstracted from their dominion, and instead of the commingled phenomena of these, the older strata, which tell us of epochs of time, of revolutions and changes by flood or fire, we have phenomena peculiar to the waters above, and are enabled to mark their transitions into the fossil and mineral kingdoms.

Each region on the earth, or within the waters, varies in its capacities and in its tendency to generation, and maintains in its generations living creatures, having phenomena peculiar to itself, and common to all, the Causes of Effects, are therefore numerous. Every species propagates its kind, but the accidents of change of food, temperature, and association, may cause a change of organization. The like accidents of change are equally manifest in inorganic bodies, the mechanical or chemical union of one day giving place to the mechanical union of another day; the final disappearance of one mechanical mixture, causing another compound to make its appearance; but in all these changes, common to inorganic matter, we have not yet been enabled to note with correctness, how far silica changes in decomposition, and if it does so, under what circumstances this change takes place.

(To be continued in our next.)





RUINS OF CLONATTIN CHURCH, NEAR GOREY, IRELAND.

TO THE EDITOR OF THE BUILDER.

SIR,—At a distance of one mile from this town stand the remains of the little church of Clonattin, by its lonely situation, in the midst of large hawthorn hedges, hidden and unheeded; nothing now remains besides parts of the north and south walls, and a small portion of the western end of the fabric. The annexed sketch is a

representation of its appearance at the present time. The ivy running over its masonry, though adding to its venerable appearance, has been the active agent of gradual destruction to its walls.

To the casual observer this little church presents nothing besides two walls and the now scarcely traceable foundations of its chancel.

Of its period of erection I could learn no trace. One small window alone is to be seen



Plan of the Door-Jambs.

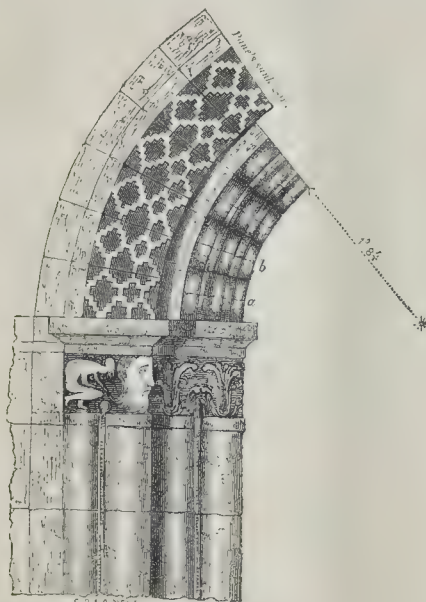


Section showing the Joints of the Arch-Stones at a and b.



Soffit of the Arch-Stones at a and b.

12 ins. 6 0 1  
SCALE. Foot



Elevation of part of Door-Jamb and part of surmounting Arch.

in the south side. The ivy with which the north side of the church is so overgrown may perhaps conceal a similar one.

I am, Sir, your obedient servant,  
Gorey, 26th March, 1844. J. K. L.

THE NEW BRIDGE AT BATH.—The Town Council, by an overwhelming majority, have acquiesced in the recommendation of the committee for the erection of an entirely new structure. The new bridge will be of iron, of one span, and there will be a footpath on each side of it. Among the proposals sent in to the committee, in addition to the successful one of Messrs. Armstrong and Manners, were—for one arch, Mr. Lamb, 6,000*l.*; Mr. Bell, 7,040*l.* if of stone, 9,700*l.* if of iron; Messrs. Birch, 3,555*l.*; Mr. Barry, Taunton, 3,689*l.* For two arches—Mr. Lamb, 5,250*l.*; Mr. Bell, 7,808*l.* if of stone, 8,099*l.* if of iron; Messrs. Birch, 3,000*l.*; Mr. Barry, 3,439*l.*; Mr. Manners, 3,220*l.* Mr. Gravett, for a straight bridge, supported on iron breast-summers, 4,000*l.*

NEWSPAPER

There is, however, a rich treat to be found (to all who wish to take a retrospective review of the state of the arts at a remote period in this country), as at the heads of many of the numerous graves that surround the walls of this little spot are the scattered remains of the cut-stone dressings of an entrance doorway.

For the pages of THE BUILDER, I have made out the subjoined sketches of some portions of this doorway. The arch, which is in the Norman style, is a very curious example, and taking into account the nature of the material from which it is wrought (Mica slate), shews very considerable skill in the workmen of that day.



## LECTURES ON ARCHITECTURE AND ANTIQUITIES.\*

## Conclusion of Lecture II.

OF PERSEPOLIS, the ancient capital of Persia, but few ruins remain to attest its former magnificence. It was set on fire by Alexander the Great in one of his drunken fits, and never recovered its ancient splendour. A magnificent terrace supported an immense number of columns, whence it was called the Palace of Forty Pillars. "On ascending the platform on which the Palace of Forty Pillars once stood," says Sir R. Ker Porter, "nothing can be more striking than the view of its ruins, so vast and magnificent, so fallen, mutilated, and silent,—the court of Cyrus, the pavilion of Alexander's triumph, and the memorial of the wantonness of his power." Again, Sir R. Ker Porter says, "On drawing near the Chehel-Minar, the eye is riveted by the grandeur and beautiful decorations of the flight of steps which lead up to them. This superb approach consists of a double staircase, projecting considerably before the northern face of the terrace, the whole length of which is 212 feet; at each extremity, east and west, rises another range of steps; and again, about the middle, projecting from it 18 feet, appear two smaller flights rising from the same point. Here the extent of the range, including a landing-place of 20 feet, amounts to 86. The ascent, like that of the great entrance from the plain, is extremely gradual; each flight containing only 32 steps (none exceeding 4 inches in height), in breadth 14 inches, and in length 16 feet. The whole front of the advanced range is covered with sculpture. The eye at first roves over it lost and bewildered by the multitude of figures." Among the sculptures, figures of bulls (some of the capitals are formed of bulls kneeling), and of lions, are of frequent occurrence, and the lotus flower is often introduced.

In some magnificent portals or doorways yet standing, the large, overhanging, hollow cornice, is too strikingly like that in Egyptian temples to pass unnoticed; and Mr. Gwilt observes that "the similarity between them points to the conjecture that, though neither might have been borrowed from the other, they are not many removes from one common parent." And again: "No person can look at the style of composition and details of Persepolis without a conviction of some intimate connection between the architects of Persia and those of Egypt." (*Encyclopædia of Architecture*.)

ECBATANA was the capital of ancient Media, and was eight leagues in circumference, and surrounded by seven walls in the form of an amphitheatre, the battlements of which were painted in various colours, and covered with silver and gold. It was here that Tobit resided with his family after the death of his parents. (ch. xiv. v. 12.) Josephus tells us (Antiq. b. x. ch. xi. s. 7) of the prophet Daniel that he "built a tower at Ecбатана in Media; it was a most elegant building, and wonderfully made, and it is still remaining, and preserved to this day; and to such as see it, it appears to have been lately built, and to have been no older than that very day when any one looks upon it, it is so fresh, flourishing, and beautiful." It was at Ecбатана that Hephæstion, the favourite friend of Alexander, died, and it was here that Cyrus was buried:

"The eagle child of victory, the great, the wise, the just,  
Assyria's fam'd and conquering sword, and  
Media's regal strength."

Some writers, however, place his tomb at Pasargada, where the kings of Persia were always crowned.

SUSA, the capital of the Persian empire, when Persia and Media were united, was 120 furlongs in extent. The treasures of the kings of Persia were kept there, and the royal palace was built with white marble, and its pillars were covered with gold and precious stones. It was usual with the kings of Persia, from the time of Cyrus, to spend the summer at Ecбатана, and the winter at Susa, because the climate was warmer there than at any other royal residence. It derived its name from the quantities of lilies which grew there—*susān* being the Hebrew for *lily*. This city is the

Shushan of the English translation of the Scriptures\*: it was here that Daniel had his vision of the kingdoms (ch. viii.), and we find it frequently alluded to in Nehemiah; but in the Book of Esther we shall find some account of the magnificence of the palace, "where were white, green, and blue hangings, fastened with cords of fine linen and purple to silver rings and pillars of marble; the beds were of gold and silver, upon a pavement of red, and blue, and white, and black marble." (ch. i. v. 6.) The King Ahasuerus, mentioned in the Book of Esther, is supposed, by Archbishop Usher, to be Darius Hystaspes, whilst the learned Scaliger thinks that Xerxes was meant; and Josephus states that it was Artaxerxes Longimanus—an opinion followed by Dean Prideaux, Bishop Tomline, and others.

There is much to interest the antiquary in various parts of Asia, as at Petra, the capital of Idumæa, where the sculptured rocks are very remarkable. India demands a lecture for the examination of its truly astonishing works of art—works whose history is lost amid the darkness of superstition. We propose at some future day to devote a little time to the consideration of the excavated temples of India; at present we propose to refresh our sight with the purer treasures of classical architecture, and to bask in the sunny climes of Greece, as a relief from the gloom and darkness of long-forgotten ages.

G. R. F.

## METROPOLITAN IMPROVEMENTS.†

## THAMES EMBANKMENT.

## The Plans of Mr. John Martin.

THE plans of Mr. Martin for improving the navigation of the river, and for diverting the sewerage from its shores, have been for many years before the public, and we thought it due to the exertions of that gentleman in aid of an undoubted public good, to comply with a request which he preferred to the commission, through its chairman, to be examined; and we accordingly requested his attendance.

The principal features of Mr. Martin's plan, as applied to the part of the river under consideration by the commission, viz. between Vauxhall and London bridges, are the diversion of the sewerage from the river, and the application of it as a manure; and in connection with this object, an embankment of the river, and upon it a promenade.

The improvement in the sewerage he proposes to effect by uniting the present sewers with main trunks, or intercepting sewers, running parallel with and contiguous to the present bank of the river; and the space between the present wharfs and the embankment he proposes to fill up with solid matter, having large chambers and openings three-quarters of a mile apart, from which chambers the contents of the sewers should be raised by steam-engines, and conveyed in pipes to certain receptacles in the country, and be there distributed in a liquid state for agricultural purposes. The value of this as a manure, the importance of so using it in a commercial point of view, and the injurious effects of its discharge into the river, are fully illustrated in Mr. Martin's description. Should the expense of this disposal of the sewerage operate to the present abandonment of his proposition, he would nevertheless recommend the adoption of the intercepting sewers, with their chambers and

openings, which might be allowed to discharge their contents into the river, until his more comprehensive plan could be carried into effect.

In providing for the sewerage and the embankment, Mr. Martin also proposes that a public walk should be obtained along the embankment quay, where there is sufficient width, or where any undue abutment into the river presents an extraordinary obstacle that the walk should pass behind or through it, or through the basement of any building which should form such abutment; and if a carriage-drive is insisted on, that the road should be much wider, and that inclined planes, rising about 1 inch in 30, should be substituted wherever stairs are now proposed.

Mr. Martin recommends the erection of colonnaded wharfs upon the quay, at intervals where the traffic is great, as between Blackfriars and London bridges, to afford additional room for the landing of merchandise; and over this line of colonnaded wharfs, he proposes the public walk to be continued.

"To render the depth of the river at low-water equal, and to preserve the bottom from uneven wear," Mr. Martin recommends the construction of subweirs across the river from shore to shore, by means of piles with beams pinned down upon them—about 100 feet of the middle being lower than the rest of the weir, which should be made to slope to the shore until it meets mean low-water mark. By placing the weirs at distances of a quarter of a mile, the fall would, in Mr. Martin's opinion, "be gradually and regularly distributed from Westminster to London bridge."

Of the plans and drawings laid before us by Mr. Martin, we have selected such as we think essential to a clear understanding of his views, and the statement which he addressed to the commission is printed in our minutes of evidence.

Of Mr. Martin's plan for an embankment with a public terrace, the claims were not considered equal to those of other plans prepared for the same objects and lying at the same time before us; and we felt, therefore, at a very early period of our proceedings, that we should not be justified in making it the subject of further inquiry.

The plans to which our attention has been directed, as appearing to exhibit in their details the best mode of effecting an embankment of the Thames, were three in number, viz.:

A plan prepared by Mr. Walker.

A plan prepared by Mr. Page, the acting engineer of the Thames tunnel; and

A plan founded upon the suggestions of a member of the commission.

These will be occasionally referred to as plans A, B, and C, respectively.

The commission proceeded, in the first place, to examine Mr. Walker and Mr. Page in reference to the objects, advantages, practicability, and expense of their respective plans. The official opinion of Captain Beaufort, and the professional opinions of Mr. Hartley, Mr. Cubitt, Mr. Gordon, Mr. Rendel, Mr. Macneil, Mr. Rennie, and Mr. Giles, were subsequently obtained; first, as to those leading and general points which appeared to apply to all the plans; and, secondly, as to the relative merits of the three.

Of these opinions, a portion, it is to be observed, was collected by the commission in the usual form of oral evidence. It occurred to us, however, subsequently, that all the essential questions in an inquiry of this nature might be more effectively condensed, and circulated in writing (an arrangement which was subsequently found conducive also to the parties consulted), and the remainder, therefore, were collected in that form.

Copies of these questions were also addressed to Sir Isambard Brunel, and Mr. J. K. Brunel, and Mr. Donkin; but considerations of health in the first case, and professional engagements and want of time in the other two, deprived the commission of the assistance of these gentlemen.

In addition to the eminent civil engineers above adverted to, we had occasion to examine, upon separate and distinct portions of the inquiry, Mr. J. W. Higgins, a surveyor extensively employed in London, and ordinarily referred to by the corporation for valuations, in cases of embankment upon the river; Mr. R. L. Jones, the chairman of the London-bridge Improvements Committee, a gentleman

\* שושן [Nehemiah, ch. i. v. 1; Daniel, ch. viii., v. 2.] The city of Shushan, or Susan—ששנה [Canticles, ch. ii., v. 1].—Lily.

So little is known of the ancient pronunciation of the Hebrew letters, that modern Jews scattered in various nations, pronounce them very differently; whether the letter ש should be denominated *shin* or *sin*, and should have the power of *sh* or *s* simply, is very doubtful. The difference between ש and ס, supposed to be *sh* and *s*, but confused with each other by different authorities, and by which the Ephraimites were detected (Judges, ch. xii., v. 6) when asked to say שבעל, but said סבעל, in the English translation of the Scriptures *Shibboleth* and *Sibboleth*; hence in the Vulgate they are translated *Scibboleth* and *Sibboleth*; in Bishop Scio's Spanish translation they are spelled as in the Vulgate, but from the peculiar Spanish sound of *sc*, *Shibboleth* becomes as though written in English *S'hibboleth*; in Diodati's Italian translation they are spelled *Scibboleth* and *Sibboleth*, altering again with the Italian pronunciation.

† Continued from page 197.

\* Continued from p. 199.



possessing great information on many of the subjects involved in these inquiries; and Captain Maughan, the dockmaster of the London Docks, whose connection with a large commercial body interested in the navigation of the pool, added to his practical acquaintance with the wants and habits of the river generally, made his evidence especially desirable. Messrs. Hay, Peache, and Lucey, barge-owners and lightermen, and Messrs. Taylor, Harvey, and Pocock, coal-merchants, or general wharfingers, in the line between Westminster and Blackfriars'-bridges, were examined principally on points not touched upon by the Select Committee of 1840, and upon the probable influence of any measure of embankment upon their respective interests.

On the feelings and opinions of the trade, as a body, it appeared to us to be more consonant to the convenience of the parties to be consulted, more conducive to a right understanding of the measures contemplated, and more likely to result in a well-considered judgment upon these measures, if our chairman were to address himself to one of its members in behalf of the whole; to inclose for their consideration copies and detailed descriptions of the plans; and to express the desire of the commission to have a deliberate opinion from all parties concerned as to the principle upon which, and the mode in which (consistently with the permanent interests of the river), an embankment might be effected in nearest accordance with their own views and wishes. A letter was accordingly addressed, and plans transmitted, to Mr. Taylor, of the firm of Dalgleish and Taylor, extensive coal-merchants and wharfingers in Scotland-yard; and in the appendix a copy of that letter is inserted, as well as of Mr. Taylor's reply.

In addition to these various sources of information on the subject before us, we were favoured with the written opinions of Mr. William Cubitt and Captain Maughan, subsequently to, and in extension of their respective oral examinations; a "Memorandum upon Estuaries and their Tides," contributed by Sir Henry Thomas de la Beeche; and, finally, with three letters, and various tables and statements, prepared by Mr. Page, accompanied by sections of the several bridges, and of the river, presenting a large body of valuable matter not bearing exclusively on the local topics and interests more immediately involved in these inquiries, but on the general question of embankment in tidal rivers. With these we have inserted in the appendix, papers, the result of inquiries made under our direction as to the frontages and occupations of the wharfs on the Middlesex side, with the number of barges and other craft in front of each at certain periods of the inquiry; and also as to the heights above Trinity datum of the nearest line of communication parallel with the river between Blackfriars'-bridge and Whitehall, shewing the great irregularity in the level of that leading thoroughfare.

#### *The Plan of Mr. Walker.*

**PLAN A.**—The plan of Mr. Walker, referred to in a former part of this report, originally comprised an embankment on both sides of the river, between London and Vauxhall bridges. In his evidence before the commission as to the relative expediency of embanking the Surrey and Middlesex sides of the Thames respectively, Mr. Walker stated his attention to have been principally given to the northern side of the river, adding it to be his own opinion (in which, indeed, almost all the authorities subsequently consulted appeared to concur), that "it would be better to establish a principle, and to shew its working in a portion of the river in the first instance," and to make the first embankment on the northern shore. The course of inquiry, therefore, pursued in his examination by the commission, had reference principally to these considerations.

The lines of Mr. Walker's plan are those shewn upon plan A in the appendix. It contemplated the formation of quays along the greater portion of the line, at a level of 3 feet 6 inches or 4 feet above Trinity standard; these quays to become, upon terms to be settled, the property of the respective parties owning the present wharfs, of which the embankment was, in fact, to be considered an extension.

A continuous solid embankment, however, having been deemed impracticable throughout

the whole line, Mr. Walker's plan suggested four exceptions, viz.: one at Northumberland-wharf; a second above Waterloo-bridge, terminating at the bridge-stairs; a third above the Temple-gardens; and a fourth commencing at Whitefriars'-dock, and terminating at the Bridge-stairs, Blackfriars. At these places he proposed to leave recesses (shewn on the plan), varying from 400 to 800 feet in width respectively, and bearing together a proportion of about one-third to the rest of the embankment.

"As the deepening of the navigable channel might tend to draw down the ground of the respective wharfs into the river, it was proposed, where required, to support the same by close piling in the line of the embankment, the top of this piling not to be above the level of the ground where it is driven." The main body of this embankment Mr. Walker proposed to construct of materials to be obtained from the bed of the river; the embankment-wall, excepting at Somerset-house where the wall was to be faced with stone, being of brick, with stone dressings only.

Of Mr. Walker's plan, a roadway formed no essential feature. In the event of a terrace or a railway being thought desirable, he proposed that it should be at least 50 feet in width; that, commencing in the neighbourhood of Whitehall, it should be carried over both the embankment and recesses, upon flat arches of 100 feet span, at such an elevation generally above the river as would enable the public in the use of it to communicate with Hungerford, Waterloo, and Blackfriars'-bridges, at the level of their respective roadways. With the last-mentioned of these bridges it would end.

Assuming, therefore, the height of Mr. Walker's embankment, throughout, to be, at high water, four feet above Trinity datum, the elevation of the roadway of this terrace above it would vary at different places; at its commencement at Whitehall it would be from five to six feet, at Hungerford and Blackfriars'-bridges 27 feet, and at Waterloo-bridge 37 feet above the same standard. To a spectator from the river, it would in each case present, with the addition of its balustrades, an elevation about three feet higher.

As the fall of the tide would, throughout the whole line of the embankment, produce, to the eye, a corresponding addition to its base, the river front of the terrace and embankment together would, at times of ordinary low water, have gained an apparent addition to its height of about 16 feet; making its extreme elevation above low water, with the balustrades, about 56 feet.

The estimated expense of Mr. Walker's embankment, as stated to the select committee of 1840, assuming it to be carried to the Horseferry-road, was 300,000*l.* In his evidence before the commission no proportion of this amount was assigned to the shorter distance since contemplated; but it is probable that, upon the embankment above Westminster-bridge, a small portion only of that amount would have been expended.

The erection of a terrace (if it were desired) as a separate superstructure, with its piers, arches, and roadway together, would, in Mr. Walker's opinion, involve a further expense of about 400,000*l.*; making the estimated cost, therefore, of the terrace and embankment combined, between 600,000*l.* and 700,000*l.*

The plan of Mr. Walker, as we have already stated, excited considerable opposition in Parliament in the session of 1840, from the wharfingers and others interested in the trade of this locality. It was then directed exclusively to the principle of a solid embankment, subject to the exceptions already referred to, as to recesses in certain portions of the line.

The objections urged against it at that period had reference to its alleged interference with the river frontage, of which, though a large portion, in the opinion of the commission, might, undoubtedly, have been improved by the adoption of such a measure; yet a still larger had been appropriated to purposes dependent upon its proximity to the water side, and adapted principally to the habits of the coal-trade.

These objections, it should be stated, though the objections of a majority of the parties affected, were not universal. It was alleged by Mr. Walker that many wharfingers were desirous of availing themselves of the privilege to embank, upon the terms then proposed

by the city, viz.—the payment of 1*d.* per annum for every square foot of ground acquired from the river.

It was objected, however, that assuming this to be permitted, a measure so partial in its operation could not fail to be injurious to a large body of the trade, by creating recesses of indefinite width, uncertain as to the time of their existence, and in the meantime favouring the accumulation of mud.

The evidence of Mr. Walker upon all these points, together with the evidence of those who, on these and other grounds, were opposed to the principle of his embankment, has been before the public now for a period exceeding three years, in the report of the select committee already referred to. No doubt, it appears to us, can exist, upon a perusal of that evidence, that it exhibits a manifest preponderance of feeling on the part of the trade adverse to the plan before that committee.

The object of the commission, therefore, in calling Mr. Walker before them, was not to re-open the discussion of 1840, but, looking to the result of that discussion, his subsequent survey of the river in 1841, and the probability, from these and other causes, of his having communicated with parties interested in the northern shore of the river within the intervening period, to ascertain whether he had seen reason to alter his opinions or to modify his plan, and especially whether he were prepared to bring the question again under their consideration in a shape that might justify them in recommending its adoption.

From our examination of Mr. Walker on these points, his views appeared to have undergone no change; and with reference to the concurrence which his suggestions were now likely to receive on the part of wharfingers and others interested in the line, we found him unprepared to inform us either as to the extent to which such concurrence might be depended upon, or to which the commission might reasonably consider itself entitled in reviving the consideration of his plan. One of three alternatives appeared to us to be inevitable; either that such concurrence should be obtained in the first instance, and throughout the whole line, or that considerable sums of money must be expended in compensations; or, assuming the impossibility of the first of these alternatives, and the inexpediency of the second, that the embankment must proceed in small and sometimes widely detached portions of the whole line.

The latter of these alternatives would justify a revival of all the objections to the proposed embankment of 1840, and render the execution of a terrace or river road utterly impracticable.

We are not unmindful that Mr. Walker has endeavoured to provide against these contingencies by recesses sufficient in extent, and so arranged in regard to locality as to meet the wants of a large body of the trade; but we cannot but remark, at the same time, that these recesses stood in Mr. Walker's plan of 1840; that he could then give no definite assurance as to the time by which they would be completed, or the period for which they might be available; and that, upon being questioned by ourselves, as to the grounds upon which he had determined the proportions of his recesses to those of his solid embankments, he admitted that "he had calculated upon the feeling of individual proprietors in the line, of which, however, he knew little."

In stating to the commission the origin and purposes of his survey of 1841, Mr. Walker observed, "The great object of the city in that survey, as it appears to me, has been to determine a river line, to which parties making applications might, but beyond which they must not extend their premises; and, to shew how the navigable part of the river may be deepened and improved, without injuring the berths for barges where parties do not wish an extension of solid wharf, which is in no instance proposed to be compulsory."

Upon being questioned by the commission, whether that opinion should be understood as applying to the plan under consideration, he replied:

"I have stated that at present there is no intention of anything compulsory, so far as I am aware of. I am not sure that it would not be expedient for a considerable time to leave



it to be optional. I think if the measures were now intended to be compulsory, there would be demands from the owners on the banks of the river for compensation; whereas, if the thing were left to work its own way for a time, parties would be allowed to carry out and extend their premises; some in the shape of recesses or docks, and some in the shape of embankment, the property being then considered theirs in fee. In that way, portions being taken in different parts all along the river, if it should be desirable afterwards to be made compulsory upon the minority, the majority of owners and occupiers agreeing in the plan; or if they got to be all unanimous, there would be an excellent standard along the whole course of the river on which to value the land, or to pay for damages, if any were done." The commission, upon this, observed, "Then, the embankment would take place at separate intervals?" To this observation Mr. Walker answered, "Yes."

The amount of monies to be paid as compensation under such circumstances, or of other monies to be raised in consideration of the land embanked, are subjects, therefore, into which it would be obviously impossible for this commission to enter with any certainty or profit. According to Mr. Higgins, who was examined before the committee of 1840, and whose views, like those of Mr. Walker, would appear to have undergone little alteration subsequently, a revenue of about 3,600*l.* per annum might be realized if the embankment were complete; but "he had taken what would be gained by the embankment; in no case what would be otherwise lost." He had made no separate estimate of the amount to be expended in compensations, and his estimate of the revenue was admitted to be irrespective of any outlay of the kind.

The advantages of Mr. Walker's plan for a solid embankment, if it were complete, would undoubtedly consist in its simplicity of outline, its freedom from details, and its entire exemption from restrictions and regulation of any kind for its after-management. In making this observation, we desire to apply it either to a solid embankment throughout, or to the embankment with recesses to which Mr. Walker's proposal is at present limited; for, although the objections, on the score of the accumulation of mud in these recesses, and of the insufficiency of the ordinary traffic of the river for its dispersion, pervade the whole of the evidence taken by the commission, yet the general tendency of that evidence is to shew, that, if they were judiciously constructed in the first instance, a moderate application of artificial means, such in fact as is at present resorted to in the best constructed wharfs on the river, might answer every necessary purpose.

(To be continued in our next.)

#### CHURCH-BUILDING INTELLIGENCE, &c.

*New Church of St. Nicholas, East Grafton.*—On Thursday last, the Lord Bishop of the diocese consecrated the new church of St. Nicholas, at East Grafton, in the parish of Great Bedwyn. This church was commenced on the 11th of April, 1842, and is designed in the Norman style, the details being correctly and successfully carried out by the architect, Mr. Benjamin Ferrey, and executed in Bath stone by Mr. Lloyd, of Great Bedwyn. Among many presents from different individuals are some richly-stained windows, and a pavement of encaustic tiles in the chancel, given by the Marquess of Ailesbury. The windows were the production of Mr. Willement, who also designed the arrangement of the pavement, and executed the ornamental painting of the chancel. The font, copied from that still existing in Welford Church, in the county of Berks, is beautifully executed in Painswick stone, and was universally admired. It was a gift from the vicar's children, as were the books from Dr. Merriman, and the splendid altar-cloth from the Countess Bruce.

*New Church, Portsea.*—The ceremony of consecrating the new church of St. Mary's, Buckland, the parish church of Portsea, took place on Thursday, by the Bishop of Winchester. The church will in future be opened on all occasions for Divine service, and is capable of accommodating 2,000 persons. The old edifice could only give room for about 600. The fund for building this church has been raised by subscription.

*New Church in the Parish of Kingsclere.*—It is proposed to build a new church on the northern part of the common, in this parish, where five acres of land have been set apart for that purpose, under the late Act of Parliament, for the proposed inclosure.

*New Catholic Chapel and Monastery.*—The foundation-stone of a Catholic chapel and monastery, were on Thursday week laid by Mr. V. Gandolfi, of the firm of Gandolfi and Co., silk-merchants, Throgmorton-street, on the estate of Mr. T. Hornby, Blackmoor Park, Worcestershire. The buildings, which will be erected at the sole expense of Mr. V. Gandolfi, are expected to be completed in the course of three years, at an expense of 10,000*l.*

The subscription for enlarging the parish church of Melksham already amounts to upwards of 1,000*l.*

#### RAILWAY INTELLIGENCE.

*South Wales Railway.*—Measures are being taken to carry into effect a railway in connection with both the Great Western and Birmingham Railways with South Wales, and its terminus will be Fishguard, from whence an easy and short passage may be secured to the south of Ireland. The following circular has just been published, and we find that on the 22nd of March last a meeting of the members of parliament and other gentlemen connected with Wales was held, among whom were Lord James Stuart, president; Sir J. J. Guest, Bart.; O. Morgan, D.S. Davies, D. Morris, and Frederick Gower, Esqrs.; Mr. Brunel, Mr. Russell, the chairman of the Great Western Railway, &c. The estimate of the cost of the whole line will be 2,500,000*l.*; and we have every reason to believe that Government will give every assistance to the furtherance of this great undertaking. The intended line is as follows:—

Gloucester to Stonehouse .....	7 miles.
Stonehouse to Swansea .....	89 —
Swansea to Carmarthen .....	24 —
Carmarthen to Fishguard .....	35 —
London to Fishguard .....	255 —

and will pass within a short distance of Carmarthen. The interests concerned in so important a measure may thus be briefly enumerated:—Those of the government and other persons connected with the Forest of Dean. Also those of the great iron, copper, tin-plate works and collieries at Newport, Cardiff, Swansea, Llanelly, and the whole of the manufacturing and agricultural interests of South Wales, by the facility of communication it opens with the manufacturing districts of England; and likewise the interests connected with the south of Ireland, by effecting a communication between that country and London in less than fifteen hours, thus bringing the important districts of Wexford, Waterford, Cork, Kilkenny, Tipperary, Limerick, the Shannon, and many others, within an easy distance of the whole of England. The country has been carefully surveyed as far as a preliminary investigation will admit of it, and it is beyond all doubt that an excellent line may be obtained at a moderate cost of construction.—*Carmarthen Journal.*

*The Great Western and South-Western Railways.*—The Committee of the House of Commons, appointed to determine on the merits of two lines of railway proposed by the Great Western and South-Western Companies to the town of Newbury, in Berkshire, have come to the determination of granting the line from Basingstoke to Newbury, which was the one proposed by the South-Western Railway Company, and rejecting the line proposed by the Great Western Railway Company from Reading to Newbury.

*Railway to Tavistock.*—Measures are being adopted for the purpose of constructing a railway from Plymouth to Tavistock. Preliminary meetings have taken place in Tavistock. It is proposed to raise the required capital in shares of 25*l.* each.

The Great Western Railway Company have now in contemplation to make a branch line to extend to Frome and Warminster, embracing the towns of Melksham, Bradford, and Trowbridge. A line for the latter was provided for in the first Act.

*Rating of Railways to the Poor Rate.*—A case of considerable interest came before the Lewes Quarter Sessions, on Wednesday week, being an appeal by the Brighton Railway Company, against a rate made by the overseers of Cuckfield, in Sussex, in 1843; there were appeals against the rates in four other parishes, but as all parties wished the affair definitively settled, the five parishes joined, and agreed to abide by the decision on this one case.—Mr. Cobbett and Mr. Roupell appeared for the company, and Mr. Creasy and Mr. Wyatt for the parish.—The ground of appeal was "that the company were rated and assessed at a rate higher than they ought to be," the rateable value charged upon them by the parish being 1,864*l.* 5*s.*—producing a rate of 13*s.* 16*s.* 4*d.*; while Mr. Cobbett contended that the real rateable value, according to correct calculation, was 293*l.* for that portion of the line situate in Cuckfield parish.—After several surveyors and engineers had been examined on behalf of the rate, and the accountant, resident engineer, and carriage-builder of the company on their behalf, the rate was confirmed.—The trial lasted upwards of eight hours, and the greatest interest appeared to have been excited as to the result.

*Railway Returns.*—A return, just obtained by the hon. and gallant member for Lincoln, Col. W. Sibthorp, of all moneys to be raised under the sanction of the acts whereby railroad companies have been incorporated between the 1st of January, 1826, and the 1st of January, 1844, gives some interesting particulars, shewing the immense resources of the country, as regards the obtaining of vast capital for public purposes. Taking some of the more important lines of railroad established within the last ten years, we find the following results are obtained:—The gross total sum to be raised according to Acts of Parliament by the Broad and Forfar Railway Company amounted to 160,000*l.*; the Birmingham and Derby Junction Railway Company was altogether empowered to raise 1,200,000*l.*; the Birmingham and Gloucester, 1,413,741*l.*; the Bristol and Exeter, 2,000,000*l.*; the Bristol and Gloucestershire, 876,000*l.*; the Whitstable and Canterbury (a tram-road), 80,000*l.*; the Cheltenham and Great Western, 2,000,000*l.*; the Chester and Birkenhead, 499,999*l.*; the Chester and Crewe, 458,333*l.*; the Clarence, 799,645*l.*; the Dublin and Drogheda, 600,000*l.*; the Eastern Counties, 2,533,333*l.*; the Edinburgh and Glasgow, 1,500,000*l.*; the Glasgow, Paisley, and Ayr, 1,249,900*l.*; the Leinster and Munster, 1,065,000*l.*; the Great North of England, 1,730,000*l.*; the Great Western, 4,999,999*l.*; the Liverpool and Manchester, 1,832,375*l.*; the Birmingham and London, 5,500,000*l.*; the Blackwall, 1,066,000*l.*; the Brighton and London, 2,820,000*l.*; the Croydon, altogether, 921,333*l.* (the original estimate of Mr. Gibbs, the engineer, having been only 140,000*l.*); the Greenwich, 993,333*l.* (or nearly double the original capital of 533,000*l.*) the South-Western 2,540,000*l.*; the Leeds and Manchester, 3,429,000*l.*; the Manchester and Birmingham, 2,800,000*l.*; the Grand Junction, 800,000*l.*; the Midland Counties, 1,866,333*l.*; the Newcastle and Carlisle, 1,050,000*l.*; the Northern and Eastern, 1,631,288*l.*; the North-Midland, 3,400,000*l.*; the South-Eastern and Dover, 3,630,277*l.*; the Sheffield and Manchester, 1,533,000*l.*; and the York and North Midland, 681,666*l.* The above are only a fraction of the whole, but even these will serve to prove the astonishing monetary power and resources of the British empire. It should be stated that the sums in question include both the capital in joint-stock, and the amounts raised by loan or mortgage. In some instances (and the Greenwich and Croydon lines may be named amongst others) the original estimates have been enormously exceeded; the latter insignificant line, which is only 104 miles in length, having already cost the proprietors nearly a million sterling (or 100,000*l.* per mile), whereas the originally proposed capital amounted to 140,000*l.*

*Effects of Railways on Foreign Commerce.*—The extraordinary effects of the increased rapidity of transit secured by the railroad system, not only as merely shortening the distance from town to town, but even on our commercial relations with the continent, are fully exemplified in some alterations which are about being made in the conveyance of a



staple commodity of one of the midland counties—viz. salt. The saliferous district of Cheshire, Nantwich, Dronowich, &c., produces more of this necessary article than any other salt mines, we believe, in the world, and it has hitherto been principally exported from Liverpool, continental vessels coming in ballast for the purpose. By the now full development of the railways through the midland and northern counties, arrangements are being made to transmit the salt by canal to Manchester, and thence by the Manchester and Leeds, Leeds and Selby, and Selby and Hull Railways, to the latter place for shipment, thus not only shortening the time to the Baltic about one-half, but the great probability is, that vessels which now come in ballast, owing to the length of the voyage round the Channel, will, in future, bring cargoes of grain, and thus cause an interchange of two great necessary commodities. One large wholesale house at Liverpool has already an establishment at Hull, and 300 waggons are building expressly for the purpose. It is also probable that Welsh slates, and other articles of commerce, will find their way across the island for shipment from our eastern ports.

### Correspondence.

#### GREAT MALVERN ABBEY.

SIR,—Will you permit me to correct a slight misconception in your last Number? In your report of the meeting of the Society of Antiquaries, of March 21, it is stated that drawings of the ancient Refectory, at Great Malvern, were presented by Edward Blore, Esq.; that the structure had been demolished in 1841, and it was believed that no other representations of this building, but those of Mr. Blore, had been preserved; such, however, is not the case. In the summer of 1836 I visited this neighbourhood with my friend Edward Blackburne, Esq., architect, author of a "History of Crosby Hall," a work on Pointed English Architecture, and restorer of a portion of Crosby Hall, &c. We examined this very interesting building, and took sketches and measurements of it. It was certainly a very singular and interesting example of English carpentry; the framing of the roofs and elegant wooden tracery of the windows were very remarkable. Mr. Rickman, in his work on the Architecture of England, thus speaks of this erection as the Barn of Malvern:—"Near it (Malvern Abbey) is the Abbey-Barn, a very interesting piece of wood-work, evidently of Decorated character, with some very good moulded-work in oak for windows, and tracery-piercings of a bold style in the principals of the roof."

I am more inclined to coincide with Mr. Rickman in his opinion, that it was used for that purpose, than as a refectory, as supposed by my namesake.

Begging you will excuse this intrusion on your notice,

I am, Sir, your obedient servant,  
8. Michael's-place, JOHN BLORE.  
Brompton-square, April 9th, 1844.

[We should like to publish the decorative carpentry of this building.—Ed.]

SIR,—I most respectfully beg leave, through means of your publication, of making more generally known the following acts of well-timed generosity to the labouring poor, now very rarely to be met with.

At the New Conservative Club-House, now in progress of erection in St. James's-street, a bricklayer's labourer of the name of McCarty, in the month of October last, fell from one of the scaffolds and was killed on the spot; upon the members of the club being made acquainted with the circumstances of the case, and that he was the only support of a widowed mother, they immediately subscribed a fund, and granted her a pension of eight shillings a week during her life-time. In the early part of January of the present year, another labourer fell backwards from a ladder, and was very seriously hurt by falling upon some iron girders that were at the foot of the ladder; he was thereby disabled for twelve weeks, during which time he was paid by the club eighteen shillings per week, being his full wages, till again enabled to resume his work. Last week, a labourer, while assisting to erect a scaffold to the ceiling of the grand staircase, fell from

a height of thirty feet upon the stones below, and received a severe internal injury; he, also, is the recipient of their bounty to the amount of his weekly earnings. I leave you and your numerous readers to form your own opinion upon the above; at the same time I think you will agree with me when I say that such well-timed generosity has now rarely to be recorded.

I am, Sir, your constant reader,

W. BOWACK, Foreman of the Works.

April 9th, 1844.

SIR,—As the acquisition of useful knowledge is at all times both highly desirable and pleasant to all those who are anxious to obtain a more perfect knowledge of the different trades, which they, in the order of Providence, may be called to fulfil, and, however, simple may be the knowledge communicated, yet it is received by such with pleasure and delight, as it puts them in a position to become more useful members of society, and renders them capable of performing higher uses to their fellow men. With this desire I would, through the medium of your excellent paper, make the following inquiry:—

What is the difference between that system of lines as practised by those of "the old school,"

in getting out the wreathed part of a hand-rail and that system which is coming into more general practice, and known by the name of the "square cut." And whether the work published by Mr. Weale, of Holborn, is an elucidation of the said "square cut?" If you, or any one of your able correspondents, would favour me with a solution of the above questions, you would greatly oblige,

Your obedient servant, J. P.

#### BLOXHAM'S GOTHIC ARCHITECTURE.

SIR,—I am exceedingly gratified at seeing that Mr. Bloxham has published another edition of his work on Gothic Architecture, but at the same time I think that if Mr. B. had published a supplement containing the additional information in a separate volume, it would have been a method better than the one followed, since those who possess the old edition must either go without the additional information or buy the new edition. I trust he will remedy the defect by publishing a supplement, for I am sure it will meet with a very extensive sale. Hoping you will be good enough to insert this in your valuable publication,

I am, Sir,

A POSSESSOR OF THE OLD EDITION.  
Saturday, April 13th, 1844.

#### SMITH'S PATENT WEATHER-TIGHT FASTENINGS AND SILL-BARS FOR FRENCH-CASEMENTS; IMPROVED REVOLVING IRON SHUTTERS; &c.

THE diagrams annexed, numbered from 1 to 5, represent an efficient means of excluding the weather from casements, being simple in construction, and easy of application.

Fig. 1 represents, to a scale of one-half the

full size, a short length of the meeting-styles, with a fastening thereto applied, and exhibits the appearance when the casements are closed; the brass face-plates and lever with ornamental knobs only being seen.

Fig. 2 is a section of meeting-styles taken above the lock, which is shewn as being mortised into a right-hand style, and through which passes the lever-spindle, communicating a threefold motion to the bolt, the case of which is let into a groove ploughed out of the rebate,

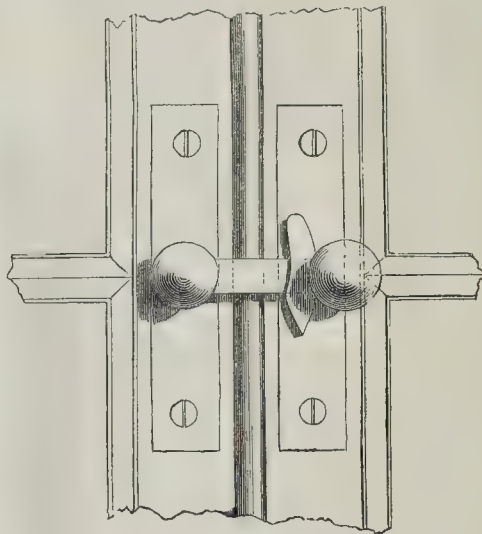


Fig. 1.

along the whole height of the style, and is bolt, by simply turning the lever-handle into the position shewn by the figure, is projected

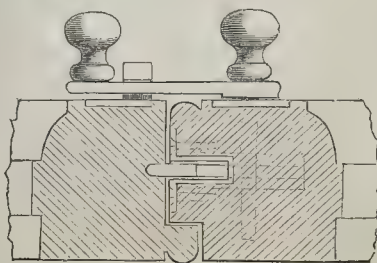


Fig. 2.

up, down, and forward at the same time, thus their whole height, and securely bolting the casements at top and bottom.



Fig. 3 is a section of a right-hand hanging-style, and the containing frame, and is a very

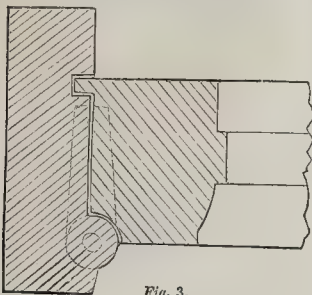


Fig. 3.

simple mode of hanging casements. By the above arrangement, the casements are rendered weather-tight in all their vertical joints, besides being effectually fastened, without presenting the projections of the Espagnolette bolt.

Fig. 4 is a section of a sill and casement

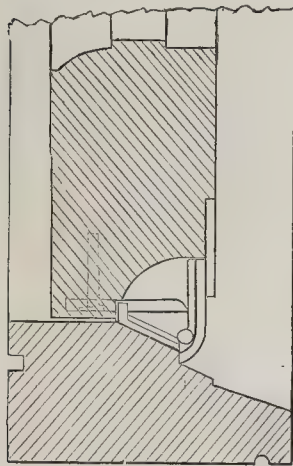


Fig. 4.

bottom-rail, to which is applied the patent weather-bar, the action of which is apparent. The casement is shown as shut, the tongue which passes under and raises the hinged-flap keeps it close to the face-plate, which is screwed to the bottom-rail, while the casement is closed; but so soon as the casement commences opening, the flap drops gradually till the point of the tongue has passed from under it, when it is relieved and drops into its seat, where it is protected from being trodden up or raised by accident: thus three joints are formed impervious to weather.

Fig. 5 is another description of weather-bar,

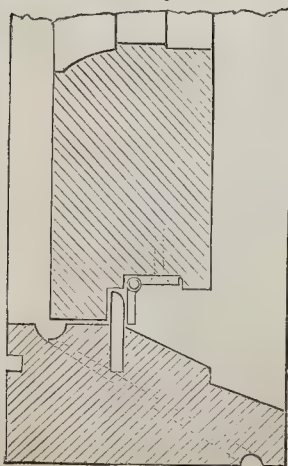


Fig. 5.

the peculiarity of which consists in the arrangement of the hinges of the flap, which is so hung that the greater the pressure of wind or

water against it, the firmer will be the joint. Figs. 6 and 7 illustrate an important improvement in the construction of revolving



Fig. 7.

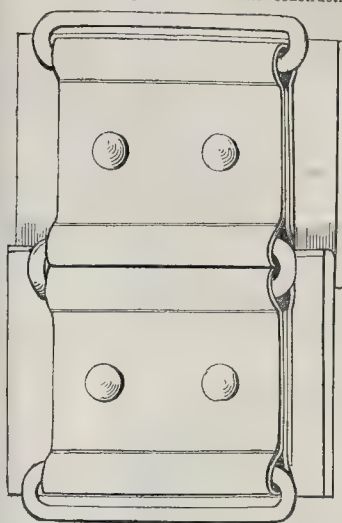


Fig. 6.

iron shutters, consisting in the substitution of which fig. 7 is an edge-view, in place of the a chain of the form shown by fig. 6, and of hinge usually applied to revolving shutters;



Fig. 9.

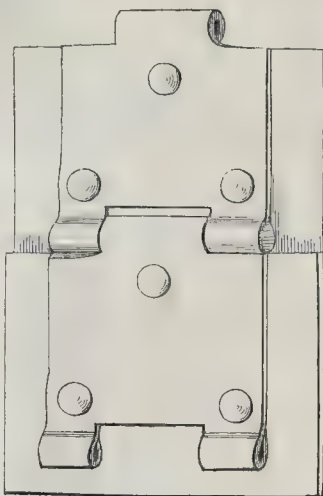


Fig. 8.

such hinge being represented by figs. 8 and 9, by a comparison of which the efficient operation of the chain will be apparent.

The advantages sought by the use of chains to be gained without increase of cost, over hinges, are, *four times the strength, four times the working-surface, the requirement*

*of less room, greater security, non-liability to derangement, and fourfold duration.* Those interested in the application of iron shutters, casement-fastenings, sill-bars, &c., would do well to inspect the numerous and interesting models of them at the patentee's works, and will then be able to judge how nearly these desiderata are accomplished.

**GREENWICH HOSPITAL.**—A considerable number of workmen are employed within the boundary-wall of Greenwich Hospital, laying down iron piping, for the purpose of more speedily extinguishing fire, should it at any time break out in that national edifice, without the aid of fire-engines. The principle is similar to that which has been for some time urged upon the government, and tried in the streets of the metropolis. The water is conveyed in pipes of nine-inches bore, laid from the capacious reservoir in the domain of her Royal Highness the Princess Sophia, immediately above the Observatory. Thence it passes along the declivity, supplies the Naval School, crosses the Woolwich-road, and enters the Hospital at the western-gate. The piping is to be laid throughout the whole of the exterior, and it is calculated upon hydrostatic principles

that the pressure of water will be sufficient without the aid of machinery, to force its way through lengths of leathern hose sufficient to reach the highest part of the building. It has been proved by recent experiments made in town, that, though water be conveyed through 5,300 yards of iron piping, consisting of 4,220 yards of 20-inch main, 550 yards of 15-inch main, and 500 yards of 9-inch main, the force was sufficient to drive it through two lengths of 40-feet hose to a height of 60 feet, giving a delivery of 100 gallons per minute. At Greenwich Hospital it is intended to erect stand-cocks so as to command every portion of the extensive pile, and from the diameter of the piping and the height of the fall, there can be no question but that the plan, when tried upon a large scale, will prove eminently successful. The men are working long hours, in order to complete the work as soon as possible.



## Miscellaneous.

**LIBRARY OF SIR CHRISTOPHER WREN.**—“To be Sold by Auction, by Messrs. Cock and Langford, in y<sup>e</sup> Great Piazza, Covent Garden, this and y<sup>e</sup> following evening, ‘The curious and entire Libraries of y<sup>e</sup> ingenious Architect, SIR CHRISTOPHER WREN, KNT. and CHRISTOPHER WREN, Esq. his son, late of Hampton Court; both deceased. Consisting of great variety of *Books of Architecture, Antiquities, Histories, &c.* in Greek, Latin, French, and English; together with some few lots of PRINTS. The said books may be viewed at Mr. Cock’s in y<sup>e</sup> great Piazza aforesaid, till y<sup>e</sup> time of sale, which will begin each evening at 5 o’clock precisely. Catalogues of which may be had gratis at y<sup>e</sup> place of sale aforesaid.”

“Note.—The Curious collection of Coins and Medals, Bronzes, Marble, and other Antiquities, will shortly be exhibited to Public Sale, timely notice of which will be given in this Paper.”—*Daily Advertiser of Oct. 26, 1748.*

**FALL OF A NEW BUILDING, AND LOSS OF LIVES.**—A serious accident occurred on Thursday week at Hull. The Hull Flax and Cotton Company are building some new offices for clerks and book-keepers, adjoining their present entrance office. The offices are built over a reservoir or drain. The accident occurred in striking some wedges from an arch over the reservoir, when the arch fell with a great crash, and at the time of the accident four men were at work underneath the arch, two of whom were killed, the other two fortunately escaping with only a few contusions.

**INDIAN RUBBER PAVEMENT AT THE ADMIRALTY.**—That portion of the Indian rubber pavement which has been laid down in the forecourt of the Admiralty, at Whitehall, has been tested by three heavily laden coal wagons, each carrying seven tons, being driven over it, when the pavement became considerably depressed, but, from the elasticity of its nature, resumed its former appearance as soon as the wheels passed.

**EDINBURGH PUBLIC BATHS.**—ROYAL DONATION.—The directors have just received by letter a donation of 100*l.* from his Royal Highness Prince Albert, who has also intimated that “he feels most happy to contribute that sum to the effecting of so very praiseworthy an object.”

## Current Prices of Metals.

April 16, 1844.

	£.	s.	d.	£.	s.	d.
SPELTER.—Foreign ton ..	0	0	0	23	0	0
“ For delivery ..	0	0	0	22	5	0
ZINC.—English sheet ....	0	0	0	30	0	0
QUICKSILVER .....	per lb.	0	4	6		
IRON.—English bar, &c., &c., ..	per ton	5	15	0		
“ Nail rods .....	0	0	—	8	5	0
“ Hoops .....	7	15	0	—	8	0
“ Sheets .....	8	10	0	—	8	15
“ Cargo in Wales ..	5	5	0	—	5	10
“ Pig, No. 1, Wales ..	0	0	0	—	3	15
“ No. 1, Clyde ..	0	0	0	—	3	2
“ For, Swedish ....	9	15	0	—	10	0
“ Russian, COND. ....	—	—	—	16	10	0
STEEL.—Swedish keg, p. ton	18	10	0	—	19	0
“ Faggot, ..	19	0	0	—	19	0
COPPER.—English sheathing, per lb. ....	0	0	0	—	0	8½
“ Old .....	—	—	—	0	0	8½
“ Cake p. ton ..	0	0	0	—	84	10
“ Tile .....	0	0	0	—	83	0
“ S. American ..	0	0	0	—	75	0
TIN.—English, blocks, &c. cwt. ....	—	—	—	3	13	0
“ bars .....	0	0	0	—	3	14
“ Foreign, Banca .....	0	0	0	—	3	10
“ Straits .....	0	0	0	—	3	6
“ Peruvian .....	0	0	0	—	3	0
Tin plates, No. IC. p. box	1	5	0	—	1	8
“ No. IX. ....	1	11	0	—	1	14
“ wasters 3s. p. box less	—	—	—	—	—	—
LEAD.—Sheet milled .....	per ton	17	15	0		
“ Shot, patent .....	0	0	0	—	19	15
“ Red .....	—	—	—	21	10	0
“ White .....	—	—	—	23	10	0
PIG-LEAD.—English .....	0	0	0	—	17	0
“ Spanish .....	0	0	0	—	16	10
“ American .....	0	0	0	—	16	5

SHORT and MAHONY, Brokers,  
1, Newman’s-court, Cornhill.

## Tenders.

TENDERS delivered for Hildenboro’ Parsonage, near Tonbridge.—Ewan Christian, Esq., Architect.

April 4:—

Howard and Son (Newington) .....	£1,333
Mair (West Malling) .....	1,310
Kempster (Boro’) .....	1,290
Chalkin (Tonbridge) .....	1,195
Cobb (Maidstone) .....	1,156

TENDERS delivered for the erection of five Houses at Brixton Hill, for J. Blackett, Esq.—Mr. J. W. Griffith, Architect:—

Bartlett .....	£2,730
Hellis .....	2,123
Trevers and Son .....	2,098
Notley .....	1,940

TENDERS delivered for the alterations to a House in the Old Kent-road, for Mr. B. Cowell.—April 13:—

Crawley .....	£235
Dean .....	195
Wadey .....	192

## NOTICES OF CONTRACTS.

For the erection of a New School at Harrietsham, Kent.—Messrs. Whichcord and Walker, Architects, Maidstone. April 22.

For building Sewers in Moor-lane, Cripplegate, and Great St. Helen’s, City.—Plans, &c., Sewers Office, Guildhall. April 23.

For Paving with Wood a portion of St. Andrew’s street, Cambridge, containing 352 superficial yards or thereabouts.—F. Randall, Clerk to Commissioners. April 23.

For building an Infant-School at Greenwich.—R. S. Martyr, Esq., Architect, George-street, Greenwich. April 25.

For making a Navigable Cut of about 660 yards from the Ozier Bed Reach to Newhithe, on the River Medway, Kent.—Messrs. Hoar, Beale, and Hoar, Solicitors, Maidstone; Messrs. Whichcord and Walker, Architects, Maidstone. April 27.

For the several Repairs to the Barber’s Hall and Buildings adjoining Monkwell-street, City.—Specification at the Hall. Further particulars of Messrs. Closs and Son, Surveyors, &c., 33, Clement’s-lane, City. April 30, 1844.

For building a House, Shed, Cellarage, and Vaulting.—Mr. Bellingham, near the bridge, Great Cambridge-street, Haggerstone. Mr. Catling, Architect. May 2.

For erection of a new Union Workhouse at Highland’s Farm, in the parish of Cuckfield, Sussex.—Particulars, Plans, &c., of Mr. T. Wisden, Hampton-place, Western-road, Brighton. May 10.

CAMBRIDGE.—For the several works to be executed at the corner of St. John’s and Bridge-streets. Mr. Clemence, Surveyor, Chesterton-road. The day for receiving Tenders not fixed.

For Erecting a Church at New Radford, near Nottingham.—Plans, &c., H. J. Stevens, Esq., Architect, 16, Full-street, Derby.

For works required in the enlargement of the Liverpool Workhouse.—Day for sending in Contracts, &c., postponed *sine die*.

## ERRATUM.

Page 181, 2nd column, line 1, for “grained,” in some copies, read “groined.”

## TO OUR CORRESPONDENTS.

We have received the communication relative to brick columns, which will appear in our next.

Also the Bishop of Kildare’s Seal, and the figure of the first Bishop of Ferns, which are in the hands of our engraver.

Also the beautiful interior view of the Chancel of Brecon Priory Church.

We have received the plans and description of Arbroath Infirmary, but should like to be informed in English words of the meaning of the word “Sarking.”

Through want of time and space we must defer till next week answering our other numerous correspondents.

## MEETINGS OF SCIENTIFIC BODIES, To-day and during the ensuing week.

SATURDAY, APRIL 20.—*Westminster Medical*, 32, Sackville-street, 8 P.M.; *Asiatic*, 14, Grafton-street, 2 P.M.

MONDAY, 22.—*Geographical*, 3, Waterloo-place, 8½ P.M.; *Medical*, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 23.—*Medical and Chirurgical*, 53, Berners-street, 8½ P.M.; *Zoological*, 57, Pall Mall, 8½ P.M.; *Civil Engineers*, 25, Great George-street, 8 P.M.; *Antiquaries*, Somerset House, 8 P.M. (anniversary).

WEDNESDAY, 24.—*Society of Arts*, Adelphi, 8 P.M.; *Pharmaceutical*, 17, Bloomsbury-square, 9 P.M.

THURSDAY, 25.—*Royal*, Somerset House, 8½ P.M.; *Royal Society of Literature*, 4, St. Martin’s-place, 4 P.M.; *Medico-Botanical*, 32, Sackville-street, 8 P.M.; *Numismatic*, 41, Tavistock-street, Covent Garden, 7 P.M.; *London Institution*, Finsbury-circus, 7 P.M. (anniversary).

FRIDAY, 26.—*Royal Institution*, Albemarle-street, 8½ P.M.; *Philological*, 49, Pall Mall, 8 P.M.

SATURDAY 27.—*Royal Botanic*, Regent’s-park, 4 P.M.; *Westminster Medical*, 32, Sackville-street, 8 P.M.

**BRITISH MUSEUM.**—Open to the public every Monday, Wednesday, and Friday, from 10 till 7 during May, June, July, and August, and from 10 till 4 the rest of the year; except the first week in January, May, and September, Ash-Wednesday, Good Friday, and Christmas Day, and Past or Thanksgiving Days. The *Natural History Collections* are open for study and comparison of specimens, to persons having permission, on Tuesday and Thursday from 10 till 4. The *Reading Room* is open to persons having tickets of admission every day (except Sundays, and when the Museum is closed, as above mentioned), from 9 till 7 in May, June, July, and August, and from 9 till 4 during the rest of the year. The *Gallery of Antiquities* is open to students having tickets every day in the week, except Saturdays and Sundays (and those times when the Museum is closed), at the same hours as the Reading Room.

**ROYAL COLLEGE OF SURGEONS.**—The Museum is open to visitors on Monday, Tuesday, Wednesday, and Thursday, from 12 till 4, except during the month of September; on Friday to gentlemen for studying in it; and on Saturday from 10 till 1 to gentlemen desirous of comparing specimens with those in the Museum. The Library is open to members and students of the college, and visitors having tickets of admission, daily (Sundays excepted), from the 1st of October to the 1st of April, from 10 till 4; and from the 1st of April to the 1st of September, from 10 till half-past 5.

**GEOLOGICAL SOCIETY.**—Library and Museum are open every day from 11 till 5.

**ROYAL ASIATIC SOCIETY.**—Museum is open every Tuesday, Wednesday, and Thursday, from 11 till 4.

**UNITED SERVICE INSTITUTION.**—Museum open all the year, from 11 till 5 in summer, and from 11 till 4 in winter. Admission by members’ tickets.

**LONDON INSTITUTION.**—Lectures will be delivered every Monday and Thursday evening, at 7 o’clock, until May 6.

## ADVERTISEMENTS.

TO BUILDERS, &amp;c.

**RAIN WATER PIPES, RAVE GUTTERINGS, SASH WEIGHTS, Air Bricks, Coal Plates, Stable Drain Grates, Bell Traps, and the usual castings for buildings, always ready, and supplied in large or small quantities. Prices in accordance with the present low price of iron, at JOHN YOUNG, Junior’s, Wholesale Ironmonger, 18, Blandford-street, Manchester-square, leading from Baker-street, Portman-square, where prices may be had on application, or sent postage free.**

## ZINC DOOR AND WINDOW PLATES.

**H. HEVETSON** from having had considerable experience in the manufacturing of this article, is now enabled to offer to the public the best DOOR and WINDOW PLATES which can be made, especially in the engraving part, either plain or ornamental, at moderate prices, for a good article. Apply at the Zinc Manufactory, 57, Cannon Street, near London Bridge.

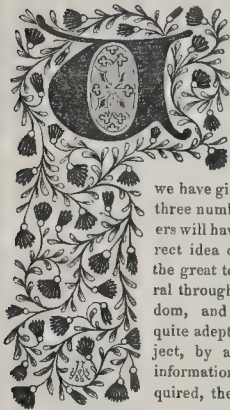
**ROYAL ADELAIDE GALLERY, LOWTHER ARCADE, STRAND.**—Under the special Patronage of her Most Gracious Majesty. Open daily from 11 to 5 o’clock, and from 7 to half-past 10 every evening. Morning Attractions.—A continued series of Scientific Experiments, Musical Performances, Exhibitions, Apparatus, Mechanical Inventions, &c., demonstrated and explained: Glass-working, Philosophical Lectures, Hydrostatics, &c. Microscope, Monck Mason’s AERIAL MACHINE, worked by propulsive machinery, and explained in a lecture on the Aerial Navigation; ELECTRICAL ELKS, Bunce’s CARBON BATTERY, Dissolving Views, Laughing Gas, Sculptures, Paintings, &c. Evening Recreations, in addition to Morning Attractions. PROMENADE CONCERTS, Vocal and Instrumental, Messrs. L. Z. Remy, Co. conductor.—Admission, One Shilling.



# The Builder.

NO. LXIV.

SATURDAY, APRIL 27, 1844.



URING the several detached portions of the important parliamentary document which

we have given in our last three numbers, our readers will have a pretty correct idea of the state of the great towns in general throughout the kingdom, and will become quite adept on the subject, by adding to the information already acquired, the rest of the

**REPORT of the Select Committee appointed to Inquire into the Circumstances affecting the Health of the Inhabitants of Large Towns and Populous Districts, &c.**

Similar or worse accounts are given of various other districts, detailing the evils arising from houses built in close courts, often back to back, frequently with no thorough draught of air, without any conveniences for cleanliness or decency, with no effective drainage, inspection, or system of paving or cleansing.

The general conclusion of the Town Council is: "That the greater part of the town is in a most filthy condition, which demands an immediate remedy, a remedy which does not seem attainable under any local Act now existing, but calls for an especial enactment, which is doubtless required (they say) not only by Leeds, but more or less by every town in the empire."

After referring to the evils constantly arising from the bad construction and position of their dwellings, the witness is asked: "Would it not then be of the first consequence to the welfare of the working classes, that there should be some general regulation laid down, either in a general Building Act or some Act generally applicable, not for interfering with the ordinary construction of houses, but for preventing their being built in such a form and manner as experience has shewn is highly detrimental to the health of the poorer inhabitants?"—To which Dr. Williamson replies: "The working classes are now exposed to the cupidity and defective arrangements of their landlords, and they appear to me to require the protection of some such general enactment to remedy the evils." The necessity and practicability of such a remedy is spoken to by several other witnesses and experienced builders.

The witness having stated that Leeds had doubled its population within 30 years, is asked, "During that time it appears from the report which you have confirmed, that no due provision and regulation has been made with respect to drainage, sewerage, and cleansing, ventilation, and building, and for the supply of water for this vast community?—Certainly not." And the witness then expresses his opinion of the necessity of legislative assistance.

Your committee have inquired into the state of several other densely-peopled towns, and refer to the evidence given respecting them, not thinking it necessary to enter into detail more than by stating, that they all appear to stand in need, more or less, of measures calculated to enforce sanitary regulations for the benefit of the humbler classes.

Your committee are, however, happy to remark, that the great town of Birmingham, inhabited by so many industrious mechanics,

so long celebrated for their skill and ingenuity, appears to form rather a favourable contrast, in several particulars, with the state of other large towns.

The nature of the employment generally appears not injurious to health; the general custom of each family living in a separate dwelling is conducive to comfort and cleanliness; and the good site of the town, and the dry and absorbent nature of the soil, are very great natural advantages. Still there are many regulations of great consequence to the health and comfort of the inhabitants, which appear neglected, to some of which your committee will advert in the remedies they recommend. Some sanitary regulations respecting the common lodging-houses appear absolutely necessary for the safety of the community.

In addition to their inquiry into the state of many of the large towns of England, your committee also directed their attention to the condition of Dublin and Glasgow. With respect to the former, although many improvements may be made, and additional sanitary regulations are absolutely necessary, they do not think it necessary to do more than direct attention to the able evidence of Dr. Maunsell respecting it, containing many valuable suggestions.

With regard to Glasgow, however, they are sorry to observe that the details are of a most melancholy and afflicting nature. An intelligent witness, who has had every means of knowledge, states, "that penury, dirt, misery, drunkenness, disease, and crime culminate in Glasgow to a pitch unparalleled in Great Britain." And in another place, "I did not believe, until I visited the wynds of Glasgow, that so large an amount of filth, crime, misery, and disease existed in one spot in any civilized country."

The witness was accompanied by the magistrates and heads of the police, and describes the want of ventilation, sewerage, cleansing, and attention to the health of the poorer inhabitants in the lower parts of the town, as most grievous in its effects. The result is summed up in the following terms:—"Such being the state of things in large districts of Glasgow, it is not surprising that the number of persons who died last year was 10,270, being at the rate of one in 24, to the whole population, or that out of that number 2,180 died of typhus fever, which never leaves Glasgow." These melancholy details, which can scarcely be read without shuddering, are amply confirmed by Dr. Cowan, a physician resident in the town, whose work, called "Vital Statistics," has been laid before your committee, and its general accuracy proved. It is there stated, and confirmed in evidence, that the rate of mortality in Glasgow has increased most rapidly, and is thus given in round numbers: 1821, 1 in 39; 1831, 1 in 30; 1835, 1 in 29; 1838, 1 in 26; thus shewing the frightful increase from 1 in 39 to 1 in 26 in 17 years.

And, again, it is shewn that the mortality in children under ten years of age has risen from 1 in 75 in 1821, to 1 in 48 in 1832. "Fever," it is stated, has been gradually increasing in the city of Glasgow, and its victims constitute within a fraction of 55 out of every 100 patients treated in our hospitals." "This increase has been during a period of great prosperity." The report quoted goes on to say, "We may safely assume that the 12,895 individuals treated in the fever hospitals during the last seven years, all, with few exceptions, depending on their daily labour, and extending the benefit of that labour to others, were out of employment for a period of six weeks."

Dr. Cowan adds, "The mortality bill of 1837 exhibits a rate of mortality inferring an intensity of misery and suffering unequalled in Britain, and not surpassed in any town we are acquainted with on the continent of Europe." Remedial measures are suggested in the following words: "A few thousand pounds judiciously expended in opening up the districts most densely populated, and in other obvious ways, would greatly tend to alleviate the pressure of our heaviest municipal tax, the fever tax."

Your committee would now turn from the melancholy details, a portion of which they have thought it right to insert in their report, and would state generally, that although the main evils complained of, and proved before them, appear to arise from the want of any regulations as to buildings and ventilation, and

the deficiency in sewerage, cleansing, and other sanitary provisions, yet there appears to be some important improvement necessary, referable to especial sources of illness in certain districts, as particularly, 1st, The existence of burial-places in the midst of populous neighbourhoods.

2nd, Local nuisances from some noxious business, affecting the health of the vicinity.

3rd, The neglected and dangerous state of low lodging-houses, frequented by a wretched and migratory population, who often carry fever and other disorders into distant districts.

Independent of the physical evils to the working classes arising from the causes before adverted to, your committee are desirous to express the strong opinion they entertain, confirmed by the testimony of many of the witnesses examined, that the dirt, damp, and discomfort so frequently found in and about the habitations of the poorer people in these great towns, has a most pernicious and powerful effect on their moral feelings, induces habits of recklessness and disregard of cleanliness, and all proper pride in personal appearance, and thereby takes away a strong and useful stimulus to industry and exertion.

The wife, hopeless of being able to make his home comfortable to her husband, abandons all endeavours for the purpose; neglect leads to neglect, recrimination follows reproof, and their children are brought up amidst dirt and wretchedness, with the example of constant domestic disputes before them. Nor can it be doubtful to those who trace the effects of such causes, that the humbler classes are often induced or driven by the want of comfort at home, and by the gloomy prospect around them, to have recourse to dram-drinking, the fertile parent of innumerable ills.

Your committee have thus laid before the house an imperfect abstract of the facts proved before them in evidence, shewing the neglect of due sanitary regulations applicable to improve the health and increase the comfort of great bodies of the poorer classes.

They have traced a few of the more prominent evils which appear to spring from this neglect, and have endeavoured to shew the ill effects produced by these causes in degrading the character of their humbler fellow-subjects, in producing crime, disease, and discontent, and in counteracting in great measure (as regards the younger portion of the population) those moral and religious impressions which they might otherwise receive from education where it is afforded to them.

The cost to the country, arising from these combined causes, it might be difficult to estimate with exactness, but there can be no doubt that it is enormous. Thus it is estimated that every person in the Fever Hospital (12,895 in seven years) in Glasgow loses six weeks employment, which, calculated at 7s. 6d. per week, would amount to 29,004l. lost to the community, besides the cost of attendance and support; this has been calculated, where the patient recovers, at 1l. per case, and adds here 12,895l. to the account of loss; chiefly owing to the want of proper sanitary regulations.

In proportion as the working classes in these great cities (rapidly increasing every year) and their children are injuriously affected in their physical condition and their moral characters by the causes alluded to, just in that proportion will their value to the community be diminished, and their cost to the kingdom increased. The property which the country has in their useful labours will be so far lessened, and the unproductive outlay necessary to maintain and restrain them so far augmented.

This consideration will not be thought beyond the province of your committee, when it is remembered that in the remedies they propose some outlay of expense must necessarily occur; yet, on reflection, it is hoped that they will be justified in the conclusion they have come to, that ultimately a great saving to the community will thereby take place; and even were that not the case, that some such measures are urgently called for, as claims of humanity and justice to great multitudes of our fellow-men, and as necessary not less for the welfare of the poor than the safety of property and the security of the rich.

## REMEDIES.

The remedies which your committee would propose in order to carry out the spirit of "Sanitary regulations for the benefit of the health of the inhabitants of the great towns of



the realm," are several; some of a prospective, and others of a retrospective operation.

The first measure they recommend is, a general Building Act, applicable to towns now, or at any future time, comprising a certain amount of population; laying down regulations respecting the construction of certain rates of houses (well understood among builders) which are fitted for the dwellings of the working classes.

The regulations would be framed so as to interfere no farther with every one's right to manage his own property than was necessary to protect the health of the community; nor would they extend beyond what the necessity of that urgent duty of Government justified. Such regulations would fall strictly under that rule of public law universally acknowledged, which lays down as a maxim, "*Sic utere tuo ut non alienum ledas.*"

These regulations would forbid and prevent such forms of construction specified, as experience and undoubted testimony shew to be inconsistent with health. These would embrace,

1. Cellar dwellings, unless with areas in front and back, and with sewers below the level of the floors.

2. Rows of houses erected in close courts, built up at the end.

3. Rows of dwellings built back to back, so as to prevent any thorough ventilation.

These regulations so far would be of a preventive character, and would not otherwise interfere with the discretion of builders.

There are, however, a few other rules which ought to be introduced into such an Act; one of the most important is, to require that before and behind every row of houses of this description a certain space should be left open, proportioned to the height of the houses. What this proportion should be would be matter of consideration. Experienced builders, who have given evidence before your committee (and who are unanimous in opinion as to the necessity of such a provision), differ slightly as to details, one proposing the space in front should be the height of the houses themselves, whilst another thinks two-thirds might be sufficient; and, in like measure, with regard to the space necessary to be left open at the back of these small houses.

Some provisions have likewise been suggested as proper to be inserted in a Building Act, which might insure to these humble classes of houses such conveniences as are absolutely necessary for health and decency, and such receptacles for refuse, ashes, &c., as cannot be dispensed with consistent with cleanliness and comfort. There should also be a sufficient underground drain communicating with the common sewer.

Some other beneficial provisions may probably be sanctioned as proper for a general Building Act; but these are the only new provisions which appear to your committee essentially necessary for the welfare of the working classes.

Regulations as to the thickness of party-walls, to hinder the spread of fires, and others to prevent overhanging projections and dangerous chimneys, are now in the Building Act applicable to the metropolis, and probably in some provincial Acts, and would of course be necessary.

In these suggestions your committee have kept in view the policy of interfering as little as possible with private property, and no farther than the strict necessity of the case justified.

There is in the evidence abundant proof of the absolute want of some such provisions, and of the wide-spread evils and misery resulting from their neglect. They are in the nature strictly of sanitary regulations, and are only the fulfilment of one of the first duties of a humane government, to protect those who cannot protect themselves.

It is matter of deep regret to your committee that some such Act as they suggest did not engage the attention of Parliament at the beginning of the century, before our great towns were so densely populated, and so many dwellings for the working classes had been built in contravention of the proposed rules; had such been the case, they cannot doubt but much of the discomfort and sufferings which have been detailed before them would have been prevented.

Your committee are informed that some years since a general Building Act, which

would probably have contained some regulations like those they recommend, was under the consideration of the government; but, amid the changes which subsequently took place, was laid aside.

The obvious necessity of some such enactment, arising from the evils detailed before your committee, might perhaps justify them in simply but earnestly recommending it to the consideration of Parliament; but feeling, as they do, the great importance of its speedy adoption for the benefit of a rapidly increasing and valuable class of their humbler fellow-subjects, they are induced to consider and reply to some objections which might be brought against it.

It may be said, that such regulations as have been spoken of, forbidding buildings being erected in certain forms considered prejudicial to health, is an interference with private property. This is doubtless the case, but appears to be amply justified on the plea of the general good; and the same necessity is constantly held to justify similar interference, in various Acts of Parliament for the construction of roads, railways, canals, and in the enforcement of regulations regarding police, quarantine, &c.

A more serious objection is, that such regulations, by throwing some difficulties in the way of erecting closely-packed dwellings for the working classes, would render them dearer than at present, and increase the difficulty which they often find to procure habitations in populous cities. With respect to such part of the proposed regulations as would insure a better arrangement of dwellings on the same space (as by insuring courts and streets to be open at each end), this objection would not apply. But undoubtedly the effect of some of the rules suggested for a Building Act would be to improve the dwellings of the working classes, but at a greater cost than before.

The evidence, however, of experienced builders leads your committee to believe that this cost would not be very materially increased by prospective regulations of the nature described. The cost of a little increased space of ground before it is built upon, and before additional value is given to it by the proximity of manufactories, shops, roads, and streets, is very different and much less than afterwards; but the rules suggested would apply to it when open, and thus comparatively of less cost.

The outlay on the houses themselves in construction and materials (which are the main points of cost) might be the same, whether there are 20 or 15 on the same number of square yards; yet the effect on the health and comfort of the inmates would be very different in one case from the other. Still it must be admitted, that if a larger space of ground is required for a given number of dwellings, and they are constructed in a better and more costly manner, and have appendant to them some conveniences which they are now without, that the rent to be paid for them must be somewhat higher; but your committee assert with confidence, that this addition will be amply compensated to the working classes by the additional convenience and comfort they will enjoy, and that they will gain in freedom from disease, which now so frequently attacks them and their children, a saving greatly exceeding their outlay. The chief property of these persons is their labour. The evidence shews how often this is interrupted by fevers and other disorders, arising from the causes adverted to. Regulations, therefore, which may protect them from these evils, and allow them the uninterrupted advantage of the wages derived from their labour, would more than make up to them some augmentation of rent.

It must be borne in mind that without some such improvement in the construction of his dwelling, and the conveniences appendant to it, as are suggested, it is almost impossible for a working man's home to be made comfortable, or to have any attractions for him, or that he can in any way make the most of his daily earnings, and he is thereby driven to drinking as a resource, as it is stated by many witnesses examined.

Another remedial measure, which appears to your committee absolutely necessary to facilitate proper sanitary regulations in great

towns, is a general Act for the sewerage of these densely-peopled communities.

At present these Acts are partial in their operation and extent, varying in their provisions, and very defective in the powers they give.

A reference to the evidence collected by your committee will shew how great has been the neglect of the sewerage and drainage in some of the most densely-peopled parts of London, and the large provincial towns, and how much misery and disease have been entailed on the poorer classes of inhabitants in consequence. It cannot be denied, however, that considerable attention has been directed to this point within the last twelve years, and that great improvements have been effected during that period; still the want of any general system of operation, and the defective powers possessed by the commissioners, both in the metropolis and country towns, in which they have been established by local Acts, have altogether prevented the extension and construction of sewers, upon a scale commensurate with the increase of population. Your committee cannot help repeating their conviction, that, in addition to the physical evils which this want of the means of carrying off the refuse and impurities from their dwellings entails upon the poorer classes, it is impossible to deny, from the evidence before them, that their moral habits are affected by the same causes. That a constant residence in a tainted and polluted atmosphere, whilst it predisposes them to disease, and renders them less able to repel its attacks, also produces a degradation of moral character, an indifference to the common decencies of life, and an utter recklessness of all those comforts which persons in their station might be expected to enjoy.

The effect of this utter prostration of energy, and of all the better feelings of the mind, has been to reduce multitudes, who might otherwise have passed with credit through their humble spheres, to have recourse to ardent spirits as a desperate alleviation of their wretchedness; and your committee need hardly point out, how surely this irresistible temptation leads, step by step, to habitual dissipation and debauchery.

Your committee are perfectly aware, that wherever large masses of the labouring orders are collected together in towns, it is almost hopeless to enforce that strict attention to household cleanliness which is maintained amongst those of the same rank in rural districts; but it is for this very reason, and to counteract this unfortunate tendency to neglect of cleanliness and comfort, that your committee deem it essential that every practicable means should be adopted to provide, at all events, against the worst of the evils detailed in evidence before them, and due sanitary regulations, to place the poorer classes in a condition to avail themselves, by a little exertion, of those conveniences which experience has proved necessary to remove the accumulated impurities of large towns.

In pursuance of these principles, and with the view of affording to the poorer classes congregated in towns some protection from the evils to which, from the confined nature of their dwellings, and the cupidity of speculators, they are frequently exposed, your committee are of opinion that it would be advisable to establish, in every town containing a population of a certain amount, a Board of Health, whose duty it should be to examine into such circumstances and occurrences within their district as are prejudicial to the general health of the inhabitants; to call the attention of the Commissioners of Sewers, and any other local authorities that might be concerned, to such nuisances, and to devise and suggest remedies. They should report their proceedings annually to the Central Board of Health, if such a board be constituted, and if not, to the Secretary of State for the Home Department, for presentation to Parliament, by which means publicity would be insured to their proceedings, and much useful information collected and diffused. These Boards of Health might be appointed by the Boards of Guardians, or by the Town Councils in corporate towns, or directed by the rate-payers.

It is obvious that a portion of such Boards should always consist of members of the medical profession, and your committee are inclined to think, that a class of persons pe-



cularly pointed out by the nature of their avocations for a duty of this sort, are the practitioners attached to the Poor Law Unions, who, being in the daily habit of visiting the most destitute and neglected portion of the community, must become acquainted with the condition of the localities in which they reside, and with the prevalence of those disorders which result from the absence of public sanitary regulations.

Such Boards of Health would probably each have a clerk (paid for his services), whose duty it would be to make minutes of the proceedings, and give such returns, in a short tabular form, as might be useful for reference, and important as affording easy information on a subject of such vital interest to the people.

The principal duty and object of these Boards of Health would be precautionary and preventive; to turn the public attention to the causes of illness, and to suggest means by which the sources of contagion might be removed; and in this way your committee believe a great saving of expense would take place eventually, and that the necessary outlay would be compensated by the diminution, not only of suffering, but of actual cost to the community.

Your committee have next to suggest that facilities be afforded for the establishment in towns and newly-extended suburbs of an administrative authority for drainage and sewerage, without the necessity of incurring the expense and delay of a local Act.

This desirable object might be effected by passing an Act for this country, framed upon similar principles to the 9 Geo. 4. c. 82, which is restricted to Ireland, and by which, on the requisition of twenty-one householders, a public meeting may be called of all the inhabitants of houses rated at 5*l.* and upwards; this meeting is empowered to decide upon the appointment of commissioners in whom are vested the necessary powers for the cleansing, draining, paving, and lighting of the town. This Act has been already adopted in about sixty towns with general satisfaction. Your committee think it would be a good arrangement that these rates should be borne by the landlord, and that some facilities for that purpose should be given.

Your committee have been informed that doubts exist as to the powers possessed by some Commissioners of Sewers of constructing new sewers, they therefore recommend that the continuance of these doubts be obviated; and also that some additional powers, which appear absolutely necessary for remedying the evils which they have stated, be granted to existing Commissions of Sewers, as well as to those which may hereafter be constituted.

1. That of enforcing adequate sewerage for rows or streets of houses which may hereafter be erected; the expense of construction to be mainly charged upon the proprietors of the houses, while that of future repairs will fall upon the general rate of the district.

2. That of enforcing a communication between private dwellings and the adjacent main sewer, at the expense of the proprietors of those dwellings, and the repairs to be placed under the superintendence of the officers employed by the Commissioners of Sewers.

3. That of prohibiting the sinking of cess-pools below the level of the main sewer, and any other similar powers which may be deemed necessary for the public benefit.

Your committee believe it would also be of the greatest advantage to the inhabitants of great towns if an inspector was appointed to enforce the due execution of sanitary regulations. They think such an officer should (whether appointed by the rate-payers, or the guardians of the poor whom they have chosen) have the power of proceeding by indictment to abate nuisances, an old remedy of the English law, which, though somewhat in disuse, it seems quite necessary to revive and extend, to prevent and put down injury to multitudes. At present, for want of some such guardian of public rights, they are continually encroached upon, and nuisances injurious to the health, comfort, and property of the people (especially of the humbler classes) are shewn by the evidence adduced before the committee to be constantly increasing. It would be the duty of such an officer to prevent any encroachment on or diversion of highways, or open spaces of ground in the enjoyment of the public.

Your committee think that the inspector

should report from time to time the state of his district to the Board of Health, constituted as before suggested.

Your committee have thus given an outline of the principal remedial measures they propose. They have been obliged to detail these at considerable length, which is perhaps inseparable from the magnitude and importance of the subject.

Before, however, they conclude their report, they would state that there are several points of the utmost consequence to the health of the inhabitants of our great towns, which they content themselves with barely enumerating, because they feel assured that if the remedial suggestions they have made were acted upon, these matters would immediately be attended to.

Thus, if the legislative enactments suggested were passed, if Boards of Health and district inspectors were appointed, there can be little doubt that these subjects would soon attract the attention their importance deserves, and if legislative aid were wanted, it would in such case be promptly afforded.

1. The custom of continuing burying-grounds, crowded with constant additions of corpses, in the midst of populous cities, is spoken of by several witnesses as most injurious to health.

2. The importance of an ample and due supply of water within the reach and means of the humbler classes has been made evident to all who have attended to the subject, and appears lamentably deficient in several populous and increasing communities.

3. The augmentation of buildings in the vicinities of these crowded cities seems to call for provisions to insure some open spaces being preserved, calculated for public walks, essential to the health and comfort of the poorer classes. This was adverted to and recommended by the report of a former committee; it presses more and more as the population of these great towns rapidly increases, and many witnesses have spoken of the growing necessity for some such provision.

4. Some inspection and power of regulation of the humbler class of lodging-houses seems absolutely necessary for the health of the people. They are shewn, by evidence before your committee, to be now utterly neglected; that there are many in all our great towns habitually in a filthy condition, the abode of fever and other contagious disorders, destitute of all sanitary regulations, and inhabited from time to time by a migratory and shifting population. Thus the diseases which are frequently taken in these dirty and ill-ventilated places are spread about the country, to the manifest danger of the people.

5. Wherever local circumstances give the power to establish public bathing places for the use of the poorer classes, such a step would be highly beneficial, and the cost in manufacturing towns, where many steam-engines are employed, would not, it appears, be considerable.

Your committee have now nearly completed their outline of the sanitary regulations they recommend to the consideration of Parliament to prevent as far as practicable the recurrence and increase of circumstances highly injurious to the health and comfort of the inhabitants of our great towns and populous districts.

They cannot, however, conclude the task assigned to them, without endeavouring to suggest some method by which the existing evils may be somewhat removed, and the extent of suffering diminished.

It will be evident to any one who has considered this report, or looked into the evidence on which it is founded, that much of the unhealthiness of particular groups of dwellings, and sometimes of a whole district, arises from the want of some local improvement, in the removal of some obstruction to ventilation or drainage.

Thus, in some of the crowded and unhealthy places described, the opening of a fresh thoroughfare, giving light and air, would not only remove or abate the evil, but would give additional value to the property through which it passed.

Sometimes taking down a single house which blocked up the end of a street, or of one of those miserable courts described in the evidence, would greatly benefit all the others near, and add to their worth much more than their fair share of the cost of the whole im-

provement; or the case may be that the additional value given to the dwellings in the immediate vicinity of the proposed sanitary improvement would very nearly, if fairly estimated, cover the expense, requiring a small proportion only to be made up from some other fund.

This supposition may be varied in other ways, and is applicable to other improvements of almost any description, by which additional value is given, in different proportions, to private property, and at the same time the salubrity of the vicinity is increased.

Yet at present, however necessary for health or beneficial to private property such improvements may be, they cannot be effected, unless in each spot there be a special Act of Parliament for the purpose, which is the case in very few places. Where, however, such an Act exists, it is generally applicable only to particular improvements specified in the Bill; it only extends to cases where some fund already exists for defraying the expenses, and it gives no power of assessing the whole district benefited, or of appointing apportioners to decide in what proportions the immediate vicinity is augmented in value, and ought to be assessed in consequence. Thus, a single obstinate and unreasonable proprietor may, and frequently does, prevent an improvement beneficial to a whole neighbourhood, and even to himself; but if all the persons interested be willing to concur in the improvement, there are frequently legal disabilities which prevent their consent being available, as leases, entails, &c. Sometimes the power of exchange or sale, or long leases of a small portion of a settled property, would facilitate an improvement widely beneficial, but this now requires in each case a separate Act of Parliament.

Viewing, therefore, the necessity and advantage of such local improvements, and the difficulties which now prevent them, your committee beg to recommend the introduction of a general Act (extending to all towns above a certain population) to facilitate such improvements. They venture to suggest that such an Act should contain provisions calculated to obviate the difficulties pointed out; that it should lay down well-considered regulations as to the forms of proceeding; should enable willing parties to carry out beneficial alterations; should empower a certain majority (perhaps two-thirds) of the rate-payers of any district to adopt the provisions of the Act, and bind the minority; empower them to choose trustees or commissioners to fulfil the enactments, raise rates, purchase property, complete improvements, &c.

Your committee cannot but wish that such an Act, so essential to the welfare of these densely-peopled districts, should contain clauses to facilitate the commencement of public improvements necessary for health at the suggestion of the Board of Health, and for this purpose that, under due provisions, the Board should have the power of ordering surveys and estimates to a limited amount. Your committee also think that wherever the government, individuals, or any public body shall be willing to provide a certain proportion (as one-fourth or one-third) of the estimate of any such improvement, that there should be a power to enable such commissioners to raise a rate for the remainder. In this way they believe many spirited and benevolent persons would generously come forward to assist and stimulate such beneficial public improvements, which without some such facilities and provisions will never be made.

How far it might be advisable to enable the Lords of her Majesty's Treasury, in certain urgent cases, to advance on good security loans of Exchequer Bills to facilitate such improvements, your committee will not undertake to determine.

Your committee have thus ventured to recommend legislative measures to assist in the necessary work of laying down and enforcing sanitary regulations for the benefit of the inhabitants of the large towns of this realm. They cannot conclude this report, which they submit to the consideration of the House, without most earnestly recommending all those who, by fortune, station, or trust, are placed in a position to assist in carrying out these views, to exert themselves to the utmost, and without delay, in aiding the improvement suggested in their several towns and neighbourhoods. Whilst your committee are earnestly desirous



legislative aid should be given, they are yet aware, that with zeal, energy, and perseverance much might be done, even with the present imperfect powers, by individual and combined exertion, to lay the foundation of measures which would afterwards be extended and perfected to the permanent benefit of the community.

#### INSTITUTION OF CIVIL ENGINEERS.

APRIL 23.—The President in the chair.

The first paper read was by Mr. C. Geach, who had promised, at a meeting of the Institution in February, 1843, to give the results of more extended comparative trials of the strength of solid and hollow axles. The result of the present experiments was as decidedly in favour of the solid axles as the former ones had been in favour of the hollow ones, so that as far as the practical utility of the examination extended the results were useless.

A paper was then read by Mr. Glynn relative to the fracture of railway axles, which he attributed to the constant succession of blows received by the axle in travelling. The action was stated to be similar to that of an axle laid on the edge of an anvil and subjected to a series of smart blows of a hammer while in constant rotation. The fractures presented the appearance of a clear annular cleft all round for a depth of half an inch in the body, the centre part being crystallized and reduced so much as to be unable to bear the weight and the portion to which the axle was subjected by the pressure of the break on one of its ends. These observations had induced the Railway Company to apply the power of the break to both wheels simultaneously, thus avoiding the torsional strain.

"An Account of the Scaffolding used in erecting the Nelson Column, Trafalgar-square," by Mr. T. Grissell, was then read. This scaffolding which was first used in London for the erection of the façade of the London and Birmingham Railway Station, by Messrs. Cubitt, then by Messrs. Grissell and Peto at the Reform Club House, and also at Woolwich in forming the New Graving Dock, was composed of sills, uprights, crossheads, longitudinal timbers, braces, and struts, all of whole timber. The upright timbers were slightly tenoned into the horizontal timbers and the junctions secured by iron dogs driven into the timbers diagonally across the joints, which were preferable to bolts or spikes, as they could be more easily withdrawn and the timber was not injured. It was stated that with this scaffolding and the travelling machine at its summit, one mason could set as much work in one day as was formerly done in three days by the old system, even with the aid of six labourers, who are now dispensed with. The base of the scaffold was 96 feet square exclusive of the raking braces; the height of each stage varied from 21 feet to 48 feet, the total quantity of timber used in its erection was 7,700 cubic feet, and its cost was 240*l.* for labour in erecting. It was recommended that the plan adopted at Liverpool of bonding timber upon dry land instead of allowing it to float in timber ponds should be made use of in London, as by that means there would be less decay and the timber would be better seasoned, and the Kyanizing process would not be so much required.

A paper by Mr. Pierre Journet was then read, describing the scaffolding employed by him for the construction and repair of columns, obelisks, and chimneys of great height, at Paris; and also the machine used for raising building-materials at the Houses of Parliament, the mansions at Albert-gate, Hyde-park, &c.

The scaffolding consisted of a simple combination of a number of brackets, fixed at regular distances of about 5 feet apart, vertically upon girdles of chains and screws, braced tightly round the column under repair; upon these brackets the platforms were laid, and as the workmen proceeded upwards the lower brackets were alternately raised to the platforms above, where the workmen stood. The progress thus made in forming and in taking down a scaffold was stated to be very rapid, with corresponding economy of time and expense. No poles or cord were used, and no waste of material occurred. By these means the obelisk of Luxor, at Paris, was repaired in a very short period and at a very small cost.

The machine for raising building-materials consisted of an endless chain of square open links, the lower end revolving round a driven wheel, and the upper end around a corresponding wheel fixed upon the scaffold at the height of the building. The hods, buckets, and baskets were each furnished with a hook, by which they were suspended on the rising side of the chain, and when they arrived at the necessary height they were taken off by labourers, and carried to the spot where the materials were to be used; when empty they were hung upon the descending side of the chain, and lowered to be again filled. Messrs. Grissell and Peto, who had used these machines, expressed themselves much pleased at the economy they effected, which would induce them to employ them more extensively with engine power for the erection of the Victoria Tower at the new Houses of Parliament.

The following papers were announced to be read at the meeting of Tuesday, April 30:—

No. 577. "Description of the method employed for repairing a chimney 120 feet high, at Messrs. Coopers Cotton-mills, Glasgow," by J. Colthurst, Grad. Inst. C.E.

No. 679. "Experimental researches into the properties of the iron ores of Samakoff, in Turkey, and the hæmatite ores of Cumberland, with a view to determine the best means for reducing them into the cast and malleable state," by W. Fairbairn, M. Inst. C.E.

No. 675. "Description of a pair of iron lock-gates, constructed in 1843 for the entrance of the wet dock at Montrose," by J. Leslie, M. Inst. C.E.

#### SOCIETY OF ARTS.

##### ANNUAL ELECTION.

APRIL 17.—The following is a list of the officers for the year ensuing:—

##### PRESIDENT.

His Royal Highness Prince Albert, K.G., F.R.S., &c. &c.

##### VICE-PRESIDENTS.

*Honorary.*—Hugh, Duke of Northumberland, K.G., F.R.S., and F.S.A.; George Granville Leveson, Duke of Sutherland, K.G.; Walter Francis Montague Douglas, Duke of Buccleuch, K.G. K.T., and F.R.S.; Bernard Edward, Duke of Norfolk, K.G., F.R.S., &c. &c.; Spencer Joshua, Marquis of Northampton, President of the Royal Society, &c. &c.; Charles, Earl of Romney; William, Earl of Radnor, F.S.A.; Philip Henry, Earl Stanhope, F.R.S., and F.S.A.; John, Earl of Shrewsbury, F.S.A.; Dudley, Earl of Harrowby, D.C.L., and F.S.A.; William, Earl of Dartmouth, F.R.S., and F.S.A.; William, Earl of Lonsdale, F.R.S.; Charles Callis, Lord Western; W. Tooke, Esq., F.R.S.; Thomas Hoblyn, Esq., F.R.S.; Richard Twining, Esq., F.R.S.; Benjamin Rotch, Esq.; Joseph Hume, Esq., M.P., F.R.S.; Benjamin Bond Cabbell, Esq., F.R.S., F.S.A., &c.; William Hughes Hughes, Esq., F.S.A., and F.L.S.; William Pole, Esq., F.R.S. &c.; P. M. Roget, Esq., M.D., Sec. R.S., &c.; David Pollock, Esq., F.R.S., &c.; William Henry Bodkin, Esq., M.P.; John Ashton Yates, Esq.; Sir John Josiah Guest, Bart., M.P.

##### CHAIRMEN OF COMMITTEES.

*Accounts.*—Henry Robarts, Esq.; Joseph Payne, Esq.

*Agriculture.*—Layton Cooke, Esq.; G. Aikin, Esq.

*Fine Arts.*—George Bailey, Esq.; James Savage, Esq.

*Chemistry.*—Arthur Aikin, Esq.; Edward Solly, jun., Esq.

*Colonies and Trade.*—Hollis Solly, Esq.; P. Vaughan, Esq.

*Correspondence and Papers.*—Richard Horsman Solly, Esq.; E. Bramah, Esq.

*Manufactures.*—John Bethell, Esq.; G. T. Kemp, Esq.

*Mechanics.*—Charles Holtzapffel, Esq.; Joseph Woods, Esq.

*Miscellaneous Matters.*—Edward Binyon, Esq.; Thomas Webster, Esq.

*SECRETARY.*—Francis Whishaw, Esq.

His Royal Highness the President was elected a Trustee of Sir John Soane's Museum in place of his late Royal Highness the Duke of Sussex.

P. M. Roget, Esq., M.D., in the chair.

The secretary read a letter from Major Parly (who was last year rewarded by the

society for his plan for a floating breakwater) as to the natural breakwater of the port of Pisa, shewing that the principle of constructing these important works as laid down by the major is perfectly correct. The following is a literal translation of a description of the port of Pisa, from Claudius Rutilius, an ancient writer and member of an illustrious family at Rome:—

"The harbour is celebrated as the emporium of Pisa, and for its marine riches; the appearance of the place is remarkable, for the coast is an open one, and exposed to every wind. There are no promontories to protect it from storms, but a long sea-weed rises from the bottom of the sea, which defends it without injuring the vessels which pass over and through it, and yet is sufficient, by rising and falling with the waves, to abate their fury, and to prevent their rolling in from the sea in dangerous masses."

The secretary next read a paper on Mr. Sholl's portable barrel-hive, introducing the subject with quotations from the 4th Georgic of Virgil as to the management of bees.

Mr. Sholl's cottager's-hive may be thus described: the stand is of wood, consisting of five pieces, which are so arranged, that they may be taken to pieces readily if required, and put away in the hive if necessary to send it to a distance.

A common American flour-barrel forms the outworks of the hive; the pavilion is formed of wood, and may be either square or circular, and is placed at the bottom of the barrel. It is furnished with a wire-gauze door fixed in the bottom, which furnishes the purposes of a ventilator; two cross-bars are fixed at the top of the pavilion, to which the inhabitants attach the comb. The entrance to the pavilion is circular, and towards the top a metal tube is carried through the wall of the house or barrel, and is furnished with a sliding shield, also of metal, to keep them in when necessary. This slide is perforated so as to assist the ventilation. The pavilion, which can be removed from the house or barrel at pleasure, stands upon four legs, for the purpose of fully ventilating the space between the outer walls of the house or barrel and the pavilion; towards the bottom of the barrel is another aperture, furnished with wire-gauze for the sake of ventilation.

On the top of the pavilion is a folding partition by which it is entirely covered; this partition contains six or any greater number of apertures that may be required, to each of which is a plug of wood with a tin cover; each plug is attached to a string which is secured to the side of the barrel, so that when the plugs are removed from the apertures they may not be lost. The use of these apertures is to admit the bees when necessary from the pavilion into the surplus cases above; a small window is fixed in the partition to ascertain the state of the bees at any time. These cases, six or more in number, are also constructed of wood, nearly fitting the sides of the barrel or house; each case is of segmental form, and open at bottom to admit the bees, and, further, is lighted by a small window in the top. When the bees have filled the pavilion with honey as far as possible, admission is afforded to them to one or more of the surplus cases or additional apartments in which they deposit new comb.

The pavilion remains undisturbed, so far as removing honey is concerned, the additional apartments being supplied for that purpose. When a case is ascertained to be filled with honey it is removed to a distance from the barrel, carefully turned on one side, and the bees returning to the pavilion, the apartment may be entirely cleared of the honey accumulated, and another case may be immediately inserted in its place.

It is readily ascertained which surplus apartment is occupied by the bees, as the admission plug from the pavilion will be found placed on the top of it.

The cover or roof of the bee-house or barrel is hung with common hinges, and secured either by a common lock or a padlock.

The French Government are about to build three steam-packets, of 150-horse power each, to ply between Calais and Dover, with the view of expediting the communication between the two countries, now that the railway from London to Dover is complete, and that from Paris to Calais is in active progress.



## THE ART-UNION OF LONDON.

THE annual meeting of the subscribers to receive the committee's report, and distribute the amount subscribed for the purchase of works of art, was appointed for Tuesday week at Drury-lane Theatre, and all the elaborate arrangements consequent on the largeness of the body were made. On Monday week, however, the following letter was received at the office in Trafalgar-square:—

"Treasury, April 12, 1844.

"Sirs,—I am commanded by the Lords Commissioners of Her Majesty's Treasury to acquaint you that an institution called the Art-Union of London, having for its object the chance distribution of prizes of works of art, has been brought under the notice of their lordships, and that they are advised that it is illegal; and I am also to acquaint you that the further continuance of the same will render all parties engaged in it liable to prosecution.

"I am, Sir, your obedient servant,

"W. R. REYNOLDS.

"To G. Godwin and Lewis Pocock, Esqs.,  
4, Trafalgar-square, Charing-cross."

The committee immediately met, and a memorial was addressed to Sir Robert Peel, as First Lord of the Treasury, setting forth the nature of the association, the sum of money which through its means had been expended since its establishment in the promotion of the fine arts—the fact that the arrangements for the distribution were complete; and that if stopped at this moment great loss would be occasioned to many artists, and praying that assurance might be given that no legal proceedings would be commenced with the sanction of the government in the event of the general meeting being held as already arranged. The memorial was accompanied by a letter from the honorary secretaries, soliciting the serious attention of the right hon. baronet, and asking for an interview. Sir George Clerk, Bart., on the part of Sir Robert Peel, having appointed to receive the committee yesterday, Mr. George Godwin and Mr. Lewis Pocock, honorary secretaries, with Mr. Dickson, Mr. Gaskoin, Mr. W. Donaldson, Mr. Noble, Mr. A. Tooke, Mr. Troughton, Mr. Morant, Mr. Atkinson, Mr. Morris, Mr. Hayward, Mr. Collard, and other members of the committee, attended at Downing-street.

Sir George Clerk said Sir Robert Peel had placed the memorial in his hands, and that he should be happy to hear any observations which might be offered.

Mr. George Godwin, on the part of the committee, then made the following statement:—The Art-Union of London, since its establishment in 1837 (in consequence of the opinion published in a report of a committee of the House of Commons on arts and manufactures in 1837), has distributed about 36,000*l.* independently of the present year's receipts, in the purchase and preparation of works of art, and has put into operation painters, sculptors, engravers, metal-die sinkers, modellers, and artists in bronze (a branch of art up to this time much neglected in England), to say nothing of the branches of industry encouraged by it, as paper-makers, printers, frame and glass-makers, &c. As an instance of the magnitude of their operations in this latter respect, Mr. Godwin stated, that 300,000 sheets of paper had been used for the series of outline designs about to be distributed to the subscribers of the present year. The association had correspondents not merely throughout the United Kingdom, but in our Indian possessions, Nova Scotia, Hobart Town, Mexico, and New York. Mr. Godwin contended that to bind together a large number of individuals by a common interest—an interest in the arts of peace—was of itself an important result, tending to good. A reserved fund had been put by without interfering with the subscribers' rights, and promised to produce speedily permanent funds for the advancement of the higher branches of art. The society had now been in operation for eight years, increasing in usefulness, and the committee were confirmed in their views of its legality by numerous facts. Her Majesty the Queen was patron of more than one such association, and his Royal

Highness Prince Albert had very recently expressed to the committee of the Art-Union of London, through Mr. Eastlake, R.A., his approbation of its objects. Among the vice-presidents of the Irish Art-Union were several of the judges; his Excellency Earl De Grey was a subscriber. The committee of the Edinburgh Society included numerous advocates, and, in addition to these points, the High Chancellor of Ireland, Sir E. Sugden, Mr. Fitzroy Kelly, Mr. C. Clarke, and others had stated their opinions that the Art-Unions, properly so called, were strictly legal. The committee now found themselves with 14,000*l.* in their hands—a large increase over the subscription of any former year, on the very eve of the distribution. All the elaborate arrangements consequent on the largeness of the body acted for had been made; artists had filled the exhibitions about to be opened with their works, and, in the majority of cases, looked to the funds of the association for a return for their skill and labour. The effect on these of suddenly preventing the application of the funds provided for their encouragement would be disastrous in the extreme, nor was it simply as concerned the funds of the Art-Union of London that the artists would be affected; he would speak within compass if he said that 40,000*l.* or 50,000*l.* were in the hands of committees throughout the kingdom to be applied in the way alluded to; the point then was, whether, without their entering into the question of legality, the committee might proceed with the distribution, and wind up the proceedings of the year. He would maintain that the Art-Union of London was not encouraged through the spirit of gambling; and would prove it, by shewing that with the exception of his Royal Highness the President, and men known to be patrons of art and above suspicion, the subscription was uniformly of one guinea, for which every man had his worth in the shape of engravings, the printed report, admission to the exhibition and other pleasurable and wholesome excitements. If they were prompted by a spirit of gaming, they would be found risking their five guineas or their ten guineas. The chance of obtaining a prize was too remote to be a leading motive. For the opinion entertained of the association by the artists, he would appeal to resolutions of confidence passed at a large meeting of artists, held at the Freemasons' Tavern last year, and to the fact that Sir Martin Archer Shee, the present respected President of the Royal Academy, had been a subscriber from the foundation of the society, and had been found at all times ready to give them his advice. The exhibition of prizes would, he was sure, seem to Sir George Clerk, who he was satisfied regarded the Fine Arts as important civilising agents, to be of great service. Last year, the exhibition was open four weeks, part of the time to the public without any limitation, and was visited by about 200,000 persons. The fear of the print-sellers that the Art-Union of London interfered with their trade, and which had led to the present steps on the part of the government, Mr. Godwin could not think well-founded. Prints had been distributed by the society in quarters where prints had never before been seen; the taste thus inculcated would make buyers; when one print was hung up another was speedily required. That the print-sellers themselves were favourable to the Art-Union was proved by the fact that they attended the committee of that association before transmitting the memorial, and stated that they had specially excepted it in their prayer. The question then was, are the efforts now making by the committees of Art-Unions throughout the kingdom to be stopped. If the government think that speculators avail themselves of the existence of Art-Unions to injure legitimate trade, will her Majesty's ministers bring in a short Bill to place them on a more assured and permanent footing? The immediate point, however, continued Mr. Godwin, is, can the committee of the London Art-Union complete their arrangements on Tuesday, as announced, or must the artists of the United Kingdom suffer the sudden deprivation of the means of remuneration which had been offered them, and for which they had been at work all the past year? The question was one of great importance, and he trusted they might receive such an assurance as should enable them satisfactorily to keep faith with

the public, and avoid the threatened injury to a large body of meritorious men.

Mr. Dickson, Mr. Hayward, and others, followed in confirmation of Mr. Godwin's statement.

Sir G. Clerk, who had received the deputation with great courtesy, said that the attention of the Commissioners of the Treasury having been directed to the subject, they had submitted a case to the Attorney and Solicitor General, and that in their opinion, the whole of the associations referred to were illegal, and that it was thought due to the committee to give them early intimation of the fact. Sir Robert Peel could not interfere in the matter; all he could do was to inform them of the law. He (Sir George Clerk) was himself a subscriber, and so were many others connected with the government; still, for the Treasury to give any sanction to further proceedings, although he fully admitted the difficulty of the position in which the committee found themselves, and the loss which would result to artists if the proceedings were stopped, was quite out of the question. If the opinions of the gentlemen were such as were stated, they could of course act on them if they pleased. The most prudent course, he thought, would be to postpone the meeting, giving the subscribers notice to that effect, and suspend proceedings until it could be ascertained whether or not the legislature would protect that and similar societies.

The deputation then withdrew.

The committee have determined to postpone the meeting for the present, and it remains to be seen what steps will be taken by the artists out of doors to strengthen the hands of the committee. Whatever may be the result, the rise and progress of this association will form a most extraordinary page in the history of the arts.

## RAILWAY BUSINESS IN THE HOUSE OF COMMONS.

MONDAY, APRIL 15.

*Newquay Harbour and Railway (re-committed) Bill.*—Reported; report to lie on the table, and to be printed, together with the report of 29th March.

*Manchester and Leeds and Heywood Branch Railway Bill.*—Read a third time, and passed.

*Furness Railway Bill.*—Queen's consent signified; read a third time, and passed.

TUESDAY, APRIL 16.

*Eastern Counties Railway Bill.*—Read a third time, and passed.

*Eastern Counties Railway (Brandon and Peterborough Extension) Bill.*—Report considered; motion made, and question proposed, "That the amendments made by the committee to the Bill be now read a second time;" debate arising, debate adjourned till Thursday.

*Leeds and Bradford Railway Bill.*—Reported; report to lie on the table, and to be printed.

*Yarmouth and Norwich Railway Bill.*—Report considered; motion made, and question proposed, "That the amendments made by the committee to the Bill be now read a second time;" debate arising, debate adjourned till Thursday.

*South-Eastern, Canterbury, Ramsgate, and Margate Railway Bill.*—Read a third time, and passed.

*Manchester and Birmingham Railway (Macclesfield and Poynton Branches) (No. 2) Bill.*—Queen's consent signified; read a third time, and passed.

*Manchester, Bury, and Rossendale Railway, and Manchester and Leeds Railway (Bury Branch) Bill.*—Ordered, that Mr. Cowper do make the report from the committee to whom the Manchester, Bury, and Rossendale Railway, and Manchester and Leeds Railway (Bury Branch) Bills, were referred; and that such report be made to-morrow.

*North British Railway Bill.*—Report considered; motion made, and question proposed, "That the amendments made by the committee to the Bill be now read a second time;" debate arising, debate adjourned till Thursday.





VIEW OF STOKE-GOLDING CHURCH.

(From a Correspondent.)

AND "Historical account of the Church of Saint Margaret, Stoke-Golding, Leicestershire." By THOMAS LARKINS WALKER, Architect, of Nuneaton, 6 plates. London: John Weale, 1844.

THE view of this church, which was sent to us last year by a correspondent, has been engraved some months, and though inaccurate in perspective and some other particulars, we this week insert it as it is, in order that we may have the opportunity of cautioning our correspondents relative to the precision which it is necessary to observe in architectural delineations.

We are so overrun this week with important matters of immediate interest, that we have with difficulty found space for the subjoined extracts relative to Stoke-Golding, from Nichols's Topography of Leicestershire, reserving, till our next number, all remarks upon the church itself, and our Review of Mr. Walker's excellent work upon the same subject, which has been issued since our view of the church was engraved.

Stoke, in an old subsidy roll of the year 1505, (which was in Mr. Burton's possession) called Stoke Mansfield, is now called Stoke Golding. It is bounded by Dadlington on the north, by Barwell on the east, by Wykin on the south, and Higham on the west. This is one of the townships which pay suit and service to the court of Hinckley, of which parish it was formerly a chapelry, and may still be said to form a part, though the inhabitants have all the privileges of a distinct parish; and the chapel, when rebuilt in the reign of King Edward III., was regularly declared to be a distinct church; but the rectory is still annexed to the vicarage of Hinckley. In the Itinerary of 1280, Stoke, Higham, and Upton, answered collectively as one vill.

In 1293, Nicholas de Warwick and Joan his wife gave this manor to Alice, widow of William de Hinckley, in exchange for the manor of Fulbroke, co. Warwick.

In 1297, it was found that Edmund, Earl of Lancaster, the king's brother, at the time of his death, held divers lands at Stoke.

In 1342, Thomas Nevile, by fine, entailed the manor of Stoke on the heirs of his body lawfully begotten; and for default, on his brother Henry, and the heirs male of his body lawfully begotten; and for default, on John, the son of Cicely Simond, and the heirs male of his body lawfully begotten; and for default, on Thomas, the brother of the said John, and the heirs male of his body lawfully begotten; and for default, on Thomas, the son of John Woodford, and the heirs male of his body lawfully begotten.

In 1346, Robert Champaigne, Giles Meignell, John Marshall, and John Bare (on the aid then granted for knighting Edward of Woodstock, the king's eldest son) were assessed 20s. for half a knight's fee in Upton and Stoke, parcel of the honours of Leicester and Winton.

In 1361, it was found that Henry Plantagenet, Duke of Lancaster, died seised of one knight's fee in Stoke, which Ralph Champaigne then held; also of one knight's fee in Sapcoat,



Stoke, and Upton, which Ralph Basset then held.

In a book of fifteenths and tenths granted by the laity in 1416, Stoke was rated at 14. 5s., and in the subsidy of 1445, at the same sum; but an abatement was then made of 5s.

In 1427, it was found that Joan (who was the wife of Roger Swillington, Knight) died seised of two messuages and one virgate and a half of land, with the appurtenances, in Stoke, held of Reginald de Grey, of Ruthin, Lord of Ruthin.

In 1429, it was found that Margaret (daughter of Roger Swillington, Knight, and wife of John Gra, Knight, died seised of two messuages, and two virgates and a half of land, with the appurtenances, in Stoke, held of Reginald de Grey, of Ruthin, Knight.

In 1433, Baldwin Bugg, Esq., released all his right in all his lands and tenements in Stoke to Thomas Crull.

In 1474, it was found that Margaret (wife of Thomas Everingham, Kt.) died seised of the manor of Stoke, held of the king as of his duchy of Lancaster.

In 1506, it was found that — Turville died seised of the manor of Stoke, held of the king as of the honour of Leicester.

"This manor containeth thirty-two yard lands; whereof twenty-three and three-quarters was the antient inheritance of Rafe, Lord of Basset, of Sapcote, in the time of King Edward the First, who held the same of John, Lord Hastings (whose issue was after Earl of Pembroke), as of his manor of Daddington. From Basset (by an heir general) it came to Moton, and in like manner from Moton to Harrington, all which did appear for the said land at the Court Baron of the said manor of Daddington, and performed the suits and services for the same, as it appeared to be proved by divers antient court rolls belonging to the said manor; and also by inquisitions and records. The other eight yard lands and a quarter (as it appeareth by an inquisition taken 24 Hen. VI., after the death of Reginald Moton) was some time the inheritance of Sir

Roger de Stoke, Kt., who gave it in frank marriage to Sir Robert de Champaigne, Kt., with Margaret his daughter; which Robert was descended from the antient Earls of Champaigne, one of the peers of France, whose lineal ancestor being a cadet of the said earl's house, coming into England with King William the Conqueror, received from him great lands and possessions in this shire and in the counties of Northampton, Oxford, Lincoln, and Salop. The heir general of Champaigne was married to Tourville, from whom (by alienation made) it came to Sir John Harrington, Kt., Lord Harrington, of Exton, who being afterwards seised of the whole lordship, inclosed it, and soon after sold it to the several tenants; the deed tending to the uses of the fine and recovery bearing date June 1, 3 Jac. I., wherein there is mention of a messuage and several closes to be settled for the use of William Cart."

Nov. 3, 1604, Sir John Harrington sold to Oliver Hendman, of Stoke Golding, for 28l., two closes in Stoke, called "the Oulden," lying together, between Hinckley-field and Oulden-lane, warranted from any incumbrance done or committed by the said Lord Harrington or Sir James Harrington, Kt., deceased, father of Sir John Harrington, Kt., his grandfather, or Sir Robert Moulton, Kt., his great grandfather, or Henry Turville, of Aston Flamville, Esq. [Stoke Golding had recently been inclosed.]

Thomas Hendman died July 20, 1618, seised of a capital messuage, two bovates of land, containing 76 acres, at Stoke Golding, 10 acres of which, called Turville's land, part of Turville's manor, and 31 acres, called Harrington's lands, part of Upton manor.

Francis Brokesby died, Dec. 5, 1633, seised of six closes of pasture, &c., at Stoke Golding, one part held of the king as Earl of Leicester, the rest of the manor of Hinckley.

In 1655, there was collected in Stoke Golding, for the relief of the poor Protestants of Piedmont, the sum of 2l. 6s. 6d.

In 1703, Francis Brokesby owned and lived

on his estate at Stoke, of a capital messuage and 100 acres of land, who gave it to his only son Richard, who died without issue, and left it to his three sisters; and they, in 1730, conveyed it to Andrew Noel, of Burbage, Esq., for 1,786l. He died in 1736, and gave it to his nephew, James Wigley, Esq., of Scraftoft, M.P., for the borough of Leicester, who died in 1765, and left it by will to Thomas Boothby, jun., Esq., of Marston, and to the Rev. Henry Wigley, then Vicar of Scraftoft, to be sold, and the money arising to be applied in making such additions, alterations, and improvements about his mansion at Scraftoft, as they should seem necessary or convenient; and in case there should be afterwards any surplus remaining, it was to be laid out in buying some useful furniture, to go along with and to be used in his said mansion-house. And his heir-at-law, Edward Hartopp Wigley, Esq., of Little Dalby, in 1799 sold the same estate in five lots for upwards of 3,000l., when a moiety of the whole was purchased by William Brown, Esq., of Hinckley.

In 1775, sixteen freeholders polled for Stoke. In this village, in 1790, there were 70 families.

By the return made to Parliament in 1801, it appeared that Stoke contained 82 houses, inhabited by 87 families, 194 males 193 females, in all 387; of whom 58 were chiefly employed in agriculture, and 79 in trade, manufactures, &c.

In the field still known by the name of "Crown Hill" (three acres of which were owned in 1810 by William Sheen of Stoke), close to the north-west end of the village, there have been dug up many human skeletons; which are very common on breaking fresh ground.

A tradition remains that the crown was secreted on this hill (which is but just without the town), and that it was found afterwards by Sir Reginald Bray.

Stoke consists of about 1200 acres of land; no great part of which is ploughed, but chiefly used in dairying and feeding cattle.



CROSS ON THE  
SOUTH-EAST  
GABLE.



ELEVATION OF THE FONT.



CROSS ON THE NORTH-  
EAST GABLE.

#### DECORATIVE WORKS OF ART

Sent in, pursuant to the notices issued by her Majesty's Commissioners on the Fine Arts, now Exhibiting in King-street, St. James's-street, Westminster.

We have taken a view of these works, but must defer till next week entering into any detailed account of them.

The number of subjects, according to the official catalogue, is 170, but some specimens have been since added to the collection.

We have heard complaints uttered that from some cause many of the most able artists, designers, and workers of these matters of art, have abstained from contributing, while others

of eminence who have sent, have either submitted inferior specimens, or such as are little, if at all, applicable to the pile of buildings proposed to be decorated. This, we have been told, has mainly arisen from such parties having been straitly importuned to contribute, lest an exhibition from which so much was expected should be entirely bare of worthy specimens. In the collection there are some exemplars for iron-work; but, taking these as a whole, they do little credit to the state of English art in that department.

Perhaps while Britain affords such a wonderful proficiency in the mining, manufacture, and general application of iron, there is less general art, properly so called, in its formation,

than in the case of any other material which is manipulated; the peculiar facilities of moulding, forging, and otherwise working this metal, have rendered it one of the most useful generally applied, and indeed necessary materials, which can subserve the purposes of man's wants. Hence it is of the first importance that good taste be bestowed in forming the prototypes from which such prodigious numbers of copies may be made, as in the case of stoves, fenders, and the innumerable articles which are of every-day use, which instead of being overdone with a profusion of tawdry tasteless decoration, as is mostly the case at present, may be fashioned so that any one of decency of feeling may choose them, and not



be offended by their vulgarity. We have often been importuned by gentlemen and ladies to attend them to the Carron and other warehouses to choose stoves, but have nearly as often returned without choosing any of the patterns which we have been shown, the parties instead being willing to pay five times as much for plainer and neater articles of good quality, though, in fact, scarcely after any design, and with little elegance beyond those of the material and its polish; on some occasions we have found, after all the patterns have been looked over, only one neat one has been found, the purchase of which has been determined upon as a *pis aller*, however inappropriate it might happen to be for the particular building within which it was to be fixed. Now, if the vulgarity were to be discharged from all such articles, with few exceptions less work, both in the formation of the models and in the articles as executed, would be required.

We have been told by the vendors of these things, that if by chance any article happens to come into the market which makes some approach to neat elegance of design, such is the natural inclination of mankind towards good taste, that many thousand copies of such articles are always immediately sold, and their manufacture continues for years a source of profitable merchandizing. We shall not this week say more upon this particular subject.

There are, in the collection, specimens of stained glass, mosaics, parquettes, encaustic tile pavements, and a variety of other things into which we shall go at some length next number.

Having, as we hinted above, listened to great complaints upon the subject of the specimens of carving, which are indeed comparatively few, and many of which are not applicable to the style of the building, we now only state that we have heard that Mr. Rogers, the eminent and natural carver (like Willement) did not at first intend contributing, but being pressed so to do, sent works of art carved in wood to the value of upwards of 800*l.*, which, though few of them are in the Gothic style, are many of them brilliant, and such specimens as would do honour to any age; but on visiting the collection we were surprised to find only few of his subjects exhibited and none of them catalogued; on inquiry, we were told that many of the extraordinary works of this accomplished architectural artist were absolutely placed down in a dark cellar beneath the building; and we were facetiously told by a dry cicerone, they are there preserved like gooseberries underground, to be brought up as rare phenomena out of season. We are sorry for this, for we suppose that among the subjects must be some applicable to Pointed Architecture, in which style we know Mr. Rogers to be as eminent in correctness, elegance, and high finish as he is for his master-touch in the vivifying of dry wood into fruit, flowers, tendrils, joint and muscle, and as heretofore was his great predecessor, Grinling Gibbons.

The specimens are in general well-placed for view, though no doubt some, as must necessarily be the case, are in inferior situations. But (during this brilliant weather at least) the light from the great roof-lantern so overpowers the stained glass and some other of the specimens, that scarcely can any idea be drawn, even by analogy, of the effect which these subjects would produce, if fixed to situations in the Houses of Parliament, with the subduing of illumination caused by wire guards, and the weather-soils over mullioned windows.—We trust, in justice to the contributors of this exhibition, this matter of complaint will be remedied.

#### SOCIETY OF ANTIQUARIES.

On the 23rd instant, being St. George's day (the anniversary of the society), the following gentlemen were elected officers for the year ensuing:—

George, Earl of Aberdeen, K.T., F.R.S., President.

Thomas Amoyt, Esq., F.R.S., Treasurer.

Nicholas Carlisle, Esq., K.H., D.C.L., F.R.S., Secretary.

Sir Henry Ellis, Knt., K.H., B.C.L., F.R.S., Secretary.

Hudson Gurney, Esq., F.R.S., V.P.

Henry Hallam, Esq., M.A., F.R.S., V.P.

William Richard Hamilton, Esq., F.R.S., V.P.

Philip, Viscount Mahon, V.P.

Capt. Wm. H. Smyth, R.N., K.S.F., D.C.L., F.R.S.

Thomas Stapleton, Esq.

Albert Way, Esq., M.A., Director.

Charles F. Barnwell, Esq., M.A., F.R.S.

Beriah Botfield, Esq.

Richard Aldworth Neville Griffin, Lord Braybrooke.

William Bromet, M.D.

Sir Stephen R. Glynne, Bart.

Thomas W. King, Esq.

Rev. Samuel Roffy Maitland, M.A., F.R.S.

Thomas Joseph Pettigrew, Esq., F.R.S.

Charles Roach Smith, Esq.

The fellows of the society afterwards celebrated the anniversary by dining together at the Freemasons' Tavern, Viscount Mahon, in the chair.

#### ELEMENTARY ESSAY ON MORTAR AND CEMENTS.\*

BY JAMES WYLLSON, MON. SEC. B.A.A.D.

21. **QUICK-LIME AND SLAKED-LIME.**—The term *quick-lime* is applied after calcination, and before the lime has been subjected to any other agency. The operation it undergoes preparatory to making mortar is termed *slaking* or *slacking* (i.e. loosening its fixed causticity); this consists in throwing over the heap a quantity of cold water, which, if it has been properly burnt, it absorbs quickly in abundance, causing it soon to become very hot, to crack into pieces with some noise, to puff up and exhale a large quantity of slightly-caustic vapour, consisting of part of the water and a small portion of lime—then falling into a dry and nearly impalpable powder, in which the remainder of the water has intimately combined with the lime, forming what is called *hydrate of lime*, or in plain, practical parlance, *slaked lime*. A degree of discreet practical tact is necessary to be exercised in this process; for if too little water be used, the desired result is not produced, and if too much, the lime is swelled and rendered liable to continue light and porous and of a pulverulent tendency. The slaking gives an increase of about one-fourth on the previous weight, and which it would take a red heat to separate. Good common lime, properly calcined and fresh from the kiln, begins to slake the instant that water is thrown on it, greatly augmenting in volume, sometimes indeed so much as, when slaked to a paste, to have three times the bulk that it had in the state of quick-lime; if over burnt, however, it slakes slowly. Limes of poor quality neither slake so quickly, give out so great a heat, nor swell so much; which is the case also with those limes that are of an hydraulic character; for these, and such other limes as do not slake readily, there is a practice of reducing the lumps by grinding or pounding previous to slaking. Before making mortar, it is usual to screen the lime, if it is of the chalk kind, for the purpose of keeping back such pieces as are imperfectly burnt, and consequently have not been reduced to powder by the slaking, as these would otherwise injure the quality of the mortar. This method is evidently preferable to grinding, which is instead adopted in composing some mortars and cements: screening is not usually necessary with stone-lime. There is another mode of slaking often adopted in winter, which is, by totally immersing the lime in a large vat of water; when, the lime-water being drained off, the slaked lime remains in the condition of a paste; and the sand being wet with rain, as we may assume it to be frequently in that season, no further addition of water is required in making the mortar; but both ingredients are in a ready state for amalgamation. In the summer season this method is not so suitable, the sand being then, in general, too hot and absorbent; this process may better be observed towards hydraulic limes than with common white limes.†

22. Quick-lime should be used as soon as possible; but if not intended for immediate use, ought to be put into water-proof casks soon after being burnt; for, when it becomes cold, it begins to re-absorb carbonic acid, enlarges in bulk, and by falling asunder, and eventually approaching nearly its original state of chalk or carbonate of lime, or rather

that of the dust of limestone.\* Chalk-lime has a greater avidity than stone-lime for carbonic-acid, and the white limes recover it most rapidly, being therefore the most speedily injured in quality by exposure. Magnesian-lime, being one of the slowest in this re-absorption, retains its causticity much longer; Argillaceous-lime possesses a similar property. Workmen heap the slaked-lime together and cover it with sand, to preserve it as far as possible, when not required for instant use. Lime is sold in London by the hundred, which signifies 100 pecks or 25 bushels.

(To be continued in our next.)

#### VISIT OF PRINCE ALBERT AND THE COMMISSIONERS OF FINE ARTS TO THE NEW HOUSES OF PARLIAMENT.

On the afternoon of last Saturday, at four o'clock, his Royal Highness Prince Albert left Gwydyr House, Whitehall, where the Commissioners of Fine Arts, of which his Royal Highness is chairman, sit, and proceeded to the new Houses of Parliament. The Prince was accompanied by Viscount Palmerston, Lord Colborne, Mr. Gally Knight, Mr. Hallam, and Mr. Wyse, members of the commission. Upon his Royal Highness's arrival, he was received by Mr. Barry, the architect, and Mr. Grissell.

The visit was understood to be a formal one, suggested for the purpose of ascertaining the progress made in the erection of the new houses of legislature; and by inspection of the various compartments to form an opinion as to which of them were best suited for the displaying of frescos, statues, and other works of art.

His Royal Highness and the other commissioners first proceeded to the terrace, and inspected the elevation of the river front, and the carvings thereon; after which they directed their steps to the Victoria Tower, which is now 30 feet high. Subsequently to inspecting this tower, the majestic beauty of which called forth the admiration of the Prince, the party proceeded up a temporary staircase, erected where the grand staircase will be, which her Majesty will ascend on the occasion of the opening of Parliament, to the guard-room, and from thence to the robing-room, where Mr. Barry produced his plans, and explained the different arrangements of that part of the works. The great point of interest at this portion of the buildings was the Victoria Gallery, through which the Queen will pass in procession from the Royal robing rooms to the House of Lords. This gallery is to be devoted to the reception of statues and busts of all the great literary, naval, and military men of bygone times; and the walls will be covered with fresco paintings. A considerable time was spent in this part of the building, and his Royal Highness paid the most marked attention to the architect's explanations of his future intentions.

The parties afterwards directed their attention to the royal porch or entry to the House of Lords, in which a temporary scaffolding had been erected in order that his Royal Highness, and the rest of the commissioners, might inspect the interior of the House of Peers. The stone-work and elaborate carving of the interior elicited unqualified expressions of praise from the Prince and the other commissioners. This building has reached an altitude of 60 feet, and the main windows on both sides are fixed. It was explained to his Royal Highness that the lower parts of the walls, to the height of about 20 feet, are to be lined with enriched carved oak wainscoting, the upper part of the walls being coated with freestone from Caen, in Normandy, having enriched cornels, supporting niches, in which are to be placed marble statues of the Kings and Queens of England.

His Royal Highness, desirous of ascertaining the effect that would be produced by a statue in one of the niches, had one of the masons placed therein, and was pleased at the result.

It was stated that the greater part of the works of the new House of Peers was of sufficient height to receive the roof, which, we understand, is composed of wrought and cast iron, and is in a state of great forwardness,

\* Continued from p. 201.

† A burning sun was considered by the Roman masons to be as hurtful to mortar as the action of frost.

\* This re-absorption is said to have been first discovered by Dr. Higgins.



and is proposed to be covered with cast-iron galvanised plates.

The Prince and his party next inspected the lobby, which is even in a more forward state than the house itself, the whole of it being embellished with carvings in stone of the richest description, and it will be finished without plaster or cement of any kind being used.

The central hall was the next object of attraction. This hall intervenes between the two Houses of Parliament, and will be made the ventilator for the entire building, by means of a tower, 300 feet in height, which will be above the ascent of smoke, and consequently will furnish fresh and pure air throughout the entire erection.

The party proceeded from the central hall to the front building, intended for the parliamentary libraries and committee-rooms, the public halls of which were minutely inspected. In one of the halls a considerable preparation had been made for the reception of works of art, the walls being lined with stone filled with niches and ready to receive statues.

The Prince and his party did not visit the other parts of the building, including the House of Commons, clock-tower, &c.; but it was explained to his Royal Highness that this portion of the works was also in a state of great forwardness, and most parts were from 18 to 20 feet high. It was also stated that there were 700 men constantly at work.

His Royal Highness and the other commissioners subsequently visited the model-rooms, which are under the direction of Messrs. Thomas and Dighton. After inspecting models of the interior of the House of Lords, they proceeded to Mr. Barry's offices, where the details and drawings were laid before the Prince, and explained by the architect.

#### WESTMINSTER LITERARY AND SCIENTIFIC INSTITUTION.

On the 18th inst., being the seventh anniversary of the establishment of the institution, a very numerous and respectable company assembled in the new lecture theatre, Great Smith-street, Westminster, to hear the customary address. It was read by the secretary, and dwelt upon the gratifying fact of the great increase of the members, and the general prosperity of the society. The library, it appears, now contains 4,000 volumes on subjects of science and of general literature. This address, which chiefly consisted of general reflections on the usefulness of the establishment of literary and scientific institutions, being concluded, a lecture, illustrating the usual method of obtaining artificial light, was delivered by Dr. Ryan. In a lucid and interesting manner the lecturer drew attention to the nature of the compound by which light is produced, which is one and the same in all instances, being nothing else than the union of carbon with hydrogen gas. He then explained the conditions necessary to form the combustion, and in the course of this portion of his lecture referred to and clearly illustrated the different kinds of light now in use, and compared them one with another as regards their distinctions and relative advantages. In this way the Argand principle, the Drummond, the Bude, the Boccus lights, and Faraday's beautiful and useful apparatus for the descent of the products of combustion, were brought respectively under review. The lecture was much applauded.

#### HUNGERFORD SUSPENSION BRIDGE.

CASUAL spectators, unacquainted with the art of building suspension-bridges, when they only observe two large masses of masonry erected about 100 yards from each bank of the Thames, with no communication either from the shore or with each other, can little imagine that the structure is so near its completion that during the present summer the public will be enabled to cross from Hungerford-market to Belvedere-road, Lambeth, for the small toll of one farthing each. To the curious this bridge is worth notice, as being the only one in the metropolis dedicated to foot passengers alone, and erected on the principle of suspension. The entire length of the bridge suspended on chains will be 1,342 feet 6 inches; that is, the centre span or arch, 676 feet 6 inches; those on the side, 333 feet each. The width between the chains will be 14 feet, and of the clear pathway

13 feet; the height of the flooring above high water (Trinity standard), in the centre 31 feet 6 inches, at each pier 28 feet 6 inches, and at each abutment 22 feet 6 inches; the height of each pier above the flooring 55 feet 3 inches; the number of main plates which form the chain is 2,500, about 24 feet each in length. The total weight of iron is between 700 and 800 tons, and the estimated cost, including the approaches, is 110,000*l*. It will be seen, that its centre span alone is nearly 100 feet greater than the entire of the deservedly-celebrated Menai-bridge, which is 579 feet 10 inches. It is likewise 274 feet greater than the centre span of Hammersmith-bridge, which is 402 feet 3 inches; and above three times as great as the centre arch of Southwark-bridge, at present the largest in London. Indeed, with the exception of the wire-bridge at Fribourg, in Switzerland, which is 870 feet, it will be by far the largest in existence; and will, with the Thames Tunnel, the block-machinery at Portsmouth, the Great Western Railway, &c. &c., assist to hand down to posterity the enterprising spirit and genius of a Brunel.

#### CHURCH-BUILDING INTELLIGENCE, &c.

*St. Martin's Church, Canterbury.*—Extensive repairs, amounting indeed to a complete renovation of the ancient church of St. Martin, near this city, are now going on, the old fabric having become dilapidated and insecure. The expense is to be defrayed by a subscription, the Rev. Mr. Chesshyre being the principal contributor. The church has long been an object of great interest as traditionally the first Christian temple erected in England. Its origin is assigned by some to the Roman soldiery under the first conquerors of Britain, and it is recorded by Bede that St. Augustine and his fellow-labourers resorted hither to their devotions, on their first arrival, by license of King Ethelbert at the instance of his pious Queen Bertha. It is a plain structure, built in part of Roman bricks, but from its associations an object of much interest to visitors. An ornamental stone cross about two feet long was some time since found here, bearing an inscription in the centre which it has puzzled the local antiquaries to decipher, and which still remains a mystery.

Additional churches are to be erected at Henbury, in the parish of Prestbury, Cheshire; North Brent Tor, in the parish of Lamerton, Devon; Shortley-bridge, in the parish of Lanchester, Durham; Zeals, in the parish of Mere, Wilts; Heaton Norris, in the parish of Manchester; Morpeth, Northumberland; Middleton, Sussex; Whitstable, Kent; Swanmore, parish of Droxford, Hants; Essington, parish of Bushbury, Staffordshire; Chittoe, parish of Bishop's Cannings, Wilts; Coton in the Elms, parish of Lullington, Derbyshire; and Ison-green, parish of Lenton, Nottingham.

The churches at the following places are to be rebuilt, namely, at Garforth, near Leeds; Letterston, near Haverfordwest; and Aspley Guise, near Woburn.

The churches at Wylse, near Heytesbury; Duddington, near Stamford; Boyton, near Oldham; Thame, Oxon; Semley, near Shaftesbury; Llanfihangel, Uwchgwili, near Aberguili, Carmarthen; and Dalbury, near Derby, are to be enlarged.

Her Majesty the Queen Dowager has graciously bestowed 30*l*. upon the Holme Cultram Churches, Cumberland.

#### RAILWAY INTELLIGENCE.

*South Devon Railway.*—There have been two or three preparatory meetings relative to the formation of a railroad from Tavistock to Plymouth, to unite at the latter place with that from Exeter; it will have the support of his Grace the Duke of Bedford, Sir A. Buller, and other influential persons; the former nobleman has promised a donation of 2,000*l*., the ground for the terminus, and the road where it passes through his property: an example which it is expected will be followed by other public-spirited proprietors. It is proposed to raise the required capital of 150,000*l*. in 8,000 shares of 25*l*. each; partly by tontine investments, and partly by the issue of shares.

*Opening of the Bristol and Exeter Railway.*—On Wednesday (says the *Exeter Gazette*) there was a meeting of the active and intelligent committee, which was attended by a deputation from the Bristol and Exeter railway direction, consisting of some of the directors, and Mr. Badham, the secretary. It has been determined that the entertainment shall consist of an elegant *déjeuner-à-la-fourchette*, to be given to the numerous distinguished guests who have been invited, at two o'clock on the day of opening, in the spacious shed which has been lately erected at the terminus in this city, which measures 160 feet by 90, and the use of which has been kindly afforded by the directors of the Great Western Railway. It has also been determined that each subscriber of one guinea to the celebration fund shall have the privilege of purchasing a ticket for himself at the price of 10*s*., and two for his friends, at the rate of 10*s*. each for gentlemen, and 5*s*. each for ladies; and that no ticket will be procurable under any other circumstances, with the exception of the guests who have been specially invited, and the shareholders of the line, who will receive invitations from the directors.

*Lynn and Ely Railway.*—This undertaking progresses favourably: the proposed line has been carefully inspected by Mr. Rastrick, the engineer, who in every respect confirms the opinion entertained by the projectors of its eligibility in regard to purchase of land and total absence of difficulties in construction. On the other hand, the details of present traffic from Lynn, and the amount of income to be derived therefrom, have been most rigidly scrutinized by men of business, not the originators of the scheme, extremely cautious in judgment, and determined not to be satisfied by mere conjecture; the result is a firm conviction in their minds that a high rate of interest will accrue to those who eventually become shareholders. A requisition to the High Sheriff for a county meeting, on the subject, is in course of signature—at which many influential landed proprietors have promised to attend.—*Cambridge Advertiser*.

*English and Bristol Channel Railway.*—This long desired project is about to be carried out. We understand the line projected will commence at Bridgwater, proceeding to Langport, thence to Ilchester, following the Ye to its source, thence to Dorchester, after which it will follow the River Frome to Wareham, terminating on the Hamworthy side of Poole. This scheme is wholly independent of a line of railway projected from Southampton to Dorchester,—it is probable, however, that a junction between the South-Western and Channel Railways may ultimately be effected from Salisbury. We have reason to believe that a prospectus of the Channel Railway will very shortly appear.—*Sherborne Journal*.

*Southampton and Dorchester Railway.*—Sir I. Brunel last week visited Weymouth, being on his survey of this projected line of railroad. His opinion is unqualifiedly decisive as to the judiciousness of the undertaking, which will be proceeded with as soon as the preliminary arrangements will permit; and further, that a railroad will be forthwith laid down from Bridgwater to Weymouth; thus completing an uninterrupted transit from the Northern and Midland Counties to the Channel Islands and South of France, and also forming a connecting and direct line, so long the great desideratum between the two channels.

*Birmingham and Gloucester Railway.*—The directors of this company have instructed their engineer, Mr. Stephenson, to make the necessary surveys, with the view of affording a communication by railway to the district situated between Warwick, Leamington, Rugby, and Oxford, by way of Banbury.

*Chester and Holyhead Railway.*—On Friday week, at a special meeting of the directors, the bill now before Parliament for a railway from Chester to Holyhead, a clause in which empowers the London and Birmingham Railway to subscribe to the line to the extent of one million sterling, was unanimously approved.

*Newcastle and Darlington Junction Railway.*—The Durham branch of this railway is now opened to the public. There is therefore now only about four miles of coach road between Gateshead and London, and the entire line, it is expected, will be opened on the 18th June.



**The Electrical Telegraph.**—This is a very ingenious contrivance or invention of Mr. Bain, by means of which communication can be made almost instantaneously at a distance of many miles from one terminus to another. A sheet or plate of zinc is placed at one terminus, and a sheet or plate of copper at another; the connection between them is by a copper wire. A voltaic battery is thus created, the electric currents being produced by the earth and this simple apparatus. The currents are constant, the variations during eighteen months being found to be very small. The mechanical part of the apparatus consists of a clock at each terminus, with an index and figures marked on a circular plate from 1 to 9; these figures point out certain letters, or words, or sentences, in a vocabulary, and by these means intelligence of various events can be communicated from one terminus to another. The electric fluid operates upon these clocks so as to stop the index at the required figures; the clocks themselves being put and kept in motion by weights. There are some other minutar and more delicate details in the construction of these engines, by means of which the accuracy is better secured than in former inventions, and there is a contrivance by means of which the numbers are printed, without loss of time, on a paper attached to a cylinder or drum. The telegraph has been at work at the terminus of the South-Western Railway, the plate of zinc being at Nine Elms, and the plate of copper at Wimbledon, a distance of six miles. The results have proved highly satisfactory, and established the rapidity and accuracy of communication, and the simplicity of the means by which it is accomplished.

**Railways in Prussia.**—The Hamburgh papers of the 13th instant contain the following singular notification, copied from the *Prussian Gazette* :—

"The Prussian Minister of Finance has issued a notice to the following effect:—

"The constantly increasing number and extent of the projects for constructing iron railways, which have been eagerly brought forward of late, begin already to have a pernicious influence on *commerce and manufactures*, by withdrawing from them the capital necessary to carry them on, and employing it in dealing in railroad shares. But these disadvantages must be more visible, and in many cases, undoubtedly ruinous, if besides the railroads already approved, or especially recommended by the provincial assemblies, all or the greater part of these projects should be carried simultaneously into execution, since they would require enormous sums of money, and a much greater amount of labour than can be spared from manufacturing industry. It seems, therefore, the more necessary to check these numerous extensive projects, as they are often used to carry on improper intrigues and to promote ruinous gambling in the shares. The Minister announces that he is authorised to state, that (with the exception of cases for which the most urgent reasons shall appear) no further permission for the construction of iron railways will be granted for several years to come, and he warns all persons to avoid purchasing shares in such unauthorised projects."

**Atmospheric Railways.**—The *British and Foreign Review* says—"The Atmospheric Railway is no longer an experiment, but an established means of transit, tested and proved by repeated trials, and by the opinions of the most eminent engineers, English and Continental, who have witnessed and watched its success, and expressed their opinions satisfactorily upon the subject. Amongst the opinions expressed by the most eminent of our engineers, is that of Mr. Brunel. The prospectus of a Gravesend and Chatham Company, which has recently appeared, contains a recommendation of the committee, founded upon the opinion of their engineer, I. K. Brunel, Esq., to adopt the atmospheric system. The prospectus states that 'The committee, having made a satisfactory inquiry as to the decided economy with which the Dublin and Kingstown Extension Railway is now being worked as an atmospheric line, and their engineer having satisfied himself as to the advantages this plan of motive power affords, recommend its adoption on the proposed line of communication, both as a means of keeping the capital within a very moderate compass, and increasing the profits by a reduced charge of working.'"

**Rival Railways.**—Lines of railway are projected by the Great Western Company, from Oxford to Banbury, and from that town a railway is projected to Worcester. In opposition to this movement, the London and Birmingham Company are projecting railways from Aylesbury to Oxford, and from Oxford to Leamington, by Banbury.

A railroad, to cross the river Severn near Purton, and to proceed from Stonehouse, on the Great Western line, through the Forest of Dean, to Monmouth, thence down the valley of Usk, beyond Brecon, and afterwards by the river Towy to Carmarthen, is confidently talked of.—*Gloucester Journal*.

## Correspondence.

### MORTARS AND CEMENTS.

SIR,—In Mr. Wylson's Essay on Mortars and Cements, he states in the last paragraph that he is not aware of the Coral Islands being used as lime. I beg to refer him to John Williams's "Narrative of a Residence in the South Seas," and I believe, also, Ellis's "Polynesian Researches," for information on this subject, when he will find that Mr. Williams has used it for building and plastering. I have not either of the works by me, or I would send you the passages.

While on the subject of cements, in a Builders' Dictionary of 1734, I find the following article on cement, which may be new to many of your readers :—

"Cement, in architecture, is a strong sort of mortar used to bind or fix bricks or stones together for some kind of mouldings; or in cementing a block of bricks (as they call it) for the carving of capitals, scrolls, or the like.

"It is of two sorts; one called *hot cement*, and the other *cold cement*, because the hot cement is made and used with fire, and the cold cement is made and used without fire.

"To make the hot cement, take half a pound of bees'-wax, an ounce of fine brick-dust, an ounce of chalk-dust or powdered chalk; sift both the brick-dust and chalk through a fine hair sieve (the brick and chalk may be beat in a mortar before it is sifted). Let all these be boiled together in a pipkin or other earthen vessel for about a quarter of an hour, keeping it continually stirring with a piece of iron or lath, then take it off and let it stand for four or five minutes, and it is fit for use.

"The bricks which are to be cemented with this kind of cement must be made hot by the fire before the cement is spread on them, and after that, be rubbed to and fro one upon another, after the same manner joiners do, when they glue two boards together.

"The cold cement is less used: and is accounted a secret known but to few bricklayers. It is made in the following manner :—

"Take a pound of old *Cheshire* cheese, pare off the rind and throw it by, then cut or grate the cheese very small, put it into a pot with a quart of cow's milk, let it stand all night, and in the morning take the whites of 24 or 30 eggs, and a pound of the best unslacked or quick lime, and beat it in a mortar to a very fine powder, sift it in a fine hair sieve, put the cheese and milk to it in a pan or bowl, and stir them well together with a trowel or such-like thing, breaking the knobs of the cheese, if there be any, then add the whites of eggs, and temper all well together, and it will be fit for use.

"This cement will be of a white colour; but if you will have it of the colour of brick, put into it either some very fine brick-dust or some almeagram, but not too much, but just enough to give it a colour."

I remain, Sir, yours truly,  
Marylebone, April 22, 1844. B. E. N.

### RAVAGES OF THE WORM IN TIMBER.

SIR,—In your paper of the 6th instant, I see a letter from "A Correspondent," calling attention to a description of wood grown in the West Indies, which he says resists the ravages of the worm. The value of such a wood for piling and dock-gates would be immense, and your correspondent's statement should be corroborated if possible. I have myself made some inquiry on the subject, and learn that a quantity of this timber came into London a year or two ago. Perhaps some of your subscribers may have used it, and if so, a

communication through your journal would be welcome to myself and other parties who have not seen any of the timber used.

Ought not our government to import a quantity of such a wood, which for their own wants, and for the trade, would be so valuable; and which would benefit our West India Islands, at present said to be so much depressed?

I am, Sir, your obedient servant,  
London, 12th April, 1844. G. H.

### TIMBER SCARFING.—ROOF TRUSS OF PRINCESS'S THEATRE.

SIR,—Will your correspondent, a "Practical Carpenter," complete his description of this roof-truss by answering the following questions :—

What are the lengths of the timbers out of which he formed his tie-beams?

Are the fitches secured together by any means other than those shown in the sketch?

What is the length of the scarfing?

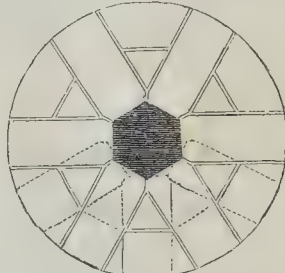
What is the distance between the trusses?

And What iron work is attached to the kings, queens, and principals?

I am, Sir, A CONSTANT READER.

### METHOD OF BUILDING A BRICK COLUMN.

SIR,—In answer to "J. T.," I beg to send you a plan of the best and most substantial method of building a brick column of two feet diameter. Each course is so arranged that no



two bricks or joints will fall on each other, which is the very *spirit* of all brick bond; the dark space in the centre may either be filled up or left open; I should prefer the latter mode. The pieces of brick which must be cut off from each end of the stretchers will serve to fill up the small equilateral spaces, so that absolutely there is no waste material whatever.

Then as to the method of "carrying it up," I have found the following the most easy, as also the most accurate: Get a cylindrical rod of iron, about half an inch diameter, also, a piece of wood cut to the proper length for a *trammel*, half an inch thick, and 1½ inch wide, bore a hole in one end, the same diameter as the rod, over which slip the trammel; then fix the iron rod perpendicular in the axis of the column, quite firmly at the bottom and top. The trammel will serve as a guide to the workman in carrying up the brickwork; at the same time the proper *entasis* could be given to the column by shortening the trammel regularly.

If you think the above description worthy of insertion in *THE BUILDER*, you will much oblige, Sir, your obedient servant,

JOHN PHILLIPS.

[If our correspondent will furnish us with the improved theory of brick bond relative to which he has written, it shall be inserted if we find it meritorious.—*Ed.*]

SIR,—Will you, if convenient, inform me whether a person holding the lease of two adjoining houses, and underleasing a portion of one to another person, can, without notice, build upon the yard, leaving only a passage for passing by, the light of the rooms of course being very much hindered by such building? By answering the above you will much oblige, Sir, your obedient servant,

A CONSTANT SUBSCRIBER.

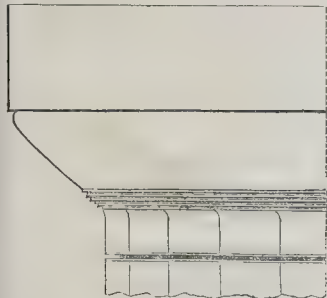
Hackney, April 24, 1844.

[No person can, without being subject to action, build so as to injure any light of any adjoining premises which has been enjoyed 20 years, nor can any person injure in such way his lessee's light, without incurring similar liability.—*Ed.*]



## COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.—No. IV.

**HYPOTRACHELIUM.**—We find the meaning of this word thus given by Mr. Gwilt: "Hypotrachelium (Gr. ὑπό, *under*, and τράχηλος, the *neck*); the slenderest part of the shaft of a column, being that immediately below the neck of a capital." (Encycl. p. 987.) As this definition is not sufficiently explicit, we subjoin that of Professor Hosking:—"Hypotrachelium (Gr. ὑπό, *upon*, and τράχηλος, the *neck*), the part forming the junction of the shaft with the capital of a column; the neck of the capital itself. In some styles it is a projecting fillet or moulding, and in others, as the Doric, it is composed of a channel or groove, and sometimes of more than one." It would appear, therefore, that under this term, which we shall, for convenience, translate as *necking*, is included all that portion of the upper part of a column which is contained between the lowest annulet and the junction of the capital to the shaft. In some columns this joint is so fine as to be scarcely discernible, as in the temple of Minerva at Sunium, in the temple of Jupiter Nemæus, in the Agora at Athens (the only good feature in the capital), and in the principal temples at Agriguntum. In other temples, again, the joining shews a slight sinking or groove, as in the Parthenon (No. 1),



No. 1.

and in the Propylæa at Eleusis, and at Rhamus. The joint in the columns of the Propylæa at Athens resembles No. 2, whilst in those



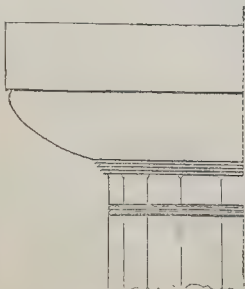
No. 2.

of the temple of Theseus the sinking has a double chamfer (No. 3). In the columns of



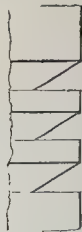
No. 3.

the temple at Corinth, the necking consists of



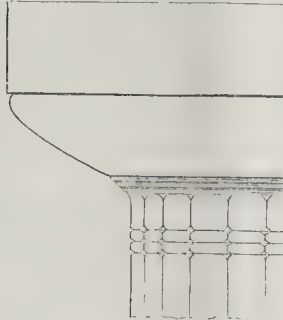
No. 4.

three grooves, divided by fillets (No. 4), which



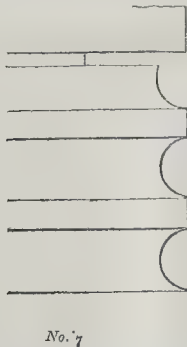
No. 5.

are shewn of their full size at No. 5. At



No. 6.

No. 6 is seen the necking of a column belonging to the great Hexastyle temple at Pæstum, which consists of two grooves cut in the form of beads, and agreeing with the flutes of the shaft. At No. 7 is seen the profile of the



No. 7.

grooves to the columns of the temple of Apollo at Bassæ. These, which are of the full size, are from Mr. Donaldson's illustrations of that building. In allusion to examples like those last given, the Earl of Aberdeen observes:—"There are other signs which mark the antiquity of columns, one of which are the three grooves sometimes found at the hypotrachelium or necking of the shaft. Although these do not occur in every example of the earliest temples, they are never to be discerned in those of later date, and when inserted, may invariably be considered as the work of a remote date." (Enquiry, p. 154.) Judging, therefore, by the examples of the Parthenon and Theseum, and other works of good design, we may conclude that the architects of the best era of Athenian taste, the days of Pericles, did not consider it as an improvement to their columns to make the hypotrachelium a prominent feature, as important, in fact, as the annulets, as seen at Corinth and Selinus. The temple at Corinth, there is every reason to believe, is the oldest Doric edifice extant.

I know that it is usual in describing a capital to include in it the necking; and in orders, where the flutings of the shaft are carried no higher than the necking, this description is just; but as no one would dream of reckoning the flutings as part of a capital, I consider that in a Grecian Doric column we should hold that the capital in truth terminates with the

annulets, although, for convenience sake in execution, the upper part of the column is cut out of a block with a continuation of the flutings. In the Grecian Ionic and Corinthian orders, and in all the Roman orders, the necking, which is often called the astragal, invariably consists of a torus, or bead, above a fillet, and in all these orders the flutings are invariably stop under the neckings. In the temple of Minerva-Polias at Athens, the necking is placed at some distance below the volutes (the bead of this necking is carved), differing in this respect from the capitals of the flæsius and of Asiatic-Ionic examples, where the shafts run up to an astragal beneath the moulded echinus between the volutes; such capitals, therefore, may be said to be deficient in hypotrachelia. It has been ascertained that the capitals of the columns at Agriguntum and at Thorius were joined to the shafts by cedar plugs, through which passed cylindrical wooden pins, no cement being used. Mr. Hosking calls the space in Doric and Ionic columns, between the mass of the capitals and the hypotrachelium, by the term trachelium, or neck, and this distinction seems to be a just one.

**APOTHESES** (from ἀπό, and θέσις, thesis, position) signifies divergence, and is the term which should be applied to that curve or hollow which unites the shaft of a column to the fillet or annulet in the necks of columns, in contradistinction to the word—

**APOPHYGE**, which implies recession (from ἀπό, far, far off, and φύγι, Gr. *fuga*, Lat. *flight*), and which is understood to apply only to the curve found at the lower diameter of all columns which have moulded bases. Mr. Gwilt thus defines this word:—"Apophyge Gr., signifying flight). That part of a column between the upper fillet, or annulet, on the base and the cylindrical part of the shaft of a column, usually moulded into a hollow or cavetto, out of which the column seems as it were to fly or escape upwards. The French call it *congé*, as it were, leave to go." (Encyc. p. 894.) A Grecian Doric column, therefore, is the only one in which an apophyge, or common with the other orders, the apothesis or cavetto at the upper diameter of the shaft. The two hollows we are speaking of are always repeated at the two extremities of the pilasters of all the Roman orders, but are never found in such positions in the *antæ* of the Grecian Doric; and only the apophyge, or lower hollow, is found in the *antæ* and pilasters of the pure Grecian Ionic and Corinthian orders. G. R. F.

## Miscellanea.

**THE ROYAL EXCHANGE.**—There is prodigious competition, we are informed, among our sculptors for shares in the allotment of the additional 10,000*l.* for statuary to adorn the Royal Exchange. Noticing which, we would inquire if the City Wellington Statue, now complete in the studio of the late Sir F. Chantrey, is to be placed, as it ought to be, on its pedestal in this locality, on the 18th of June, the anniversary of Waterloo?—*Literary Gazette*.

**HEREFORD CANAL.**—Sums amounting to a much larger total than is required to complete the Canal have been tendered in loan to the Company. On Thursday week the able engineer, Mr. Stephen Ballard, commenced the work from Withington to Hereford, and by this time next year we hope to see it completed to the bottom of Holmer-lane; by autumn twelvemonths we anticipate the completion of the entire line to Hereford, and also a glorious gathering in this city to celebrate an event fraught with interest to the city and county.—*Hereford Times*.

**THE STONE PIER AT GREENWICH.**—Considerable alarm has been excited on the stone pier in consequence of a further portion of the structure having given way.

On Dartford Heath are clearly developed the tracing of a Roman encampment, which hitherto has escaped the notice of the military Kentish historians.—*Dover Chronicle*.

\* With the single exception of the Choric Monument at Episcopatæ, where the necking is a plain groove, which some writers, and among them Athenian Stuart, think was intended to be "filled with an astragal or collar of bronze;" whilst other writers consider that the artist only followed the practice observed in Doric capital.



**BAD VENTILATION OF PLACES OF WORKSHIP.**—Few spectacles are perhaps more melancholy than those presented in cases such as these. The congregation is not unfrequently placed in an atmosphere of extreme impurity, poisonous in its tendency, arresting or interfering with some of the most important functions of life to such an extent, that they are occasionally suspended for a time, when a temporary death or fainting takes place. But what must the state of the mind have been, and how far was it beneficially occupied, in the devotional exercises in which it was previously engaged. The power of the clergyman is often reduced, as well as the attention of the congregation. Too often he does not recognise the darkness of the physical atmosphere that at times oppresses all his labours, and counteracts or diminishes his usefulness, as much by the power with which it subdues his own energies, as by the careless indifference which it encourages in his congregation. At the very moment that he may be descending on the pernicious influence of vice, and pointing out the purifying power of that moral atmosphere which should surround the heart, how often are his labours shorn of their power by the physical poison that sometimes paralyzes the best intentions, the indications of which are manifest on the application of the most ordinary tests, and whose influence might be counteracted by means equally simple and efficacious.—*Reid on Ventilation.*

**AGE AND EXTRAORDINARY SIZE OF AN OAK.**—At about six miles W.S.W. of Saintes (in the Lower Charente), near the road to Cozes, stands an old oak tree, in the large court of a modern mansion, which still promises to live many centuries, if the axe of some Vandal does not cut it down. The following are the proportions of this king of the forests of France, and probably of all Europe:—

Diameter of the trunk at the ground . . . . . from 9 to 10 yards  
Diameter at the height of a man . . .  $6\frac{1}{2}$  to  $7\frac{1}{2}$   
Principal branches . . . . . 1 to 2  
Diameter of the whole head . . . . . 40 to 43  
The height of the trunk . . . . . 8  
The general height of the tree . . . . . 22

A room has been cut out of the dead wood of the interior of the trunk, measuring from 9 to 12 feet in diameter and 9 feet high, and with a circular seat cut out of the solid wood. A round table is put in the middle when it is wanted, round which twelve guests can sit. A door and a window admit daylight into this new sort of dining-room, which is adorned by a living carpet of ferns, fungi, lichens, &c. Upon a plate of wood taken from the trunk, about the height of the door, 200 concentric and annual rings have been counted, whence it results, in taking a horizontal radius from the exterior circumference to the centre of the oak, that there must have been from 1800 to 2000 of these rings, which makes its age nearly 2000 years.—*Annales de la Société d'Agriculture de la Rochelle.*

**BRIDGEWATER CANAL.**—Preparations are making for carrying on an extensive trade in salt between the mines, at Northwich, in Cheshire, and the port of Hull, through the medium of the Manchester and Leeds, the Leeds and Selby, and the Selby and Hull railways. This communication, it is said, is to be completed by converting the Duke of Bridgewater's canal, which was constructed about the year 1760, under the direction of Mr. Brindley, the engineer, into a line of railway from the salt mines to Manchester, to join the railways passing eastwards and communicating with the German Ocean.—*Leeds Mercury.*

At a meeting of the Five Districts Societies of St. Marylebone, held at the Court-house, Wednesday, April 24, present, the Rev. Dr. Spry, in the chair, the reports from the several districts were read, from which it appeared that, during the past year, 3,891 persons had been relieved by their visitations, and the sums distributed amounted to 1,395*l.* 0*s.* 1*d.*

**TRAFALGAR-SQUARE.**—The whole of the terrace-walks within the area of the above promenade are completed, and this square will be opened to the public on Monday next.—*Globe.*

## Current Prices of Metals.

April 19, 1844.

	£. s. d.	£. s. d.
SPELTER.—Foreign ton . . . . .	22 15 0	23 0 0
" For delivery . . . . .	0 0 0	22 5 0
ZINC.—English sheet . . . . .	0 0 0	30 0 0
QUICKSILVER . . . . . per lb.	0 4 6	
IRON.—English bar, &c. . . . . per ton	6 0 0	
" Nail rods . . . . .	0 0 0	6 15 0
" Hoops . . . . .	0 0 0	8 0 0
" Sheets . . . . .	0 0 0	9 0 0
" Cargo in Wales . . . . .	5 5 0	5 10 0
" Pig, No. 1, Wales . . . . .	3 15 0	4 0 0
" No. 1, Clyde . . . . .	3 5 0	3 10 0
" For., Swedish . . . . .	9 15 0	10 0 0
" Russian, CCND. . . . .	16 10 0	
STEEL.—Swedish keg, p. ton	18 10 0	19 0 0
" Faggot . . . . .	0 0 0	19 0 0
COPPER.—English sheathing, per lb.	0 0 0	9 $\frac{1}{2}$
" Old . . . . . ditto.	0 0 0	8 $\frac{1}{2}$
" Cake p. ton . . . . .	0 0 0	84 10 0
" Tile . . . . .	0 0 0	83 0 0
" S. American . . . . .	0 0 0	75 0 0
TIN.—English, blocks, &c. cwt.	3 13 0	
" bars . . . . .	0 0 0	3 14 6
" Foreign, Banca . . . . .	0 0 0	3 10 0
" Straits . . . . .	0 0 0	3 6 0
" Peruvian . . . . .	0 0 0	3 0 0
Tin plates, No. 1C, p. box	1 6 0	1 10 0
" No. 1X . . . . .	1 12 0	1 16 0
" wasters 3s. p. box less		
LEAD.—Sheet milled . . . . . per ton	17 15 0	
" Shot, patent . . . . .	0 0 0	19 15 0
" Red . . . . .	21 10 0	
" White . . . . .	23 10 0	
PIG-LEAD.—English . . . . .	0 0 0	17 0 0
" Spanish . . . . .	0 0 0	16 10 0
" American . . . . .	0 0 0	16 5 0

SHORT and MAHONY, Brokers,  
1, Newman's-court, Cornhill.

## Tenders.

TENDERS delivered for Houses to be built in Grove-street, South Hackney, for Mr. Parr.—Mr. Parkinson, Architect. April 18, 1844.

Hancock . . . . .	£1,324	0 0
Nicholson . . . . .	1,236	0 0
Ryder and Son . . . . .	1,200	0 0
Norris . . . . .	1,197	0 0
Hort . . . . .	1,129	7 9

TENDERS delivered for an Hotel to be built at Hockly Spa, near Southend, for James Fawcett, Esq.—John Lockyer, Esq., Architect.

Joseph Wilson . . . . .	£1,848	10 0
Mr. Stevenson . . . . .	1,882	0 0
Mr. Cumming . . . . .	1,903	0 10
Mr. Matthews . . . . .	1,989	0 0

## NOTICES OF CONTRACTS.

For the erection of a Bridge at Hilton, in the parish of Woolfield, Salop, and also for lowering and improving the upper part of Hilton Hill.—Plans, &c., at Mr. Stokes, Shipley. May 8.

For the erection of a Theatre at Wolverhampton, —Drawings, &c., at the Peacock Inn, Wolverhampton. Mr. Tichborne, Wolverhampton. May 6.

For re-building the Western Pier of the Humber Dock Basin, and the removal of the present Pier included, or to be provided for in a separate tender, as may be most convenient.—Secretary to the Dock Company at Kingston-upon-Hull. Plans, &c., at Mr. Michael Lane's, Engineer, Castle-street, Hull. May 20.

For Warming and Ventilating the new Workhouse at Aylesbury.—The Guardians of Aylesbury Union, Bucks. Plans of the Building at the Office of Messrs. Savage and Foden, Architects, 31, Essex-street, Strand. May 1.

For works required in the enlargement of the Reigate Union Workhouse at Redhill.—Plans, &c., at the Board-room. Mr. Thomas Hart, Clerk to the Guardians. May 6.

For repairs and alterations of the Branch Bank, Aylesbury.—G. H. Taylor, Esq., Architect, 22, Parliament-street, Westminster, and 22, Queen-street, City; or at the Branch Bank, Aylesbury. April 29.

For altering and completely finishing the carcasses of two Houses in Middleton-road, Queen's-road, Dalston.—Mr. James Clark, 4, Richmond-Terrace, Queen's-road, Dalston.

For building an Union House, at Lock's Bottom, Farnborough, Kent.—Mr. Henry Nottingham, Clerk to the Guardians, Keston, Kent. Plans, &c., at Messrs. Savage and Foden's, Architects, 31, Essex-street, Strand. May 10.

For the erection of a Cast-iron Bridge, with brick piers and approaches, at Somersham, Hants. G. Thomson, Esq., Somersham. April 29.

For Bricklayer's and Mason's Work in making

certain alterations in the front of the Ipswich Savings' Bank.—Mr. J. M. Clark, Architect Brook-street. April 30.

For the erection of an Iron Bridge of one arch, of one hundred and ten feet span, intended to be built over the river Avon, at Bath.—P. George, Esq., Town Clerk, Bath.—Drawings, &c., at G. P. Mannors, Esq., Architect, No. 1, Oxford-row, Bath. May 31.

For the several Repairs to the Barber's Hall and Buildings adjoining Monkwell-street, City.—Specification at the Hall. Further particulars of Messrs. Closs and Son, Surveyors, &c., 33, Clement's-lane, City. April 30, 1844.

For building a House, Shed, Cellarage, and Vaulting.—Mr. Bellingham, near the bridge, Great Cambridge-street, Haggerstone. Mr. Catling, Architect. May 2.

For erection of a new Union Workhouse at Highland's Farm, in the parish of Cuckfield, Sussex.—Particulars, Plans, &c., of Mr. T. Wisden, Hampton-place, Western-road, Brighton. May 10.

## ERRATA.

In the diagrams from No. 1 to 5 inclusive, inserted last week, illustrating Smith's Weather-tight Sill-bars, Fastenings, Revolving Shutters, &c., the engraver neglected to reverse the subjects on the wood-blocks, so that right and left hand are changed.

Page 205, 2nd column, line 15 from bottom, after "The difference," add "is unknown."

## TO OUR CORRESPONDENTS.

"Your Reader from the First."—We refer to page 71.

"Mr. Charles Newnham."—We have not so much fear as our correspondent on the subject of the proposed new Building-Act. Among many complaints made by him, we do not think valid his objection to having slabs 18 inches wider than chimney-openings: this requirement would be not burthenome, and would be serviceable. Indeed, we think chimney-slabs cannot, for safety, be too large. Whether chimneys be worn or not by machines (which we think does not necessarily follow), humanity requires that chimney-climbing be forbidden, and that if a few chimney-sweeps may at present be compelled to seek other employment, that is not a sufficient reason for perpetuating any thing so abominable. We think it much less humane to force young parish apprentices up narrow, sooty, and sometimes burning chimneys, than to leave "to starve," as our correspondent says, such few chimney-sweeps, if there be any, which we doubt, who prefer starving to obtaining a livelihood in some calling more wholesome and cleanly. With some of the other matters of our correspondent's letter we agree.

We have under consideration "Hints for a Design for a Cemetery Cathedral," the Cambridge Font-cover, and the Grecian Design for a School. We have received the beautiful window of Thornbury Church, and will publish it as it is if our correspondent cannot procure draughts of its jambs, mullions, label, saddle-bars, &c.

Our two correspondents' questions relative to "Tudor" Arches, will be answered in our next.

## MEETINGS OF SCIENTIFIC BODIES,

To-day and during the ensuing week.

SATURDAY, APRIL 27.—Royal Botanic, Regent's-park, 4 P.M.; Westminster Medical, 32, Sackville-street, 8 P.M.

MONDAY, 29.—British Architects, 16, Lower Grosvenor-street, 8 P.M.; Medical, Bolt-court, Fleet-street, 8 P.M.; Zoological, 57, Pall Mall, 3 P.M. (anniversary.)

TUESDAY, 30.—Civil Engineers, 25, Great George-street, 8 P.M.; Free-Masons of the Church, adjournment of the 17th Chapter, 8 P.M.

WEDNESDAY, MAY 1.—Society of Arts, Adelphi, 8 P.M.; Geological, Somerset House, 8  $\frac{1}{2}$  P.M.; Horticultural, 21, Regent-street, 3 P.M. (anniversary); Royal Institution, Albemarle-street, 8  $\frac{1}{2}$  P.M. (anniversary).

THURSDAY, 2.—Royal, Somerset House, 8  $\frac{1}{2}$  P.M.; Antiquaries, Somerset House, 8 P.M.

FRIDAY, 3.—Royal Institution, Albemarle-street, 8  $\frac{1}{2}$  P.M.; Botanical, 20 Bedford-street, Covent Garden, 8 P.M.

## ADVERTISEMENTS.

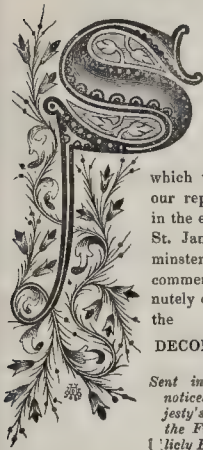
**BREWING and WASHING COPPERS** AND COPPER WARES of all descriptions, 92 and 93, Houndsditch.—LAVAR and SON, Manufacturers of Stills, Sugar Pans, Dyers' and Melters' Coppens; also every variety of minor Utensils for Chemists, Confectioners, Victuallers, Varnish Makers, &c., at prices that cannot fail to give satisfaction. Copper Work made to drawing, or repaired. Price of Brewing Coppens 1*s.* 6*d.* per lb.; Washing Coppens 1*s.* 2*d.* per lb.; with suitable allowance to the Trades. Improved Green-house Boilers and Steam Apparatus in general.



# The Builder.

NO. LXV.

SATURDAY, MAY 4, 1844.



EVERY of criticism it is not our intention to indulge in upon the present occasion; though from the frequent views

which we have taken in our repeated attendances in the exhibition-room in St. James's-street, Westminster, we this week commence a tolerably minutely detailed review of the

## DECORATIVE WORKS OF ART

Sent in, pursuant to the notices issued by her Majesty's Commissioners on the Fine Arts, now publicly Exhibiting.

The following works were sent in by Mr. W. G. Rogers:—

A carving in oak of a stand for an oriental bloodstone cannon mounted in gold, for her Majesty the Queen Adelaide.

A magnificent chimney-frame, executed for W. Beaumont, Esq., M.P., composed of boldly-carved fruit and flowers, boys, birds, &c.

A royal trophy, in the style of Gibbons, representing the point-lace neckcloth of Charles the First, sword, sceptre, emblems of the chase, &c.

A carved oak lectern, with black letter inscription.

Figure of Mary in carved pear-tree wood.

Three panels of Gothic tracery.

Four flower brackets.

Eight scroll brackets.

A richly carved Venetian boss.

A finial.

A hanging niche, exhibited by permission of G. Sines, Esq.

A Gothic frame, exhibited by permission of Norman Wilkinson, Esq.

Two fine groups of fruit and flowers, and one in porcelain (an extraordinary specimen of ornamental china never before attempted in this country).

A three-light girandole in wrought-iron, executed for Sir W. James, M.P.

All these works are, in their several styles, very admirable and many of them shew design of a character wonderfully fine.

1. Design for the principal door of the House of Lords, by Thomas Legg.—The centre panels contain the emblems of the three kingdoms, and two shields, on which are placed the arms of the cities of London and Westminster. At the bottom of the upper panels are ranged the crowns of the peers in the proper order of precedence, and in the heads of the end panels the arch-bishop and bishop's mitres. The royal arms and supporters are placed on the principal centre panel, and on either side the arms of England, Scotland, and Ireland. On the small shields at the top of the door are arranged the arms borne by successive monarchs, &c., from the time of Edward the Confessor.

The general design is neither rich nor original, but the specimen or work is cleanly carved.

3. Design for the principal door of the House of Lords, by William Ollett.

This composition is rich, but the figures which decorate it are too short; its framework, composed of arms, would give interest and variety to the composition.

5. Design for a door for the House of Lords, by John Steel.—This design is divided into six panels, surrounded by twelve figures, emblematical of the twelve months of the year,

placed in niches with canopies and brackets, Britannia being the surmounting figure in the centre above. In the centre two panels are urns containing corn, fruit, and flowers. In the four other panels are different shields, representing the rise and progress of Great Britain.

This is in a mixed style which ought to be entirely rephended.

7. Design for the principal door of the House of Lords, representing the Barons demanding the Charter of Liberties from King John, by William Freeman, junior.

A fair design, though not entirely happy.

9. Design for the principal door of the House of Lords, by Samuel Pratt, junior.

A rich design, but too much in the French flamboyant style; over-done with ornament; the carved specimen of which is not sufficiently finished. The pure English style is in detail beyond comparison superior to Continental Gothic.

11. Design for the principal door of the House of Lords, by S. A. Nash.—In this design red lines shew the extent of each leaf of a pair of folding doors, similar in arrangement, the head of the arch being left fixed. In one door is represented a portrait statue of King Henry III. (from his effigy in Westminster Abbey), the monarch under whom the first traces of the present constitution of a Parliament appeared. In the corresponding situation it is proposed to place the resemblance of the reigning sovereign. The subject of the sculpture proposed for the head of the arch is the memorable event in the history of English constitutional government, which took place in Westminster Hall on the 3rd May, 1253, when the peers obtained from Henry III. a fresh and most solemn confirmation of liberty for his subjects.

This composition has much beauty, and would, with some alteration, serve for one of the doors. The sculpture in the head of the doorway would have a very fine effect.

13. Design for the principal door of the House of Lords, by John Thomas.—This design is divided into four panels; the figures in these panels, under canopies, are the patron saints of the four divisions of the United Kingdom. Under these, in a band forming the centre style, is the name of each figure, and corresponding division, such as "St. George for England," &c.; the lower panels are filled in with the heraldic devices of bearings, helmets, crests, and mottoes proper to each; the whole resting on a plinth, with the motto of "O Lord, preserve the Queen." The tracery above the canopies is enriched with the roses of Lancaster and York united, having the thistle and shamrock on each side; the door is intended to open in the centre, the joint being concealed by an enriched buttress, which forms the centre ornament.

This is another good design with a decorative effect more perpendicular than the last.

15. Design for the principal door of the House of Lords, by John Wolstenholme.—The ornaments and mouldings in this design have been selected from some of the ancient specimens of art in the cathedrals of York and Beverley.

A good design, plainer than the preceding specimens, but the lower part of the design is too much separated from the upper work. The carved specimen is cleanly executed.

17. Design for the principal door of the House of Lords, by Francis William Browne.—The emblems are chiefly confined to the peerage.

This has some clever design and carving, but is too much broken into circles to appear elegant; it might be used for one of the doors of the edifice.

19. Design for the principal door of the House of Lords, by William Thomas.—The subject of the drawing is intended to represent the laws that have governed at different periods. In the four principal panels are bas-reliefs under the general heads of—The Divine Law, The Law of Superstition, The Law of Force, and Justice Revived. In the first is represented the Lawgiving by Moses, the Justice of Solomon, and the Death of Ananias; in the second, the Trial by Ordeal, the Inquisition, and the Martyrdom by Fire; in the third, "the Strongest shall be Right," Trial by Tournament, and Trial by Combat; and in the fourth, the Reformation, the Good Samaritan, and the Trial by Jury; these are

surmounted by appropriate figures, and in the centre (on the buttress) is the figure of Justice.

This is good, but its effect is injured by the figures being storied in three tiers, and by the lower panels being draped in the late style, which peculiarity, though often to be found, nevertheless exhibits decline of art.

21. Design for the principal door of the House of Lords, by Henry Ringham.—In this design, the doors being folding, the left hand style of the specimen is larger on that account; the extreme thickness of this door would be eight inches.

The specimen is very cleanly and freely carved, but the style of the design is too much in the continental manner of thistle crocket-work; some of the arches of the tracery-work are too much depressed, while others are of fair proportions; the work has consequently a mixed effect, which offends.

23. Specimen of carved work, relating to design No. 51, by John Lees. This shews ability.

24. Design for the principal door of the House of Lords, by James Rattee.

This design contains good work, but all its subdivisions are too stumpy, and break up the character of aspiring Pointed Architecture.

26. Design for the principal door of the House of Lords, by William Allan.—The first panels below represent a priest, a soldier, and an agriculturist, a lawyer, a sailor, and a merchant, in the costumes of the twelfth century. The centre panels represent Cranmer receiving the Bible from Henry VIII., and King John signing Magna Charta, in the costumes of the respective periods. The top panels represent David I., King of Scotland, administering justice, and St. Patrick summoned before the king and princes of Tara for lighting the paschal fire. The centre figure represents Britannia, those on the left Henry III. and Henry VII., and those on the right a bishop in the costume of the eleventh century and Robert Fitzwalter.

Parts of this design are good, although it has the defect of being storied with pictorial subjects, and some of its details inferior and faulty.

25. Specimens of carved work, relating to design No. 56, by Peter Cummins. These would serve to produce variety in the carvings.

29. Specimen of carved work, being a compartment of the design No. 53, by John Black. Cleanly carved.

30. Design for the principal door of the House of Lords, by Colling and Vincent.

This, for a plain design, is good, and the carved specimen accompanying it has great merit, and is cleanly performed.

32. Specimen of carved work, relating to design No. 48, by Stephen Prebble. Cleanly carved, but the figure too short.

33. Design for the principal door of the House of Lords, by Colling and Vincent.

Richer than the last, but not so pleasing, on account of a stumpy effect, produced by the nature of its subdivisions.

34. Design for the principal door of the House of Lords, by R. B. Boyle. We entirely disapprove of this design.

36. Design for the principal door of the House of Lords, by Samuel Nixon.

37. Design for the principal door of the House of Lords, by Samuel Nixon.—Representing—1. Alfred the Great receiving an illuminated Missal, as a reward for learning to read, from his mother Osburgha. 2. Alfred at the battle of Astun. 3. The first flotilla defeating a Danish squadron. 4. Alfred scolded by the neatherd's wife for letting her cakes burn. 5. Alfred dividing his only meal with the pilgrim. 6. Alfred comforted in his adversity by the vision of St. Cuthbert. 7. Alfred in the Danish camp. 8. The meeting of Alfred with his trusty followers at Egbert's stone. 9. Baptism of Guthrum previous to his signing a treaty, Alfred standing sponsor. 10. Alfred releasing the wife and children of Hastings, his most powerful enemy. 11. Trial by jury. 12. The assembly of the Witan, or first Parliament.

This, though storied, is in many respects a good design; but its architectural details are not in good taste, the tracery work of it having a crouching, broken, and scattered effect.

38. Specimen of carved work relating to design No. 37, by Samuel Nixon. The workmanship is clean and good.

39. Design for a Gothic door, by William



Steel.—Ornamented on the top with the royal arms, surmounted by the rose, thistle, and shamrock; on the right side a figure of her Majesty, in a niche with canopy and bracket, on the sides of which are the allegorical figures of Justice and Plenty; and on the left side of the door a figure of Egbert, the first king of England, in a niche with canopy and bracket, at the sides of which are the allegorical figures of Discord and Suffering.

This would form one fair specimen among a variety, though it has rather a disagreeable dodging effect, produced by the mixture of large and small figures in the same range.

41. Design for the principal door of the House of Lords, by Thomas Drew. Apparently sent in joke.

44. Design for the principal door of the House of Lords, by Henry Ringham.—This design is for folding doors, the extreme thickness would be nine inches. Has merit; the figures are in two stories; but the carving is of less value.

45. Design for the principal door of the House of Lords, by Samuel Pratt, Jun. In many respects a good design.

47. Specimen of carved work, relating to design No. 41, by Thomas Drew. From its style altogether inadmissible.

48. Design for the principal door of the House of Lords. (In the angle near the end of the screen.) By Stephen Prebble.—The panel at the head contains the Queen's arms, the figure beneath on the right is intended to represent King Alfred, that on the left Lyscurus, the celebrated legislator of Lacedæmon. In the bottom panel, on the right, is the Tudor rose, the emblem of the union of the rival Houses of York and Lancaster, and on the left a portcullis, the arms of Westminster.

49. Design for the principal door of the House of Lords, by Benjamin Baker.

This is accompanied by good carving, but its style entirely out of the taste of the building.

(To be continued.)

#### PROPOSED MODIFICATION OF THE WINDOW DUTIES.

On Saturday the 27th April, at 2 o'clock, a deputation from the Metropolitan Improvement Society, headed by Dr. Southwood Smith, and from the Master Carpenters' Society, headed by Mr. Biers, had an interview with the Chancellor of the Exchequer on the subject of the window duties. The two deputations were introduced by Mr. H. G. Knight.

Dr. Southwood Smith explained the object for which the interview had been desired. The attention of the medical profession and the public, as well as her Majesty's Sanatory Commissioners of Inquiry, had of late been much directed to the close connection of fever, scrofula, and other diseases with the defective ventilation of houses. Air and light were as essential to a healthful condition of animal life as food. The purity of the air breathed in towns, it had been shewn, was greatly impaired by the want of perfect drainage, but this evil was further aggravated by the want of a sufficient number of openings in the walls of inferior houses, which would allow injurious gases to escape, and the pure air and light of heaven to gain admission. This defect, it appears, is occasioned by the existing mode of assessing houses to the window-duties, the tendency of which is to discourage ventilation, by causing houses to be built with the *minimum* of untaxable windows allowed by the law, and by inducing the occupiers of lodging-houses and others to block out as much light as they can possibly do without.

Mr. J. Foyne said, that as one of the surgeons of the St. George's Dispensary, he had been led by the frequency of scrofula cases among his patients to investigate the causes of that disease, and he had no hesitation in saying that the chief causes is the repeated respiration of the same atmosphere in ill-ventilated and over-crowded apartments. Low diet, bad clothing, and want of personal cleanliness are accessories only. He has often succeeded in hastening the cure and preventing the further spread of disease among the families he visited by simply introducing in their close rooms ventilators of perforated zinc plates. The proper place for these ventilators was in

the upper part of the window; but he had often found windows stopped up to avoid the window tax, and the landlord usually objected to making any new opening in the walls lest his assessment should be raised.

The Chancellor of the Exchequer inquired whether the gentlemen composing the deputations had compared the comparative mortality of towns abroad with that of towns at home, and if they could undertake to prove that there is less mortality in countries where the window-tax is unknown, as in Ireland for example, than in Great Britain?

Dr. Southwood Smith replied, that no such comparison had been made, because it would not be a fair one. The mortality of towns is the aggregate result of many influences. One source of disease is impure air, and that might be produced from various causes, all of which should, if possible, be removed.

Mr. W. E. Hickson said, that if only one predisposing cause of disease can be removed, it is surely the duty of the Legislature not to neglect it. Scrofula, which had been alluded to, prevails to frightful extent among the children received into the London Union; many of them are the most piteous objects that can be imagined, and have immediately on their admission to be sent to some sea-bathing infirmary. The present application is for the same object as that of one in 1834 to Lord Althorp, when that noble Lord was Chancellor of the Exchequer. Lord Althorp then promised, that although he could not part with the window duties, he would abate the evils they occasioned. An Act was accordingly passed, 4th and 5th William IV., chapter 54, which allowed new windows to be opened free of duty; but it had since been rendered nugatory by the strict interpretation given to the words "duly assessed on the 5th of April, 1835." The lawyers had proved that no one was duly assessed in 1835!

The Chancellor of the Exchequer observed, that it could not have been the intention of the legislature to allow the benefit of the Act to those who had evaded payment of the duties.

Mr. Biers said the case was not one of evasion, as the public could not fairly be assumed to be the proper judges of the validity of assessments. Occupiers of houses paid the duties demanded, and it was the business of the assessor to examine every house, and assess each to the right amount. In his own case a mistake had been made prior to 1835 of one window, upon which it was decided that he had not been duly assessed, although the mistake had been made, not by him, but by the assessor. With regard to the ventilation of houses, he would say, as a practical builder, that but for the tax, he should never erect a house without introducing perhaps four lancet-shaped windows in those parts of a basement where light and air were now excluded, to avoid the additional duty of 8s. 3d. upon each opening.

Mr. G. Knight laid before the Chancellor of the Exchequer the draught of a short bill, embodying the views of the societies represented by the two deputations. It proposed, not to repeal the window duties, but to amend the 4th & 5th of William IV., chapter 54, by enacting that no existing assessment should be raised from any cause whatever, that all new windows should be free from charge, and that in newly-built houses only a fixed and defined number of windows should become liable to the tax, allowing an unlimited number of untaxed openings for light and air. The rule proposed was, that one window only should be chargeable in every 300 feet of flooring on each story; but this was a matter of detail, there were, perhaps, other and equally simple means of effecting the object if the government would adopt the principle of the measure recommended.

The Chancellor of the Exchequer said, that if builders would make it their business to study the subject of ventilation, he entertained no doubt that they would find it possible to ventilate houses without any alteration of the window duties. Scrofula, he could bear witness himself, existed in the cottages of the peasantry, which were exempt from window duties. It was easy to propose an alteration in any tax, but difficult to foresee the new evils to which the alteration might give rise. The new mode of assessment proposed might be open to many

objections, but if the bill were left with him, he certainly should be willing to give it his consideration.

Mr. Goulburn was assisted during the conference by one of the Commissioners of Stamps and Taxes, who seemed altogether opposed to the object, and said that perforated plates of zinc for ventilation might be introduced in external walls free of duty.

#### FREEMASONS OF THE CHURCH.

ADJOURNMENT OF THE SEVENTEENTH CHAPTER.

APRIL 30.—The Rev. F. P. Pocock, B.A., in the chair.

Mr. Alfred Joseph Stothard presented a lithographic copy (one of the only twelve printed) of a drawing from a distemper painting found about the year 1825, on removing some walling on the north side of the chancel of East Burgholt Church, Suffolk.

Specimens were presented of Maud's Patent Portland Stone Cement (for internal and external stucco, water works, and underpinning), shewing different compositions with sand, and the fractures of brickwork without breaking the cement.

Mr. Frederick Godden, of No. 23, Little St. Thomas Apostle, in the city of London, was elected an architectural associate.

A model, in cork, was exhibited, made by Mr. Joseph Jopling, jun., to a scale of 20 feet to an inch, of the remains of the Cistercian Abbey of Furness; and Mr. Charles Jopling presented a drawing shewing to a scale of one inch to a foot profiles of nine beautiful specimens of base-mouldings, taken by himself from the same abbey. The same gentleman also presented a large lithographic outline elevation of the exquisite, richly-canopied sedilia, lavatory or piscina, &c., of the church of the same abbey.

Mr. Joseph Jopling, sen., explained the use of his apparatus of double-cranks for generating curved lines by simple continuous motion, and created much interest by the seeming promise of usefulness and invention.

Mr. William Gibbs Rogers exhibited a model in terra cotta 14 inches high, by Rysbrach, being the original, from which was executed the monument in Westminster Abbey to the memory of the poet Gay.

Mr. William Harry Rogers exhibited a very elaborate specimen, only 5 inches high, of ancient wrought-iron, in the form of pierced canopy-work and tracery, found at Warwick, suggested to have probably formed part of a lock. (We shall next week give an engraving of this.)

Mr. G. Aitchison, sen., exhibited a very beautiful illuminated vellum deed of the early part of the seventeenth century.

Mr. Alfred Bartholomew exhibited a drawing of the western gateway of St. Bartholomew's Hospital, Smithfield, and presented proof impressions of an interior view of St. Olave's Church, Tooley-street, as it lately appeared after its roof was burnt off. A view of the principal external doorway next Monkwell-street, in the city of London, of Barber-Surgeons' Hall. Also a view of St. Stephen's New Church, Hull, and an account of its consecration.

Notice was given that the subject of Chapter-vestments would be taken into consideration at the next meeting.

#### SOCIETY OF ANTIQUARIES.

MARCH 23.—Henry Hallam, Esq., V.P. Samuel Birch, Esq., Assistant Keeper of the Antiquities in the British Museum, and one of the Secretaries to the English Section of the Archaeological Institute at Rome, was elected a Fellow of the Society.

James Dearden, Esq., F.S.A., presented two impressions of a representation of an ancient British ornament, described as a collar, discovered in Lancashire in 1831. It measures in diameter 5½ inches, the weight is 1lb. 4½ oz.; one half is of a square form, enriched with zigzag lines, the other is formed of a number of twisted and engraved ornaments, separated from each other by small rings, precisely similar to the bronze ornament found in Worcestershire, and exhibited by Jabez Allies, Esq., F.S.A., on Dec. 14, 1843. This last is evidently the half of an ornament identical in design and purpose with that discovered in Lancashire.



The Lord Stanley of Alderley, F.S.A., exhibited an ancient ornament, apparently intended as a kind of necklace, formed of several pieces of jet or cannel coal, discovered near Holyhead Mountain, in Anglesies, in 1823. It is formed of several pieces, gradually narrowing towards the two extremities, attached together by means of numerous small holes drilled through the inner edges, and entirely through the breadth of some pieces. The portions of greatest width, towards the centre of the necklace, measure  $2\frac{1}{4}$  inches by about 5-8ths in breadth, and 2-5ths in thickness. A representation of a similar ornament, formed of amber, and found in a barrow at Kington Deverill in Wiltshire, is given by Sir Richard Colt Hoare, *Ancient Wilts.*, vol. 1. pl. 3, p. 46. This necklace was accompanied by another, formed of oblong beads, of a form slightly tapering from the middle, and measuring in length from  $\frac{1}{2}$  in. to  $1\frac{1}{2}$  in.; also a small conical button, similar in form to some of bone which are represented in the same work, vol. 1. pl. 12, p. 103; and a small triangular ornament, all formed of the same light and slightly inflammable substance, either coal or jet. Some portion of these necklaces appear to be deficient, and their entire length cannot be ascertained. They were deposited in a cavity of the rock, probably sepulchral, in which two urns were found, which, on exposure to the air, fell quickly to pieces.

Charles Roach Smith, Esq., F.S.A., exhibited a jug, communicated by Thomas Neale, Esq., being a specimen of Flemish ware, of a greyish-white colour, stamped with ornamental designs, and of elegant fashion. It was found at Butley Priory, Norfolk, and is now preserved in the Chelmsford and Essex Museum. Its date is of the close of the sixteenth century. A representation, drawn by John Adey Repton, Esq., F.S.A., accompanied this exhibition.

Mr. B. Hertz, of Great Malborough-street, exhibited a series of ancient keys formed of bronze, some of which bear a remarkable resemblance to the ring-keys and patented inventions of modern times.

Albert Way, Esq., director, exhibited a variety of antiquities communicated by Mr. W. G. Rogers, of Great Newport-street, consisting of German carvings in oak, forming various groups illustrative of the "Via Crucis"; an Italian holy-water vessel of bronze; and a candlestick of copper, elaborately enriched with silver ornaments, described as having been brought from the Alhambra, and similar to one which was formerly at Strawberry Hill.

It was announced that Charles Frederick Barnwell, Esq., M.A.; Beriah Botfield, Esq., M.P.; Richard Lord Braybrooke, and the Rev. Samuel Roffey Maitland, M.A., had been appointed auditors of the accounts of the society for the year ending Dec. 31, 1843.

APRIL 18.—W. R. Hamilton, Esq., V.P. John Barrow, Esq., of the Admiralty, author of "Travels in Norway and Iceland," &c., was elected fellow.

Among the presents received was a copy of "Iconographie Chrétienne, Histoire de Dieu," by M. Didron, Paris, 1843, 4to. This work forms the commencement of an elaborate treatise illustrative of the symbolism of Christian art, and exhibits the varieties of distinctive conventional representation adopted by the artists of the middle ages in regard to each of the three persons of the Trinity. The volume is profusely illustrated with wood-cuts.

The Lord Stanley of Alderley, F.S.A., exhibited a British sepulchral urn, containing fragments of burned bones, found in digging for gravel, in the township of Over Alderley, Cheshire, near the Macclesfield-road, and adjacent to a supposed ancient line of communication. The form is remarkable, on account of the small perforated handles or ears, placed at intervals around the upper part, as if for suspension. Another urn, found near the same spot, is represented in "Ormerod's History of Cheshire."

Albert Way, Esq., director, exhibited various Roman remains communicated by the central committee of the British Archaeological Association. They were found on an elevated spot, about three miles south of Chesterford, and submitted for examination by Mr. Joseph Clarke, of Saffron Walden. They consist of pateræ and small vessels of red ware, some of which are plain, and others ornamented with foliage; with the potter's mark upon one of them, OF • VERI (*officina*

*Veri*). Also a remarkable vessel of thin glass  $4\frac{1}{2}$  inches high, and  $2\frac{1}{4}$  inches wide, which holds about half a pint, and is embossed on its surface so as to resemble the cone of the fir; a glass lachrymatory; ornaments of bronze, fashioned as lions' faces, and apparently intended as the heads of nails; portions of various glass vessels, and of a very large amphora; with a coin of Trajan. Numerous fragments of pottery and glass were found in different parts of the hill.

Charles Roach Smith, Esq., F.S.A., exhibited a circular leaden fibula, purchased in London by Mr. B. Nightingale, and resembling at first sight the Roman medallions which occasionally are found mounted in gold borders. It measures in diameter two inches; a bust, with a rudely shaped and crested helmet appears on the obverse, and the remains of fastenings on the inner side shew that it was destined to be used as a brooch. Adjoining the bust are seen certain letters, explained by Mr. Smith as indicating the name of Vitalianus, the Gothic chieftain, who, at the head of 60,000 barbarians, waged war during six years with Anastasius.

Sir Gore Ouseley, Bart., F.S.A., communicated in a letter to the president, observations on the identity of the Fitz-Robert, one of the barons who compelled King John to sign Magna Charta, suggesting that, according to the practice of adopting a surname formed by prefixing Fitz to the Christian name of the father, he was probably the John Fitz-Robert, son of Robert Fitz-Roger, whose chief seat was at Clavering, in Essex. A pedigree was annexed shewing the descent, drawn from the Close Rolls, and Baker's History of Northamptonshire, parish of Aynhoe.

Evelyn Philip Shirley, Esq., M.P., communicated, by the hands of Sir Frederic Madden, F.S.A., a charter of the thirteenth century, preserved amongst the muniments of the Lechmere family, being a confirmation from Ralph de Mortuo Mari of a grant of land in Wribbenhall, co. Worcester. The peculiarities consist in its being signed with a cross by each of the persons who make and confirm the grant, a practice of rare occurrence; and in the mode of appending the seal, by a thin label, not from the foot, as usual, but from the middle of it. No similar instance of this mode of attaching the seal has hitherto been noticed in England; an instance in some degree similar occurs in the collection of charters at the Hotel de Soubise, Paris.

John Bidwell, Esq., F.S.A., exhibited a curious signet ring of fine gold, found at Thetford, in Suffolk, in 1823, accompanied by some observations in a letter from Albert Way, Esq., director. The ring bears, as the chief device, an eagle displayed; on the inner side is engraved a bird, with the wings closed, and intended, as Mr. Hudson Gurney supposed, to represent a raven; a conjecture which, with various other considerations, led him to appropriate the ring to Sir Rhys ap Thomas, the adherent of Henry VII. This device may, however, represent a falcon. A ducal crown is placed over the head of the bird, and, from the design of this ornament, and general fashion of the ring, Mr. Way is disposed to consider it a relic of the earlier part of the fourteenth century. It is very similar to inscribed signet rings discovered on the field of Cressy. No satisfactory appropriation of these devices, which appear to be heraldic, has been hitherto proposed. The ring was evidently a love-token, as appears by the legend inscribed both externally and on the inner side, *DEUS ME OUVOYE DE VOUS SEUIR A OREE—CON MOUN COUER DESIRE*, God work for me to make my suit welcome to you, as my heart desires. *Ouvoye* is the optative either of *ouvert*, corrupted from *operari*, or *ouvir*, *aperire*; the word occurs often in either sense in early tales of romance. The verb *sevir*, written by Joinville *sivre*, signifies to follow, as in Anglo-Norman *sevir* or *sevir*, to sue; but it may also imply to render service. This interesting ring weighs 5 dwts. 10 grs., and appears to have been partially enamelled.

Albert Way, Esq., director, communicated a letter from Charles Tucker, Esq., of Harford, Devon, descriptive of the curious cathedral of Albi, department of Tarn, in the south of France, according to observations made during a recent journey. This noble structure is little known, it lies remote from any great

route, about nine posts north of Toulouse. It is constructed with brick; the first stone was laid by Bp. Bernard, August 15, 1282, and the church was consecrated in 1480. The tower at the west end was elevated by Louis d'Amboise, in 1475, to the height of 290 feet, and its construction is remarkable. In the interior of the church the elaborate screen and inclosure of the choir are richly sculptured, but the most striking feature of interest consists in the profusion of paintings in fresco, which decorate the walls of the cathedral, and, by their freshness of colouring, afford a striking proof of the durability of that kind of decoration. The earliest are of the fourteenth century. The stone-work of the choir, constructed under Cardinal Louis d'Amboise, by a company of itinerant masons from Strasburg, is most elaborate, and enriched with a profusion of statues and delicate tabernacle-work. This cathedral was condemned by the Directory, and preserved by stratagem, being one of the few existing monuments of architecture which escaped with comparatively little injury, although the painted glass, the numerous and splendid sepulchral brasses, the rich screens of iron-work, and other decorations were destroyed.

Edward Blore, Esq., F.S.A., exhibited two sketches representing the ancient Refectory (as supposed) of Great Malvern Priory, now wholly demolished. These sketches were made in 1837. The exterior had been much disguised by recent repairs, and the building, on account of its unattractive external aspect, had been little noticed; it had the ordinary appearance of a barn, and was usually filled with the produce of the farm to which it was attached. The chief feature of interest was the beautiful roof, as shewn in the interior view, which formed a very interesting illustration of the domestic architecture of the fourteenth century. Two years subsequently the whole building was wantonly destroyed, merely to make way for a poultry-yard and some out-buildings. It consisted of a hall, with the usual partition, and two doors at one extremity, adjoining the butteries; the general character of the construction and ornaments shewed that it was built in the early part of the reign of Edward III. It was constructed entirely of timber, which appeared in very sound state; the hall was divided into four bays, by three principals, with intermediate subordinate principals to give support to the purlins. In each bay, except in that which contained a plain door of entrance, were two tiers of square-headed traceried windows, the pattern of the tracery being varied, as usual in works of that period.

#### OXFORD ARCHITECTURAL SOCIETY.

The meetings of the society during the present term, held at the Society's Room, near Lincoln College, are Wednesday, May 1, Wednesday, May 15, and Wednesday, May 29, at eight o'clock in the evening.

The more active assistance of the members of the society is earnestly requested in preparing the third part of the Guide to the Architectural Antiquities in the Neighbourhood of Oxford.

Any notes, ground plans, or measurements; drawings or sketches, either of whole buildings, of parts, or details; or historical notices, either from books or from MSS., with accurate references to the authorities, will be thankfully received by the Secretaries.

The third part will comprise the Deanery of Cuddesden, which contains the following parishes, here arranged for convenience in rides:—

RIDE 1.—Marston, Elsfield, Wood Eaton, Noke, Beckley, Stanton St. John's, Holton, Waterperry, Waterstock, Albury, Rycote, Forest Hill, Haddington.

RIDE 2.—Wheatley, Cuddesden, Milton, Haseley, Newington, Drayton, Stadhampton, Chislehampton, Garsington, Horsepath.

RIDE 3.—Ilfley, Sandford, Nuneham, Culham, Clifton Hampden, Dorchester, Warborough, Benson, Marsh Baldon, Toot Baldon, Cowley, St. Bartholomew's.

#### INDIA-RUBBER MATTING FOR CHURCHES.

The government have ordered the new Garrison Church at Portsmouth to be covered with this extraordinary manufacture to prevent the soldiers suffering from rheumatism, &c., brought on by sitting with their feet on the cold stones.



## ELEMENTARY ESSAY ON MORTAR AND CEMENTS.\*

BY JAMES WYLLSON, MON. SEC. R.A.A.D.

23. SAND is a non-calcareous ingredient which, as it forms an essential and highly important part in the composition of mortar demands very attentive consideration. The kind employed in London for the best works is the Thames river sand, which is regarded as the best that can be obtained in the south of England; but local circumstances are so various that different sorts are brought into use; the leading requisites, however, are their being sharp and clean. River sand obtains general preference, but it can only be its ready cleanness, with perhaps its good average size, that entitles it to this estimation, since the rolling motion to which it is subject in the current of the stream must necessarily impair its sharpness. The same applies to beach sand,† along with an objection of a different kind, viz. the strongly hygroscopic principle it has from the sea-water, and which would deter mortar from drying properly; this saline impregnation can be removed, however, by thorough washing in fresh water. Pit-sand‡ is generally found mixed with impurities, which preventing the perfecting induration of mortar, should be carefully removed by washing, until the water used becomes clear. Clean quarry and drift sand have been recommended as the best, and probably with justice, being generally hard, quartzose, flat-faced, and sharp-angled. Common road-drift, which is used to a considerable extent about town, is said to have an attraction for moisture; but it is allowed that mortar made with it is well adapted for work that is much subject to heat, as the brickwork about coopers, ovens, &c. These circumstances may, perhaps, be both referred to the likelihood of its comprising some portion of the vegetable matter employed in the composition for plastering the insides of chimney-flues. It is allowed that sands from about chalybeate springs give an extraordinary degree of hardness to mortar: they are yellow in colour from the intermixture of ochre. As a general rule, those sands should be chosen which are freest from alkaline salt, calx, clay, gypsum, or other soft matter that can be washed away.

24. Sand is sold in London by the load of one cubic yard; the yard measure is a wooden box, open at top and bottom, and commonly in two pieces in the height, the one being rebated into the other. Sand compresses into a smaller space with wetting, therefore the measure contains more in that condition than when dry.

25. MORTAR.—With regard to the best proportion of sand in mortar, it must be premised, that as it does not shrink in drying, and lime does so in a very considerable degree, as well as being liable to crack, the more sand preponderates in the composition, the less will be the settlement in the work in drying, and the greater the resistance against pressure. On the other hand, if there be too small a proportion of lime, the mortar will be what workmen call "short;" that is, the particles of sand not being all united by cementing matter, it will necessarily have a tendency to crumble away. Viewing these facts, it becomes manifest that the lime should be just sufficient to unite the particles, and no more. If we imagine a piece of hardened mortar, divested of the sand, it ought to appear like a piece of honeycomb; and this consideration suggests, that to render the lime as much as possible effectual as a cementitious agent, it ought first to be reduced with water to the state of a stiff and perfectly homogeneous paste, then mixed with the sand, and thoroughly beaten until again of uniform consistency; also, that to obtain this matrix of a nearly equal substance throughout, the sand had better be a due admixture of small and large grit than entirely of similar size. These principles being stated, some observations may be made respect-

ing proportions, which have obtained approbation. 150 pecks, or 37½ struck bushels of chalk-lime are frequently given to 2 loads, or 60 struck bushels of sand, which is so much as 5 to 8; while sometimes 20 bushels of stone-lime are considered sufficient for 2½ loads or 75 bushels of sand, or so little as 5 to 18½. Looking at these proportions, it does not appear that their vast difference is justified by a corresponding disparity between the qualities of stone and chalk limes; and if we alter the former figures to 5 to 10, and the latter to 5 to 15, that is, 1 to 2 for common chalk-lime and 1 to 3 for stone-lime, we come to a more feasible rule, and one which is sanctioned by practice. The sand may consist of grains, one-half about 1-16th and the remainder 1-30th of an inch in size, regulated by means of sieves. Of course, the proportion of the lime is in some measure dependent on the size of the other ingredient, as well as on its own quality. The proportion of sand with Dorking grey chalk-lime, which forms the basis of such excellent cements, is sometimes so much as 3½ to 1; and when it is of a coarse gravelly description, for filling-in the interior of thick walls, even 4 to 1 is not considered excessive. The distinctions of face and backing mortar, filling-in mortar, &c., referring to the relative proportions of lime and sand, are frequently observed in large works, though little to be commended.

26. The hydrate of lime in mortar is believed to have a chemical attraction for the sand, inducing the formation of a coating of lime around the grains, which, if it is not decomposable by the carbonic acid of the atmosphere, assists the mechanical combination of the ingredients in forming a hard composition around the masonry or brickwork. This induration is further promoted by the lime continuing to abstract carbonic acid from the air, at the same time parting with the water if applied in the slaking, until at length, when the water is wholly displaced by the acid, the mortar acquires its greatest solidity, becoming frequently harder and stronger than the bricks or stones which it was employed to unite.

27. The mortar used at the new British Museum is composed of one part Dorking lime, and three parts Thames sand; a piece of brickwork there, of one year's standing, had to be taken down for an alteration, and was found so indurated as to be extremely difficult to separate even with the proper tools.

28. WATER.—Rain-water is considered the best for making mortar; river-water the next to it, land-water third, and spring-water last, of the fresh description. Sea-water is unsuitable either for slaking or mixing, as it prevents the mortar from becoming perfectly dry; yet it is not considered very objectionable for works exposed to the action of the tides. In making mortar, a degree of caution is necessary to be observed in adding the water, as a very small quantity will, as the workmen say, drown it, when it has received sufficient.

29. Mortar being of such high importance ought not to be left to the unguided control of ignorant persons; but its composition should, on the contrary, be directed by some one well skilled in the nature and due treatment of its various constituent elements. It should be made with the smallest quantity of water that will reduce it to a proper consistency; and a mortar-mill is superior to manual labour, for rendering it perfectly uniform. It should always be prepared under cover, to shelter it from sun and rain: if it has been kept for some time before using, it should then be well beaten up, and no more water added, unless absolutely necessary. It was an ancient practice, and one the efficacy of which has been confirmed by modern usage, always to beat mortar well with a heavy pestle before using it, although, through the introduction of the mill, this has greatly fallen into desuetude. It is found, however, that mortars made with common white lime are improved by a much greater degree than those made with the argillaceous ferruginous kinds; which is explained by the general opinion, that part of the lime combines with the clay in the process of calcination. The effect of beating is to rub off from the granules of sand the coating of silicious lime which forms on them, through the chemical affinity alluded to in article 25, and to diffuse it throughout the mass, thereby increasing and hastening its disposition to consolidate. It also serves to thoroughly incorporate the ingredients, besides preparing the mortar for

receiving more sand, and proportionately enhancing its good quality and diminishing its price, the sand being obviously the cheaper ingredient. Age rather benefits than injures mortar, if it be composed of good ingredients, in just proportions, and kept covered up; but its good quality is much injured by long exposure to the action of the atmosphere before being used. The old practice was always to make it some considerable time before use; but Dr. Higgins started the new theory that it ought to be used immediately; and unless it can be perfectly fortified against the atmosphere, his injunction had best be complied with; for mortar is dependant for its excellence on its slow absorption of carbonic-acid.

30. During hot seasons, bricks and stone both being dry and very absorbent, should be perfectly soaked at the time of building, to prevent their too quickly imbibing the moisture of the mortar, for a rapid desiccation in the latter deprives it of a large portion of its strength; in fact, renders it more liable to crack, and more or less pulverulent as the lime happens to be more or less hydraulic. Mortar, therefore, combines and indurates best when allowed to dry slowly, and produces the greatest hardness, when used of a stiff clayey consistency, ductile, but firm. If it sets without cracking, it will probably always stand well afterwards.

31. Common mortar will never set under water, but in process of time will decompose; therefore it ought never to be used where it would be subject to such influence, either directly or indirectly, as in the backing of wharf-walls, and the like situations, unless incorporated with a water-cement, or some other ingredient having the power of transuding through it that necessary property: indeed, it is best, in works of any consequence, to use, for those parts that are to be open to the common vicissitudes of the weather, such limes as are of a hydraulic character, and which must prove ultimately a thrifty precaution, since common mortars are liable to decay on the face of work, and thus require re-pointing.

32. CEMENTS.—Water cements, or hydraulic mortars, are indispensable for such works as are erected in wet or damp situations, or are peculiarly exposed to the weather, besides being eminently calculated for enhancing the durability of ordinary buildings; their importance, therefore, renders it at once evident that a familiar acquaintance with their varied nature and treatment is absolutely necessary to those engaged in the construction of bridges, docks, or any similar works, and indeed to every architect and builder, so frequent are the occasions on which their use is more or less requisite.

33. The ROMAN CEMENT, now holding so high a place among our building-materials, and which is so essential in our architectural economy, was discovered in 1796, by Mr. Parker, who obtained a patent for fourteen years, and realized by it an ample fortune. It was then known as Parker's patent cement, and was sold by Charles Wyatt and Co., of Bankside, at 5s. 6d. per bushel. Mr. James Wyatt, the eminent architect, introduced it to public notice. It is used in forming different parts of artificial masonry, such as balusters, chimney-pots, copings, bas-reliefs, &c., and being of a decidedly hydraulic character, it has entirely superseded the puzzolana and tarras (hereafter noticed), so long and extensively used in forming our water-cements.

34. It was originally wholly manufactured from stones brought by dredging-vessels from the shores of the Island of Sheppy, in Kent, where they were found, having fallen from the cliffs of blue or London clay overhanging the beach; but the operations by which Nature affords the supply are too tardy for the demand; and these stones are now, from their scarcity and the reduced price of the cement, seldom to be gathered in such quantity as to afford remuneration for the search. It has been found that these balls or cement-stones, or, as they are denominated, septaria, belong to the upper and lower lias beds, and also exist in all deposits of bluish slaty clay; they are found in several of the strata of blue clay in the district, called, by geologists, the London basin, and may be seen in the low South-east cliff at the mouth of the Thames; appearing in a compressed spheroidal form, and in indistinct layers, but separated and insufficient

\* Continued from p. 218.

† The ancient writer Pliny speaks of river and sea sand as round-grained, and of pit-sand as sharp; and leads us to understand that while four parts of the latter were given to one part of lime, only three parts of the former were allowed of the like quantity.



to conjoin and form uninterrupted strata; they are strictly argillo-ferruginous lime-stones. No others, however, are equal to those from Sheppy; and so great is the demand, that much of what is made and sold as Roman cement, at half the original price of that article, is very little entitled to the name; although it can still be had as good as ever at the original patentee's, but at a more expensive rate. As originally made, it might be used during a sharp frost, which would not be safely practicable with the generality now made. The greater part of that now used is from Harwich, and when burnt by itself being much darker than the genuine cement, is frequently, by the manufacturers, depreciated in quality by the admixture of Swalecliff and other light-coloured stones, which render judgment of it by colour almost impossible. The Swalecliff stone, while it gives it the property of setting quickly, like Sheppy cement, is said to make it very liable to give way afterwards. On being analyzed, the Harwich cement was found to contain carbonate of lime 70, aluminous earth 24, and iron 6 per cent. A bushel of the stone broken small, ready for burning, weighed 118lbs., when burnt, 83lbs., and when ground, 88. 10 bushels of stone produce about 11 of cement, exclusive of waste: the best, when mixed up ready for use, is of a dusky-green colour, and being so dark, requires frequent colouring. Lime-stones are found in small quantity in the marshes of Essex, near Steeple, affording a cement which is stated to be little inferior to that of the Sheppy stones.

35. An excellent mortar is composed of one part Harwich cement, one part ground quicklime, and one part sand; these ingredients are well mixed through a sieve; and the mortar is made in a mortar-mill, if conveniently it may, the water being added gradually until the whole is perfectly incorporated, and a due pasty consistency is obtained. It is easy to work, and slower in setting than cement made without lime; but it becomes very hard in a few days, and soon acquires great strength.

(To be continued in our next.)

#### POPULAR OUTLINE OF THE QUADRATURE OF THE CIRCLE.

BY OLIVER BYRNE,

*Late Professor of Mathematics to the College for Civil Engineers; author of "The New and Improved System of Logarithms;" "The Doctrine of Proportion;" "The Practical, Complete, and Correct Gager;" "The Elements of Euclid by Colours;" "A Practical Treatise on Spherical Trigonometry."*

THE quadrature of the circle cannot be at variance with the strict character of a publication like THE BUILDER, as its chief designs are to spread information and discuss difficulties, which are interesting to all general readers of subjects of architecture and its kindred arts and sciences.

However, the few remarks here offered are given more with a view to gratify curiosity, than to afford any additional information on a subject so much discussed by the scientific of all ages, and long since proved to the satisfaction of reasonable men to present impossibilities, which, as such, it would be ridiculous with any existing method to attempt to overcome. The exact ratio which the diameter of a circle bears to its circumference has never been determined. This celebrated problem, called *squaring the circle*, has for ages exercised the abilities of the greatest mathematicians. Many persons of eminence have at various times laid claim to the honour of having achieved the task, but their errors have been soon detected: among these were Longomontanus, and our own countryman Hobbs; the latter steadfastly insisted that he had done so, nor would he hear any demonstration to the contrary. The world always contains a great number of such men as Hobbs, who not only deceive the mass of mankind for a while, but very often impose upon themselves.

Though the problem is apparently very simple, yet its solution defies the art of analysis, and is now generally considered an impossibility; and indeed the consideration is justly formed, if the attempt be made by any method known at present.

But although the exact relation between

the diameter and circumference cannot be expressed in known possible quantities, an approximation to the truth may be made to any assigned degree of exactness. In this manner the problem was solved by Archimedes, who, about two thousand years ago, discovered that the diameter is to the circumference as 7 is to 22, nearly. The proportion of Vieta is that of 113 to 355, which is more exact than that of 7 to 22, for it is true to six decimal places. It was derived from the pretended quadrature of Van Eick. This proportion is readily retained in the memory; for, if we set down two units, two threes, and two fives, and divide the digits into two thus:—113:355 is the ratio.

But the first person who ascertained the ratio to any degree of exactness was Ludolph Van Ceulen, a Dutchman, who published it in his book *de Circula et Adscriptis*. He found that if the diameter of a circle be 1, the circumference will be 3.141592653589793238462643383279502884 nearly; which is exactly true to 36 places of decimals; and was effected by means of the continual bisection of an arc of a circle, a method so exceedingly tedious and laborious, that its accomplishment would occupy a considerable portion of a man's life. This achievement was at the time so much applauded, that its result was carved in figures as above on Van Ceulen's tombstone.

The industrious Abraham Sharp (amanuensis to Newton) extended the calculation to upwards of seventy places of decimals. Mr. Machin, who was Professor of Geometry in Gresham College, London, calculated the quadrature of the circle true to a hundred places of decimals; it is needless to give the figures, as they are merely a continuation of those obtained by Van Ceulen. Mons. de Lagny, Euler, and others, have continued it still further; but should we attempt to give an account of all the mathematicians who laboured at this celebrated problem, we should very far exceed our proper limits. Among the ancients were Archimedes, Thales, Anaxagoras, Philo, Braxton, Antiphon, Plato, Apollonius, Ptolemy, Vieta, and many others. With all the late improvements in science to assist them, we find among the moderns the names of Newton, Cavalieries, Dr. Willis, Mr. Huygens, Mr. J. Gregory, Mr. Edmond Halley, &c.; but in this learned age, and in the enlightened United States, we have a Mr. Young, who, according to his own account, has proved all former mathematicians in error; we believe there is one exception, Mr. Hull, of King's College, whom Mr. Young allows to be his equal. Though the equality of curves to straight lines is a subject that many of the first-rate mathematicians among the ancients were very solicitous about, yet nothing very considerable was done until the year 1657, when two Irishmen, Mr. Neil and Lord Brounker, independently of each other, demonstrated the quadrature of some curves. Soon after this, Sir Christopher Wren and Mr. Huygens contested as to the priority of having found the quadrature of a cycloidal space.

But the first who brought quadrature under an analytical calculus was Mercator, in 1668, when he published a demonstration of Brounker's quadrature of the Hyperbola. It is curious to see how great men will sometimes descend from their justly-acquired dignity: we find Dr. Wallis taking praise to himself for dressing up Brounker's continued fractions; and even Newton could not be satisfied with his great improvement on Mercator, but claimed the whole discovery.

The same magnitude may be expressed by several different series. If the diameter of a circle be *one*, its circumference will be an infinite series of fractions, each numerator being always four, the denominators in the natural series of uneven numbers; and all these terms to infinity, alternately too great and too little. Newton and Leibnitz gave two other series, apparently very simple, and many more might be added, but they are of a similar nature. Could any of these series be summed, the quadrature of the circle would be found; but this has not yet been done, nor is it at all probable it ever will be so. Even from what has been said we learn one great philosophical fact, i.e., that the extent of our knowledge comes not only short of the reality of things, but even of the extent of our own ideas. We have the ideas of a square, of a circle, and of equality, and yet perhaps shall never be able to

find a square equal to a circle. But while we assert the uselessness of all attempts hitherto made, let us not be understood to mean that a method will not yet be invented which may set the matter satisfactorily at rest for ever; a new relation of quantities may be discovered, immense improvements will probably be made in the summation of infinite series, or even a new system of notation may yet be invented, that will render this *ratio* determinate and finite: for it is impossible even to conceive the limits to which science, in its vast advancements, may extend. However, if the exact ratio could be obtained, it would be a sort of mathematical triumph rather than a real good, for any one ratio which we have given is sufficiently accurate for all practical purposes. To use the words of the justly-celebrated Charles, afterwards Dr. Hutton, whose opinions we greatly respect: "Although a space be not quadruple by the methods yet known, it does not therefore follow that its quadrature is impossible, or that some method may not hereafter be discovered by which it may be squared."

"All the methods used by geometers before Archimedes were insufficient for the quadrature of any curved space whatever; but were they therefore to infer that no curve could by any means be squared? What has since been done abundantly shews the imprudence and falsehood of the assertion. Archimedes discovered a method by which he squared the parabola; and (says the doctor) by the lately discovered method of fluxions we can find as many quadrable curves as we please. But whilst I am urging the possibility of the quadrature of any space, I am not ignorant of the pretensions of several people to prove the impossibility of that of the circle in particular. There are attempts to demonstrate this impossibility in the Leipsic acts as well as in our Philosophical transactions; but these demonstrations are far from being sufficiently general to afford any conviction of it." It may here be remarked, that Des Cartes, in particular, insisted on the impossibility, on the ground that a right line and a circle, being of different natures, there can be no strict proportion between them.

In conclusion we may add, who can prove that even the root of *two*, or any other number whose root in the present scale is an infinite series, may not be a terminable quantity in some scale whose root is a square number, for such it must be? It is true we have not yet found the area of a circle, the diagonal of a square, or the root of 2, &c., infinite terms, yet for each of these we can assign infinite series, whose laws of progression are visible, which are more than the ancients could do, or perhaps expected could be done, if they ever at all thought of such things. And I have no doubt that hereafter will be discovered a method of squaring any figure whatever, which is the chief problem in geometry.

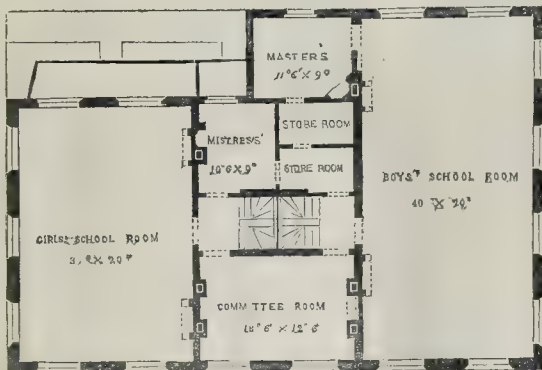
ROYAL PALACES, GARDENS, &c.—Of an account of the royal palaces, gardens, parks, &c., from the year 1838 to 1842, both inclusive, the following are the results:—In the year 1842-43, the sums received were as follows—viz. from Hyde, St. James's, and the Green parks, 1,089l.; from Kensington gardens, 70l.; Regent's park, 996l.; Greenwich park, 6l.; Kew gardens, 1,118l.; Old deer park at Kew, 1,170l.; Richmond park, 726l.; Hampton court and Bushey parks, nil; Windsor Great park, 5,330l.; New Royal kitchen gardens at Frogmore, 73l.; the Phoenix park in Dublin, 1,720l., and the sum of 2,030l., being a portion of the purchase-money received from Prince Albert, for the stock of the Norfolk and Flemish farms (purchased on behalf of the Crown in 1837, of the executors of King William IV., being part of his late Majesty's private property). Thus, the total amount received was about 14,298l. The account "in detail" shews this revenue to arise principally from the sale of decayed timber, loppings of trees, &c., the sale of hay, bark, stock, garden produce, and old materials; the rent of grass-lands, chairs, and free-board rents; subscriptions for keys of the pleasure-grounds, &c. The sum of 1,170l. is paid by the King of Hanover for the rent of the old Deer Park and Kew; and the sum of 800l. is annually allowed from the Lord Steward's department towards the expenses of the very valuable Botanical Garden at Kew.



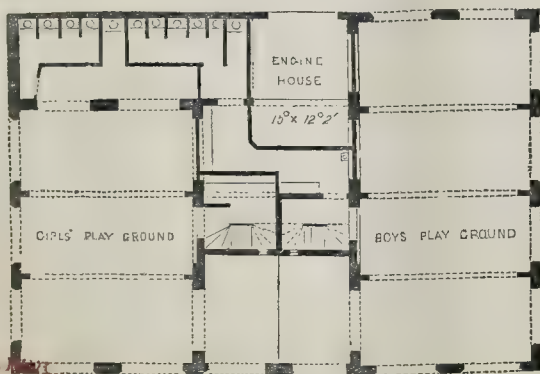


ISLEWORTH PAROCHIAL SCHOOLS.

(From a Correspondent.)



PLAN OF THE UPPER-STORY.



PLAN OF THE GROUND-STORY.

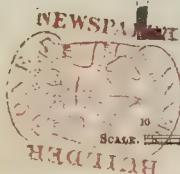
At the time of the introduction of the national system of education, in the year 1814, a considerable sum of money was expended in the enlargement of the original building, which was so old and inconvenient, and at last became so unsafe, that it was considered in the year 1840 indispensably necessary to rebuild the whole; and, in the following year, the erection of the present schools took place, on the old site, from a design by Mr. C. F. Maltby, architect.

The new school-house is of the late Gothic character, built of brick, with Bath stone mouldings, and contains a boys' school-room 40 feet by 20 feet, and a girls' school-room 30 feet by 20 feet, with coved ceilings; a committee-room; retiring-rooms for the master and the mistress; and store-rooms. The lower story of the building is formed with cloisters, comprising play-grounds for boys and girls, washing-rooms, &c. There is also an engine-house attached to the building.

The cost, exclusive of fittings, amounted to the sum of 1,242*l.* 6*s.* 7*d.*

The Right Hon. Lord Prudhoe on the occasion of his marriage with Lady E. Grosvenor, presented the trustees with an excellent clock for the school-turret.

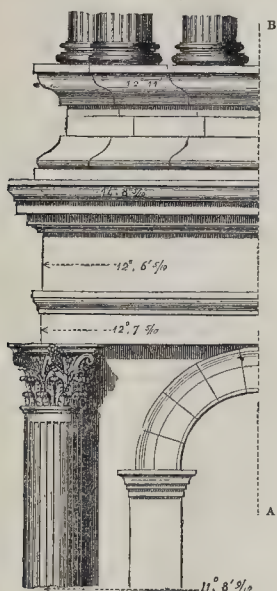
[We should have liked this design better if its style had been of Pointed Architecture of an earlier date, and if it had not contained the error of possessing no centre aperture either in its front or flank. This fault, which is fatal to first-class architecture, appears to be gaining ground; such an abuse is but very rarely to be found in any of the multitudinous works of Palladio, Jones, Wren, Hawksmoor, Vanbrugh, Flitcroft, Gibbs, Chambers, Stuart, Wyatt, Taylor, Soane, Smirk, Burton, or Barry; and if to be found in any of their works, not often in any which have not been erected in their early career, or in which they have not been trammelled by circumstances; it is against the eternal and immutable laws of taste. We only know one strictly necessary case of the application of a central mass, viz. in the triforium-arcade of a church, where a columnar weight is frequently placed immediately over the apex of each great nave and choir arch, to perform the same office as the boss in vaultings, viz. to prevent the upper arched-work from ascending, by the falling inwardly of the haunches and work immediately above them. This fault is an undeniable element of barbarism.—Ed.]



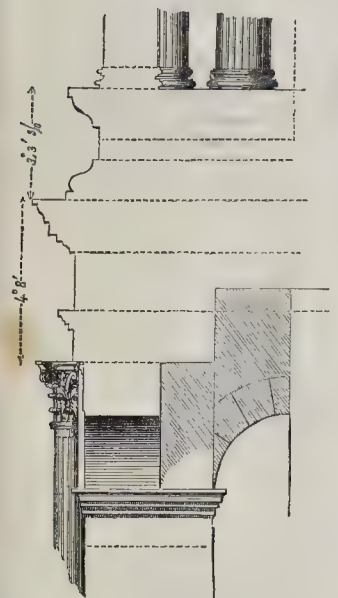
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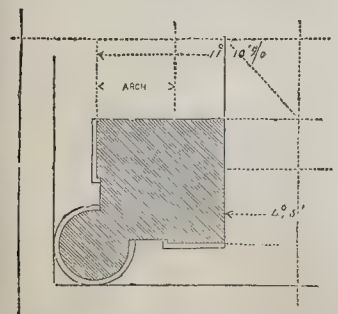
## MONUMENT AT ST. REMI.



DETAILS OF THE LOWER ARCADE AND ADJOINING WORK.



SECTION FROM A TO B (on the above Illustration).



PLAN OF ONE QUARTER OF THE BUILDING (taken at A in the above Illustration).

## TO THE EDITOR OF THE BUILDER.

SIR,—I beg to forward to you some details of the Monument at St. Remi, in France (a general representation of which appears in your No. 49, page 15, this year), which are copied by me from some excellent drawings of the monument which I have; besides these I have some others of the same subject, which are very interesting.

I am, Sir, your humble servant,

C. J. RICHARDSON.

Brompton-crescent, March, 1844.

## Literature.

"*Historical account of the Church of Saint Margaret, Stoke-Golding, Leicestershire.*" By THOMAS LARKINS WALKER, Architect, of Nuneaton, 6 plates. London: John Weale, 1844.

(Continued from p. 217.)

THE CHURCH dedicated to St. Margaret consists of a nave, a south and a north aisle, a north and a south chancel, in each of which is a piscina.

"Some, I hear, would have the first founder of this church to be the abbot of Lira, in Normandy, and the prior of Hinckley, who was belonging to the said abbot, and had to their use the tithes of this town. I will not deny but that they might be special benefactors; but, out of all doubt, Sir Robert de Champaigne was the principal agent, and chief in the foundation. And sure I am (by whomsoever it was founded) it is a worthy piece of work, neatly built, with cut and chased stones, freizes, and architectry, with fair and large windows equalizing some cathedral churches; the battlements are of a fine kind of fret-work, garnished with many high and curious cut pinnacles. It hath a fair and high spire steeple; the top whereof was shaken down in that general earthquake which happened in the year 1580."—*Burton MS.*

The steeple (containing four bells) which is at the west end, 30 yards high, is supported by strong abutments.

The south side and east end of the church have been by the architect finely ornamented in the windows and on the roof (which is well leaded), which gives it a pleasing and solemn appearance; but, if it had been raised higher, it would have been more majestic. Compared with the steeple, and the ground it stands upon, it is rather low, but yet makes a good appearance.

The view of the chancel from the east bears the character of gravity and veneration; on the north it is finished in a plainer manner, and supported by strong abutments of good stone and mortar, which appear hardened by standing in the air; at least the corroding hand of Time has made but little impression on them in five centuries.

In the south side wall remains an arch of an old monument.

A small gallery, at the west end of the north side of the church, was erected about twenty-five years ago.

Within are five arches, supported by beautiful clustered pillars, terminated by handsome groups of flowers intermixed with grotesque faces, &c.

On the outside of the church, on a buttress the second from the east, on the north side:—

T. 1620. C.

On a beam at the west end of the nave, over the belfry door:—

1620.

On another beam, at the west end of the nave:—

W.W. C.W.

1668.

On another beam:—

A.D. MDCXC.

D. NATH. BROKESBY PRIUS . . .

The town-chest is marked:—

"Stocke Chest,

C. 1636. W."

W.B. T.O.

The king's arms were new painted in 1783; John Hayfield, churchwarden.

An octagon font, with rude figures on seven of the sides, expressive of the seven deadly sins, but almost obliterated, the eighth plain.

Here is an old dial, dated 1620, from which the hand has long been broken off.

The communion plate has the following inscriptions:—

"Hanc liginam, una cum patinâ Basilius

Firebrace miles, in usum ecclesiæ de Stoke-Golding in agro Leicester, D.D. anno Dom. 1689."

"Hunc calicem cum operculo Henricus Firebrace miles, in usum ecclesiæ de Stoke-Golding in agro Leicester, D.D. anno Dom. 1689."

"B.F. anno Dom. 1689, ecclesiæ de Stoke-Golding."

"H.F. anno Dom. 1689, ecclesiæ de Stoke-Golding."

The statue of St. Margaret stood formerly in the south chancel, painted and gilt; but in 1642 the pedestal only remained. Her figure yet stands in the west window of the steeple.

In 1619 this church contained the following arms, (Plate CXX. fig. 5—13):—

Or, on a fess gules, three plates.—*Colville.*  
Gules, a fess dancette between ten crosslets Or.—*Engaine.*

Argent, two bars and a canton Gules.—*Boyes.*  
Argent, a plain cross Gules.—*St. George.*

Or a fess Azure, from which a lion naissant Gules.

Gules, three lions passant guardant, or a label of France.—*Earls of Lancaster.*

Gules, a lion rampant argent.—*Moubray.*  
Or, a fret sable.—*Champaine.*

These arms are in several of the windows, and the fretty cut on the pinnacles of the steeple.

The lead on the chancel of this church was recast, and several pieces of new timber put into the roof, by the Rev. Dr. Staunton, rector, in May, 1808.

There now remains (1810) several fragments of old painted glass, the most perfect of which are two small heads of Apostles; and the patron, St. Margaret, in the north windows of the north chancel.—*From "The History and Antiquities of the County of Leicester."* By John Nichols, F.S.A.; London, Edinburgh, and Perth. Vol 4, part 2, containing Sparkenhoe Hundred.

(To be continued.)

## SEAL OF WILLIAM, BISHOP OF KILDARE.

SIR,—I have copied the annexed drawing from a work lately published in Ireland. Its insertion in *THE BUILDER* might induce others to direct their attention to collecting similar interesting remains of former days.

The centre figure represents the Virgin and child; the figures on each side are the patron saints of Ireland, Patrick and Brigid; the lower figure in the nich is said to represent St. Conlaith, the first Bishop of Kildare. One of the shields bears the arms of France and England quarterly. What is remarkable the shield on the left, ("two keys in saltier, in chief a royal crown," constitutes the arms anciently and still borne by the Archbishops of York.

The inscription reads as follows:—

"Sigillum Willmi dei gracia Kyldarensi essi."

Ware thinks this seal belonged to William, Archdeacon of Kildare, "who was appointed to this see by the provision of Pope Eugene IV. in 1432."

The design and execution of the seal shew, in my opinion, considerable taste and ability in the artists of that remote period.

I am, Sir, your obedient servant,

Gorey, April 11, 1844.

J. K. L.





PETRALOGY, OR THE KNOWLEDGE OF  
ROCKS AND STONES.\*BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF  
NATURAL PHILOSOPHY.

I shall hereafter have occasion to speak of alumine and potash, as being the characteristics of the soils produced under direct atmospheric influences, the vegetable soils, acted upon by the atmosphere; or of the ocean waters, generating the one or the other, and not of necessity in oceanic aggregates, as is demonstrated by the aggregate masses of primary qualities, such as sands, sandstone, limestone, marls, species of porphyry, sienite, &c., but accidentally blended with many of the primary masses, by the carrying or percolating action of the waters. The sands of those vast desert regions which have been unaffected by these causes are wholly free from alumine or potash; and where the silifications, termed Egyptian jaspers, but which are common to the northern boundaries of Africa and Asia, having traces of potash in their composition: this is always produced by accidental mixture, from causes as above stated. In the older soils of Europe, the subtle distinctions of generation, reproduction, and change, lie more immediately beneath the surface discoveries of scientific men, nor can they be appreciated as truths, other than by travel and observation. Much of the strata and masses of rock of Great Britain is wholly free from these products, and it is always found that they are disposed in what is termed secondary formations, disappearing as the lower beds become more homogeneous in their qualities. The lowest red sandstones, termed primary, consist of quartz only, but the secondary beds consist generally of quartz, felspar, clay, mica, and carbonate of lime; yet, notwithstanding this manifest difference in the composition of the upper and lower beds, it is far from being a demonstrable truth that they were formed under different epochs; for the ocean bed is the general recipient of all matters carried therein by rivers and moving bodies of water, and thus the lower beds, anciently as in the present epoch, were very often of mixed qualities, the beds of sand becoming the recipients of numerous compounds deposited therein. In proof of this, we have only to look at those regions where the ocean becomes the depository of mighty rivers; and here, in the season of floods, the earths are carried down into and are distributed over thousands of square miles of the ocean bed. Thus, the vast quantities of timber and carbonaceous matters deposited in one locality give birth to the mineral coal, in its varieties of marl and clay, all of which are contemporaneously producing and produced; and were the sea suddenly thrown off these regions, the multiplicity of phenomena would rather puzzle a modern geologist, who looks for an epoch of time in every variety of consolidated matter. Even in this country the existence of bones of extinct animals, and the vast heaps of fossilized or mineralized plants, while they are the unerring evidence of tropical influences, cannot be considered undeniable evidence of their having succeeded the coral formations and other phenomena generated under the like temperature, for the one and the other, united and uniting together, contemporaneously exist, and are generating or produced at the present day.

The act of cohesion of particles and aggregates, whereby they become one consolidated mass, is observable in all countries, and is not confined to the compound silica alone; for alumine, iron, and other neutral bodies, under certain forms, possess the like powers, and, regardless of the laws of affinity, silica, like water, is capable of embracing within its volumes, numerous compound bodies without any immediate changes taking place in their atomic constituents, and having assumed the consolidated state, it possesses greater power of resistance to atmospheric action than any other earth. To effect sensible changes within its prescribed medium, it is absolutely necessary that other elemental compounds be blended with it, or that it be acted upon by chemical affinities, otherwise, it remains constant to the form assumed through a series of generations; in fact, so long as it is preserved from chemical action. Silicified rocks maintain their individuality; but strata, varying from

each other in ingredients, but having the common basis or cement, very readily unite as one whole; thus, granite is often observed to run into gneiss, and even into crystalline limestone. Again, pebbles and smaller aggregates, united with calcareous matter and some iron, readily unite as the calcareous matter becomes silicified. In the Nubian deserts, vast aggregate masses of this kind may be observed in all their stages of transition into species of jasper, the general chain of effects being palpably manifest to the senses. Changes like these are common in this country in beds of earth or clay containing lime or iron; these latter are the conductors of electric matter into the otherwise almost impervious clay; and the electric matter, abstracting the hydrogen from the clay, causes it to indurate as a siliceous body, or as clay-slate, the lime becoming converted into calc spar, which sometimes embraces portions of the earths affected by this action, or otherwise, varieties of ironstone, pyrites, &c.

It is a maxim laid down by modern geologists "that science must study the laws of phenomena only, and never their mode of production." The absurdity of this dogma is self-evident, when we reflect that the laws which govern change extend to the very fountain-head from whence all human knowledge is derived; the matter and the action, and the local affections generated by local action, being indivisible, and producing the ultimate result or phenomena. The architect builds, but his labours are in vain, the material decomposes, and the stately fabric falls; he would ascertain the causes of decay, and he finds by the aid of chemistry that the decomposition of rocks is effected according to the chemical and mechanical conditions to which they are exposed; that these chemical affections depend upon the nature of their elementary compounds, and of the cement which binds them together; and that the mechanical effects are produced by rains, winds, heat, cold, gaseous exhalations, &c., of the nature of all which influences he must acquire some degree of knowledge ere he can proceed to apply a remedy. Again, chemistry leads him to pursue his inquiries still further, and to endeavour to understand under what conditions rocks were formed; he cannot stop at the knowledge that they consist of various undecomposed bodies chemically and mechanically united; but he would know why some are composed of quartz or siliceous grains, as the sandstones, others of quartz and felspar, of quartz, felspar, and mica, and of hornblende, as trachyte, sienite, and granite; others of oviform bodies cemented by calcareous matter as the oolites, and others of earths, lamellated as the shales and clays: he is, therefore, of necessity led on to study their mode of production. Thus it is, in the absence of information, the present geological fabric is built upon the various speculations of inductive science.

Lord Bacon observes of the chemists of his day, "that they amend some things, but cause little advancement." The same remarks apply to chemists and geologists of the present day. The builder will find little to interest him in the mysticisms of this science, which are wholly inapplicable to practical purposes. Geologists tell him that all crystalline rocks are primary products existing prior to sands, pebbles, clays, and earths, these latter being produced by the decomposition of rocks. There are few, I believe, who have had occasion to use the almost indefinitely varied material of these consolidated substances, who are not capable of disproving this assumption, for a very extensive class of the crystalline rocks exhibit by the nature of their calcareous, siliceous, and argillaceous earths, their organic origin, and the laws by and under which they were produced. The limestone series embrace within their composition species identified with or analogous to existing species of the ocean, and sometimes the reliques of land animals; in some species these animals, previous to the aggregate mass crystallizing, have wholly decomposed, but the elementary constituents remain, and furnish equally decisive proof of their primary origin. Again, we observe ocean marls, madrepore structures, and beds of mollusca, continually passing through these changes, the organic body decomposing, and the earths produced by this decomposition consolidating into limestone rock. Again, in the crystalline structure of granite we do not

readily perceive traces of organic species, but microscopical observations have recently assured us that many of these crystalline bodies are wholly composed of infusoria. The sands upon the shores of this country, uniting with the shelly coverings of mollusca, may be often observed agglutinating together, and these sands are chiefly silica, the animal and vegetable matters uniting with them are chiefly silica, and this particular earth forms the general cement of the whole body; at first simple agglutination only, takes place; by degrees the union becomes more perfect, but the shells yet preserve their primary condition, they at length silicify or change in their nature; and, when the change is complete, we have a siliceous aggregate mass. But the change does not rest here, the aggregate gradually crystallizes, and the bodies forming that aggregate crystallize independently of each other; for the crystalline result varies in nature and qualities in many bodies thus united together, although the entire mass is ever governed in disposition and crystalline structure by the force of lateral pressure of the surrounding particles. Much of the strata of this country is composed of siliceous pebbles, and a great portion of those pebbles and petrified organic bodies, which, under the form of common flint, maintain the form characteristic of the species to which they belong, as sea-eggs, mussels, limpets, and other crustacea and mollusca; the bones, teeth, and vertebrae of fishes; the bones and fragments of land animals, and portions or entire trunks of trees; but uniting with these fossils are vast numbers of pebbles of the same siliceous nature, and by microscopical observation and analysis betoken the one common origin: yet men of science, while they embrace the former as fossils, designate the remainder, which are in general no other than the fragments or particles of the like organic species, as mineral bodies derived from the disintegrated rock. Again, clays exhibit innumerable traces of organization; we find aluminous clay producing from the union of the sea-water with matters deposited by running streams, which are chiefly vegetable earth. Again, subject to change produced by change of temperature, we see them pass into the state of clay-slate, or uniting with metallic matters becoming crystalline, and assuming the varied forms of rock.

(To be continued in our next.)

## METROPOLITAN IMPROVEMENTS.\*

## THAMES EMBANKMENT.

The objections to the plan, however, on other grounds are not so easily disposed of. According to the evidence before the commission, the abstraction of the tidal water from a navigable river is in principle objectionable, inasmuch as it diminishes the efficacy of the scour. Various opinions were offered as to the degree to which this objection would apply to Mr. Walker's embankment. Mr. Hartley was of opinion that it would be considerable; and, with Mr. Giles, that its effects, if not felt in the Pool itself, would be more or less injurious in the district of the river below the Pool: Mr. Rennie, that it would operate both in the Pool and in the river below the Pool. The general tendency of these opinions, indeed, in reference to the plan immediately before us, was that, assuming the navigable current to be improved by judicious dredging, and a uniform course and increased velocity to be given to its channel, the loss would, in great measure, be compensated. But these opinions were given in reference only to a small portion of the river, irrespectively of any system for its general management, and, of course, without contemplating that extension of its present plans which this commission may feel it right to recommend hereafter.

It was objected as to the recesses, that in proportion as they were favourable to the trade, they would become injurious to the navigation. Mr. Hartley was of opinion that they would abstract from the full force of the tidal current, and in a limited or proportionate degree affect both the tide and the scour: Mr. Cubitt, that an embankment so formed would not be continuous enough above low-water mark to form a good and efficient tide to the river: Mr. Gordon, that by causing eddies,

\* Continued from page 205.

\* Continued from p. 207.



they would disturb the current of the main stream, and prevent the establishment of any uniform regimen for the river: Mr. Rennie, that they would have a strong tendency to interrupt the free flow of the tide. Mr. Rendel, speaking in his evidence of these recesses, observes, "I cannot imagine any arrangement which would be more likely to make the bed of the river worse than it is at present. If there were a series of long embankments, and a series of long recesses, they would, instead of giving a uniform velocity to the stream, make it more irregular than it is at present." On the other hand, Captain Beaufort was of opinion that, practically, they would have no effect on the scour of the river, and Mr. Macneil and Mr. Giles that "embankments, with occasional recesses," would conduce to its "improvement," and to the "benefit of the navigation."

The mode of levelling these recesses proposed by Mr. Walker, and of providing them with permanent foundations, is fully explained in his evidence. The objections on this head took a wider range, though intrinsically of less importance, than those above adverted to, inasmuch as they involved the use and the construction of these receptacles for trade. Of the persons in trade examined by the commission in reference to the dwarf piling proposed by Mr. Walker, Mr. Hay (a lighter-man) was of opinion that it would be injurious to the craft. The answers of Messrs. Pocock and Peache (the first a coal, and the second a timber merchant) were not adverse: Mr. Lucey (a lighter-man) gave no decided opinion; Mr. Taylor (a coal merchant) and Mr. Harvey (a wharfinger), both of them occupiers of extensive river frontages, were generally in favour of its adoption. The opinions of these witnesses, it is right to observe, were given in evidence, and without any previous reference to plans, sections, or other sources of information. Mr. Taylor and Mr. Harvey appear to have formed the most correct conception of the course proposed to be pursued.

Of the professional witnesses consulted, the attention of the majority appears to have been directed to the effect of this dwarf piling upon the navigation, in connection with the recesses: of those who expressed their opinions with immediate reference to the use or convenience of it to the trade, Mr. Cubitt thought that dwarf piling would be inconvenient, as forming a step or threshold under water, and Mr. Rendel, that barges would be liable to ground upon, and be endangered by it. These opinions, it should be observed, were given, not in evidence, but upon a deliberate examination of the sections which accompanied Mr. Walker's plan.

The objections of the trade to the general principle of a solid embankment, whether with or without recesses, have already been adverted to in the history of the proceedings upon Mr. Walker's plan before the select committee of 1840. Of the witnesses in trade examined by the commission, Mr. Harvey objected to a solid embankment, that it would prevent him from getting his barges to the warehouses; that he should have to carry all his goods twice; that his craft, by being exposed to the swell of the steamers, without proper moorings in the stream, would be subject to increased wear and tear; and that any measure which deprived him of his accustomed means of access would be attended with additional expense in the landing and warehousing of his goods. Mr. Pocock attached no great importance to the wear and tear apprehended by Mr. Harvey; but in every other respect concurred in his objections. It was suggested, and assented to by these gentlemen, that piles driven out in the main stream might diminish the difficulty as to moorings, assuming the extent of these to be equivalent to the accommodations of their present frontages (in many cases usurped); but this equivalent would have involved a projection into the navigable waterway of 160 feet in the one case, and from 180 to 190 feet in the other, and, allowing for the depth of the solid embankment proposed in this particular locality (viz., in the neighbourhood of Whitefriars), would have carried the piling, on the northern shore alone, very nearly into the present centre of the river.

The opinions of the lightermen consulted on the last-mentioned of these points had reference principally to the exigencies of their

own calling. Assuming a solid embankment to be constructed throughout the whole line, they were agreed that, with the additional velocity to be given to the stream in heavy frosts, and with a channel loaded with ice, the craft would drift at the mercy of the current, and that no system of piling would avail for their security.

The professional opinions consulted by the commission were very nearly in accordance with each other on both of these points.

On that of the wharfe, Captain Beaufort, Mr. Hartley, Mr. Rendel, Mr. Macneil, and Mr. Giles were of opinion that continuous lines of solid embankment shown upon the plans could not be made consistently with the interests of the trade or the convenience of the public; Mr. Rennie, on the other hand, that the two objects were conjointly practicable; Mr. Gordon—that, "after a serious interference with, and breaking up of, existing arrangements, the trade would be ultimately great gainers by a solid embankment."

On that of the river—Mr. Hartley thought, that "to force all the craft to moor in the navigable stream would be a source of inconvenience to the trade, and of obstruction to the navigation;" Mr. Gordon,—"that as in the present system of traffic on the Thames, the bights or bays are indispensable as places of rest and refuge, the solid embankments of plan A would tend to injure the trade;" Mr. Rendel,—"that if the Thames were embanked with a solid embankment, according to the plan suggested, the wharfingers would find it absolutely necessary for their own protection not to moor out into the stream;" that "as the object of making a solid embankment would be to give the Thames such a uniform velocity as would keep open its channel, that velocity would prevent the use of the then shores by those barges; that the strongest run of the tide could not be taken at less than three miles an hour, and that three miles an hour would be quite enough to prevent the mooring of those craft along the shore;" that the utmost extent to which such a course would be practicable would be "a couple of barges in length," and that guard piles carried out to an extent to meet the requisites of the trade "would not continue a week." The opinions of Captain Beaufort, Mr. Cubitt, Mr. Macneil, Mr. Rennie, and Mr. Giles were addressed rather to the question of recesses, and their convenience to the trade as shelter from the open tideway, than to the positive difficulties and disadvantages connected with solid projections.

The foregoing, we think, may be referred to as a faithful summary of the opinions whether for or against the adoption of Mr. Walker's plan, having reference exclusively to its own merits. Its relative advantages and disadvantages, with reference to other plans, will be referred to hereafter.

**REFUGÉ HARBOURS.**—In the early part of the present week, her Majesty's steamer, the *Blazer*, Captain Washington, appeared off here, taking soundings, and placing buoys with flags on them at certain points, to ascertain the capability, it is said, of our bay for the site of a harbour of refuge. On Thursday the *Blazer* went down as far as Dungeness, and yesterday morning she resumed her survey of Dover Bay. It is confidently anticipated that the present members of the Commission (who, by the way, we have heard are all to be here next week) will, like their predecessors, recommend Dover as the most eligible site for the erection of the first refuge harbour on these shores. That *sine qua non* to a harbour of refuge—commanding and efficient fortifications—are already in existence here; and the ample depth of water, its local advantages of position at the very point in the Channel to avert the dangers of the Goodwin Sands, its proximity to the Continent, and its natural defences, must point it out as a spot eminently fitted by nature as a haven of shelter from the storm, or as a defence from the assaults of hostile fleets.—*Dover Chronicle*.

**INDIA-RUBBER HORSE SHOES.**—A sample of an India-rubber horse-shoe has been submitted to the Horse Guards, and approved of. It is intended to test immediately its capability and durability for that purpose.

## RAILWAY INTELLIGENCE.

*Birmingham and Derby Junction Railway.*

A special meeting was held at Birmingham on the 17th ult. to take into consideration the Bill for the amalgamation of the North Midland, Midland Counties, and Birmingham and Derby Railway Companies. Mr. Beale presided, and after stating the result of the North Midland and Midland Counties meeting, concluded by proposing the approval of the Bill, the clauses of which had been read over; and which was seconded by Sir Oswald Mosley, and adopted. Mr. Kahrs, of Derby, opposed the resolution, contending that the Birmingham and Derby Company had been unfairly dealt with in the arrangement for the amalgamation of the three lines. While the traffic of the Birmingham and Derby was increasing, that of the North Midland was going on but slowly, and that of the Midland Counties scarcely at all, comparing the traffic of the present with that of the past year; while the returns of the Midland Counties were much less than ever, the Birmingham and Derby showed an increase of 16 per cent. The formation of the new lines, more particularly that from London to York, led him to take this view, and to entertain strong apprehensions on the subject. It had been assumed that the Bill for that line would not pass. He was of opinion that it would; and, if so, it would seriously affect their interests. He contended that these new lines would affect the three Companies, if united; but that it would not, if unamalgamated, affect the returns of the Birmingham and Derby, who, he thought, had been sacrificed to their more powerful rivals. He concluded by proposing an amendment for protecting the Derby Junction, in the event of the Cambridge and York line being carried out, by a reference to the Board of Trade, and to determine whether in that event better terms should not be given to the Birmingham and Derby Company. The Chairman thought that Mr. Kahrs's opposition was ill-timed. He should have opposed the Bill at the special meeting lately held to consider it. He, the chairman, had no apprehension as to the Cambridge and York line, for he contended that the prospect of returns from it were such as to prevent any body of capitalists from entertaining it. If the Birmingham and Derby Company remained distinct, they would not derive that benefit which would accrue to them from the projected line from Rugby to Oxford, but would diminish one of their largest sources of income. The amendment was then put, and negatived by a majority of fifteen to three. Lieut-Col. Blane then proposed another resolution, to the effect that it was inexpedient for the proprietors to proceed further with the Bill, their interests not having been sufficiently considered. This resolution was negatived; as was also another, proposed by Mr. Kahrs, to modify the clause which provides that the Chairman of the Board of Directors shall preside at general meetings.

*Railroad from Lynn to Ely.*—The greatest activity prevails relative to this important undertaking. Shares are being taken beyond the most sanguine expectations: indeed it is confidently believed they will soon be at a premium. During the past week a meeting was convened by the Sheriff of Norfolk, to take the line into consideration, which was attended by a large and respectable assembly.

*Railway.*—It is not yet fully determined at what point the terminus of the railway shall be established in Peterborough. There seems to be a general feeling that, as Butt's close cannot be obtained, a spot should be selected near the private residence of Dr. Schrimshire, kindly offered by Mr. Gates, the lessee of the property.

*Railway from Suffolk to Shrewsbury.*—Captain Huish, Mr. Errington, and Mr. Swift, on behalf of the Grand Junction Company, attended a public meeting at Shrewsbury, on Wednesday, to explain and support the scheme for a "Shrewsbury and Stafford Railway." Resolutions in favour of the project were unanimously agreed to.

It is said that the shares in the proposed railway from Wolverhampton to Shrewsbury are all taken; and that, the funds being now subscribed, the necessary application to Parliament will be made immediately.—*Worcester Journal*.



**Bristol and Exeter Railway.**—Exeter must now be considered a railway town, as a locomotive engine has this week, for the first time, made its appearance within that ancient capital of the West of England. On the 17th ult. the first complete passage of an engine from the present terminus of the railway at Beambridge to the new station at Exeter took place, the engine conveying Mr. Brunel, the engineer in chief, Mr. Fripp, one of the Directors, and several of the assistant engineers, with Mr. Hennett, the contractor for the permanent way, on whose account the engine was engaged for the conveyance of timber and other materials down the line. The arrival of the engine was hailed with much interest by the Exonians, hundreds of whom were assembled to witness this novel visitor. In a few days this will become an ordinary sight, and there will then (with the exception of a slight break between Bristol and Gloucester, which will be completed in the course of a few weeks) be an unbroken railway communication from Exeter to Newcastle-on-Tyne, a distance of upwards of 300 miles.

**Pontop and South Shields Railway.**—A special general meeting of the shareholders was held at the offices, Guildhall-buildings, for the purpose of having laid before them the draft of a Bill now before Parliament, for enabling the company to widen a part of the railway, to make branches therefrom, and for other purposes. The meeting, a mere formal one for the purpose of complying with the standing orders of the House of Lords, was very thinly attended—not more than a dozen shareholders being present. Mr. Rennie was in the chair. The Bill, which is for widening a portion of the line, about five miles in extent, lying between the Durham Junction Railway and the Brandling Junction Railway, and intended to form part of the proposed line of railway between Newcastle and the Great North of England Railway, was unanimously approved of, and the meeting separated.

**New Railway.**—A direct northern railway, from London to York, by Lincoln, having in view the connection of the north of England and Scotland, by York, with the metropolis, has been recently started. This line is proposed to commence from King's-cross, and to proceed through Chipping-Barnet, Biggleswade, St. Neot's, Huntingdon, and Peterborough, to Lincoln, and thence by Gainsborough, Thorne, Snaith, and Selby, to York. The capital required is 4,000,000*l.*, in 100*l.* shares. Among the advantages which it is stated this route would possess are—that the distance between London and York would be 39 miles less than by the existing railways; that it would reduce the distance between London and Edinburgh 39 miles; and that it would be the nearest way to Leeds, Selby, Hull, Halifax, Bradford, Huddersfield, Wakefield, Pontefract, and Sheffield.

**Proposed Railway from Oxford to Wolverhampton.**—We have received information, from a source on which we have reason to place every reliance, to the effect that the projected railway from Oxford to Wolverhampton is progressing prosperously; that negotiations are now on foot with other railway companies, and that in a very short time a detailed prospectus, with the names of a most influential provisional committee, will be issued.—*Worcester Journal.*

**The Kent Railway.**—This project as originally started in 1836 has been revived. The line is proposed to go from London to Ramsgate, Margate, and Deal, passing through or near the towns of Deptford, Greenwich, Woolwich, Erith, Dartford, Greenhithe, Gravesend, Strood, Rochester, Chatham, Brompton, Milton, Sittingbourne, Faversham, Canterbury, Whitstable, Herne Bay, Sandwich, and Deal. The capital required 2,000,000*l.*, to be raised by the issue of 100,000 shares of 20*l.* each.

The Mayor of Banbury has received from Charles A. Saunders, Esq., Secretary of the Great Western Railway, a letter, intimating that it is the intention of that company to extend the Oxford Railway to Banbury, and that it is in contemplation of other parties to make a line from Banbury towards Worcester and Wolverhampton, as proposed by Mr. Elgie at the late meetings in this city, Kidderminster, Evesham, &c.—*Worcester Journal.*

**Railway Openings.**—In May, no fewer than four new railways will be opened for public traffic. The first in point of importance will be the Bristol and Exeter Railway. By this opening the public will be put in possession of an uninterrupted communication westward of 194 miles, 118 of which belong to the Great Western Proper, the remaining 76 miles being the length of the newly-opened line from Bristol to Exeter.—The Norwich and Yarmouth Railway, twenty and a half miles in length.—The Liverpool and Manchester Extension Railway, through Salford, to join the Manchester and Leeds Railway.—The West London Railway, which will form a West End terminus to the Great Western and London and Birmingham Railways, and will no doubt prove a welcome acquisition to the public, since it is calculated in the latter case, that a passenger wishing to go to Chelsea, Hammer-smith, or Knightsbridge, will save nearly one hour and a half, over the usual route to Euston-square, and thence by omnibus. It is proposed that the same carriage which brings a party, either from Birmingham or Bristol, shall convey him on to the West London Terminus.

**Railway Capital.**—The extent of railways already constructed and in operation in the United Kingdom is 2,000 miles; the sum which has already been actually expended in their formation is no less than 79,000,000*l.* sterling; the projects now before Parliament will, if sanctioned, add nearly another 1,000 miles to the existing length of our railways, and were the cost of their construction to be equal to the rate of executing the existing lines, almost other 40,000,000*l.* sterling would be added to railway investments; but as the cost will not reach that rate, to add another 30,000,000*l.* sterling to railway stock will be probably a more truthful calculation. Thus in a few years the enormous sum of 109,000,000*l.* of money will have been invested by the English capitalists in the construction of railways at home, besides a very considerable sum which has been sent out of the country to assist in the formation of foreign railways.

**Railway over the Menai Bridge.**—This bridge will be made the means of transit over the Straits, in the projected line of railway from Chester to Holyhead, for the express purpose of fully testing its capabilities, and also of ascertaining how far the ordinary traffic conducted over it may, or may not, be impeded or injured by such means; and that in case reasonable fears should then exist of its durability as a medium of railway transit, or experience should shew that such transit is injurious to the trade now carried over it, a new bridge will be erected.—*Carnarvon Herald.*

The Great North of England Railway Company have recently made an offer to the Darlington and Newcastle Junction Company (whose line is about to be opened) to contract for supplying locomotive power and carriages of all descriptions for each train at 1*s.* 3*d.* a mile. By this estimate, ten third-class passengers, charged at the rate of 1*d.* a mile, as on the London and Birmingham and other railways, would pay the expenses of a whole train, capable of conveying several hundred passengers!

**Atmospheric Spring for Railway Carriages.**—This much-approved method of giving elasticity to railway carriages is now in constant operation on the Stockton and Darlington Railway, and is universally admired for its superiority over the ordinary spring now in use. The motion given to the carriage is perfectly smooth, easy, and free from the unpleasant sensation caused by the harshness of the steel spring; and the lateral motion, which in most carriages is so very disagreeable, is entirely removed.—*Durham Advertiser.*

The Sheffield and Manchester Railway Company have purchased the Huddersfield Canal, and intend to apply to Parliament for a direct line between Huddersfield and Manchester, by way of Saddleworth, Ashton, &c., to be carried as far as practicable alongside the canal.

**Railway Returns.**—Total amount received for traffic on the London and Birmingham Railway for the week ending April 20, 19,095*l.* 2*s.* 9*d.*; Birmingham and Derby Junction, April 20, 1,360*l.* 1*s.* 10*d.*; Grand Junction, April 13, 7,607*l.* 0*s.* 9*d.*; Birmingham and Gloucester, April 19, 2,143*l.* 10*s.* 8*d.*; Great Western, April 14, 15,624*l.* 1*s.* 10*d.*

## CHURCH-BUILDING INTELLIGENCE, &c.

**Bardsley New Church.**—This structure, from its elevated site, may now be seen for many miles in every direction. It is a most beautiful specimen of the Norman architecture of the twelfth century. The whole design and execution reflect the highest credit on the architects, Messrs. Starkie and Cuffley. It is cruciform in figure, the transepts contributing greatly both to the external and internal elegance of the whole structure, which is in a light and chaste style. The stone-work of the transepts and vestry is complete, and ready for the internal finishing, which will be commenced next week. The tower is raised to the level of the roof of the church, and will be completed next month. The first stone was laid on Whit-Friday last year, by Jonah Harrop, Esq., of Bardsley House, and dedicated to the Holy Trinity. The presentation is in the hands of the trustees of Hulme's Charities, who have given the land and contributed munificently to the building and endowment of the church. A parsonage and Sunday schools will be erected in the field adjacent to the burial ground, which is in a spacious plot of land of a gravelly soil.—*Manchester Advertiser.*

**Tamworth.**—Among the curious specimens of ancient ecclesiastical architecture still remaining in this country, is the winding staircase at Tamworth Church. This staircase has one centre newel running perpendicularly to the top of the church, into which a double staircase is so ingeniously laid, that two persons may walk from the bottom to the top of the church abreast, without seeing each other until they arrive at the top. This spiral staircase is almost unique in England.—*Church Intelligencer.*

**Bury Parish Church.**—The erection of a new tower to the parish church of Bury is proceeding in a satisfactory manner. It is now considerably higher than the pediment (gabel) of the body of the church. The lovers of steeple music will be glad to learn that the old peal of six bells is to be superseded by an excellent peal of eight bells.

**Birmingham.**—The bishop of the diocese has presented a donation of 20*l.* towards the Queen's College and Collegiate Chapel in this town. The foundation-stone will be laid early in May.

The parish church of Broad Chalke, near Salisbury, an ancient structure, being the mother church of the Chalke deanery, is in a sad state of dilapidation. It is proposed, as soon as the necessary funds can be raised, to entirely new roof and repave the same. The amount required is about 1,400*l.* The subscriptions of benevolent individuals, aided by the various church societies and the liberality of the patrons of the living, amount to 1,100*l.*, leaving a deficiency of 300*l.*

Mrs. Lawrence, of Studley Park, in addition to former liberal donations, has just presented 1,000*l.* to the Ripon Diocesan Church Building Society.

Her Majesty the Queen Dowager has graciously bestowed 30*l.* upon the Holme Cultram Church, Cumberland.

**GOTHIC TRACERY, &c.**—At the last weekly conversation of the Royal Society in Albemarle-street, some very curious and elaborate specimens of carved Gothic tracery, executed by a newly-invented machine, for which Mr. T. Pratt, of New Bond-street, has obtained a patent, were exhibited, and excited a great deal of attention. The specimens are remarkable for their finish, as well as the beauty of their designs, and they can be produced with a rapidity and at a rate of remuneration which will put it in the power of most persons to have carved doors, pieces of furniture, &c. For the fitting up of cathedrals, churches, and public buildings, the employment of this machine will obtain at a tenth part of the usual expense better carving than can be procured by other means without incredible labour and great waste of time. The carvings for the church at Camberwell are being cut by this instrument.—*Morning paper.*

**CHATHAM DOCKYARD.**—An order has been received to light this establishment with gas.



PATENTS RELATING TO ARCHITECTURE,  
ENGINEERING, &c.

Granted between 26th February and 28th of  
March, 1844.

[SIX MONTHS FOR ENROLMENT.]

John Robert Dicksee, of Old Compton-street, Soho-square, artist, for improvements in the manufacture of mosaics. March 30.

William Crockill, of the Iron Works, Beverley, for improvements in machinery for making wheels for carriages. March 30.

Henry Clayton, of Upper Park-place, Dorset-square, Regent's-park, plumber and machinist, for improvements in the manufacture of tiles, drain pipes, or tubes and bricks. March 30.

Frederick Brown, of Luton, Bedford, iron-monger, for improvements in stoves. April 10.

James Murray, of Garnkirk Coal Company, Scotland, for a new method of using and applying artificial gas made from coal, oil, or other substances, for lighting and ventilating caverns, pits, or mines, or other pits where minerals or metals are worked or extracted. April 10. (Four months.)

John Aitken, of Surrey-square, for improvements in water machines, or engines and steam-engines, and the mode of traction on, or in canals or other waters or ways. April 10.

George William Lenox, and John Jones, of Billiter-square, London, merchants, for improvements in the manufacture of sheaves and shells for blocks, and of bolt rings or washers, for the purposes of shipwrights and engineers. April 10.

James Kennedy, of the firm of Bury, Curtis, and Kennedy, of Liverpool, engineer, and Thomas Vernon, of the same place, iron ship builder, for certain improvements in the building or construction of iron and other vessels for navigation on water. April 15.

John Lawson, of Leeds, engineer, and Thomas Robinson, of the same place, flax-dresser, for certain improvements in machinery for heckling, dressing, combing, and cleaning flax, wool, silk, and other fibrous substances. April 16.

Edgar Heale, of Brixton, gent., for certain improvements in the construction of carriages for the conveyance of passengers on roads and railways. April 18.

Donald Grant, of Greenwich, Esq., for improvements applicable to the ventilation of apartments in which gas and other combustible matters are consumed by ignition. April 18.

John Bailey Denton, of Gray's-Inn-square, land-agent, for improvements in machinery for moulding or shaping clay and other plastic substances, for draining and other purposes. April 18.

Joseph Woods, of Barge-yard Chambers, Bucklersbury, gent., for improvements in regulating the power and velocity of machines for communicating power, being a communication. April 18.

William Hodson, of New King-street, Kingston-upon-Hull, estate-agent, for a machine for making and compressing bricks, tiles, square pavers, and ornamental bricks. April 18.

Peter Lear, of Boston, Suffolk, of the State of Massachusetts, America, gent., for certain new and useful improvements in machinery for propelling vessels through the water. April 23.

William Taylor, of Birmingham, door-spring manufacturer, for improvements in the manufacture of axle-pulleys, and in pegs or pins for hanging hats or other garments. April 24.

Charles Harrison, manager of the Coal Talon and Leswood Iron Works, Flintshire, for certain improvements in the manufacture of cast-iron pipes and other castings. March 26.

Elisha Haydon Collier, Esq., of Golds-worthy Terrace, Rotherhithe, Surrey, civil engineer, for certain improvements in the construction of furnaces and flues. March 27.

Joseph Dickinson Stagg, of Middleton, in Teesdale, Durham, Manager of Smelting Works, for a new and improved plan for collecting, condensing, and purifying the fumes of lead, copper, and other ores and metals, also the particles of such ores and metals arising, or produced from the roasting, smelting, or manufacturing thereof, and also the noxious smoke, gases, salts, and acids, soluble and absorbable

in water generated in treating and working such ores and metals. March 30.

William Edward Newton, 66, Chancery-lane, Middlesex, civil engineer, for an improvement or improvements in furnaces, being a communication. April 4.

John Stevelly, of Belfast, Ireland, professor of natural philosophy, for improvements in steam-engines. April 10.

Thomas Nash, of Paul's Cray, Kent, paper-maker, and Francis Pirie, of Watling-street, London, paper-maker, for certain improvements in the manufacture of paper, and in the machinery to be used therein. April 11.

## Correspondence.

## ALTERATIONS AT THE CARLTON CLUB-HOUSE.

SIR,—Not having seen in your valuable publication an account of a most important competition now in progress, viz. for altering or rebuilding the Carlton Club-House in Pall-mall, I beg to send you an account. On the 16th of March last there was a general meeting of the Club, when it was determined to make extensive alterations and additions to the Club House, and to call upon fourteen of the first architects in London to furnish designs. The meeting then proceeded to name the architects who were to compete. The architects so named were:—

Mr. Barry, Great George-street; Mr. Sydney Smirke, Berkeley-square; Mr. Basevi, Saville-row; Mr. Hardwick, Russell-square; Mr. Cockerell, the Bank; Mr. D. Burton, Spring-gardens; Messrs. Lee and Bury, Golden-square; Mr. Pugin, Chelsea; Mr. Railton, Carlton-chambers; Mr. Blore, Manchester-square; Mr. Matthew Wyatt, sen.; Mr. Salvin, Saville-row; Mr. Poynter, Poet's-corner, Westminster; Mr. Hopper, Connaught-terrace.

On the 19th a letter was sent to each of the above gentlemen, stating that at a general meeting of the Carlton Club, held on the 16th March, it was resolved that extensive alterations and additions should be made to the present Club House, and that the limited number of fourteen eminent architects should be invited to furnish plans, elevations, &c., that a premium of 200*l.* should be awarded to the most approved plan in case it should not be adopted by the Club, and that a sum of 100*l.* should be awarded to the second best plan in case the first should be adopted. The plans to be sent in to Mr. Jephson, the Secretary of the Club, on or before the 1st of May. The name of the architect not to be affixed to the plans, but a mark or motto to be attached, &c. &c.

The committee also issued instructions as to the nature of the design, accommodation required, &c.

The designs, in accordance with the resolution, were sent in this day, and as it is important that THE BUILDER should contain all information interesting to the profession, perhaps you will think this letter worthy of insertion.

I am, Sir, your obedient servant,  
A SUBSCRIBER FROM THE FIRST.

## THE SOCIETY OF ARCHÆOLOGISTS AND ARCHITECTS, NEWCASTLE-UPON-TYNE.

SIR,—You will doubtless be glad to hear of the formation of a Society in Newcastle-upon-Tyne, entitled "The Society of Archæologists and Architects, Newcastle-upon-Tyne," to have for its objects the accumulation of architectural detail, historical data, and antiquarian information respecting the ancient buildings (especially ecclesiastical) in the north of England, and eventually the publication of the results of its labours. Thus, by being put in possession of a multitude of examples, the architect will be enabled to furnish designs for modern erections, according to the best models of antiquity, which in these matters (at least) appear to be our only true guide.

Each member is expected, at least once in three months, to produce and present to the Society a drawing or drawings of the whole or of part of an ancient building, together with any deductions, opinions, inferences, and historical data which he may have collected respecting it. The drawings and MSS. are intended to circulate among the members for their mutual use; and when the Society becomes powerful and rich enough,

they will be published, each member being entitled to a copy, and a certain number printed for general sale. When any expenses occur, each member will pay a moiety. Any person residing in the counties of Northumberland, Durham, Cumberland, and Westmoreland is eligible as a member, provided he possess a taste for such subjects, is able to engage in them, and the majority of the members are agreeable, when his admission is proposed.

The necessity of such an institution is apparent. Besides the value of a society professing a determination to do what they can for its professed objects; beyond, the great value attachable to the results of its labour, such labour is the more incumbent when we witness the almost daily remorseless demolition of so many of our venerable remains, by the utilitarian rage, when to a person of taste their very age (if even there were no higher motive) should preserve them from destruction. Although we have had but one meeting, considerable interest is excited, and many are applying for membership. A large field is open for our exertion; perhaps there does not exist one finer than that to which our labours are more particularly to be directed.

I have sanguine hopes of its ultimate utility both to its members and to the public.

G. B. RICHARDSON, Hon. Sec.  
and Treasurer.

Grey-street, Newcastle.

[We have not this week time to make any observations upon the formation of this society.—Ed.]

## TIMBER SCARFING.

SIR,—I should like to know from your correspondent, "A Practical Carpenter," whether he means the scarf he has contributed in page 193 of THE BUILDER (and which he says he considers preferable to any of those in Mr. Wyllson's paper on scarfing) to be equally applicable to timbers in tension and in compression, and if placed in any position; as it appears important to arrive at such a form of scarf as should not only be the best of its kind, but suitable under all circumstances.

It appears to me that the scarf fig. 18, page 75, is better than that above referred to, inasmuch as three keys form a greater obstacle than one to prevent the parts from sliding on each other, and the small end abutments would not be so liable to be broken off. I submit, however, to his superior judgment.

I am, Sir, your obedient servant,  
A CARPENTER.

Holloway, April 18, 1844.

## Miscellaneous.

ROCHESTER BRIDGE.—On Friday, April 19, the annual meeting of the Commonalty of Rochester-bridge was held as usual within the castle of that city. On the business of the day being commenced, the annual statement was read by the clerk, George Essell, Esq., from which it appeared that the rents, dividends, &c., of the corporation of the bridge for the past year amounted to near 5,000*l.*, out of which, after paying the current expenses of repairs of the fabric, &c., and the purchase of some property near the bridge, a sum of nearly 3,500*l.* had been invested in the public funds. The present funded capital belonging to the trust amounts to about 72,000*l.* On the subject of a new bridge, the wardens informed the meeting, that they had taken means to obtain an estimate from their surveyor, and some friendly discussion arose among the gentlemen present, when the general feeling appeared to be that the time for undertaking a new bridge has not yet arrived, and the wardens assured the meeting that a work of such magnitude would not be attempted until ample means have been provided without rendering the contributing parishes liable to be burdened in the slightest degree.

THE NEW CORN EXCHANGE, COLCHESTER.—At a meeting held on Saturday fortnight, to decide on the site of the new corn exchange, it was determined to adopt the spot recommended by the committee, which comprises the site of St. Peter's Vicarage, enlarged by the addition of other ground, and which altogether affords a space about one-third larger than the present corn-exchange.



**COTTAGE-ALLOTMENTS.**—Mr. Colman, the celebrated American agriculturist, who is now on a tour through Europe, speaking on the advantages resulting from cottage-allotments, says:—"I have treated largely on the subject of allotments, as presenting one of the first and most efficient means of bettering the condition of the agricultural labourer. My own convictions are strong on this point; and they are sustained and strengthened by the testimony of many men of large experience and shrewd observation. The labourer finds in an allotment a means of turning his spare hours to advantage, and in a mode of labour which, from its very character, being in the association of his wife and children, under his own control and management, and for his own immediate and personal benefit, becomes a pleasure instead of a toil. He finds it the means of eking out his scanty wages, of providing, to a degree, for an occasion of sickness, or other suspension of his employment and wages. He is enabled to bring from this source many rare comforts to his own frugal table; and has himself, if he is a man of feeling—and why should he not be?—an opportunity of enjoying one of the richest of all pleasures, that of making a small contribution to relieve an unfortunate or a sick neighbour. It presents a good school of industry for his children, under his own immediate inspection. It quickens his own intelligence, in making agricultural experiments upon a small and useful scale; and rouses a spirit of wholesome emulation, in his crops, even with the master farmers. It removes him from strong temptations to gambling, low dissipation, and intemperance. It gives him an interest in the soil; it attaches him to his home; it involves him in all the risks of the public safety, and makes him the friend of public peace and order. It gives him the spirit of a man, raising him above the sense of slavish dependence, and the dread of becoming a pensioner on public charity. In so doing, it at once exalts him in the community; induces a most wholesome self-respect; inspires a just regard for the rights of property; attaches him the more strongly to his superior, who thus shows his willingness that he should walk erect instead of keeping him upon the ground with his foot upon his neck; and presents innumerable, constant, and powerful motives to improvement and good conduct."

**THE WELLINGTON STATUE IN THE CITY.**—At the last meeting of the Royal Exchange Committee, on the subject of placing the statue of his Grace the Duke of Wellington, by Sir Francis Chantrey, the trustees, Mr. John Masterman and Sir Peter Laurie, and the executors, Mr. Turner, R.A., and Mr. Jones, discussed, at considerable length, the question as to the most eligible position of the equestrian figure on the spot selected in front of the Royal Exchange. Upon that occasion Sir Peter Laurie stated, that Sir Francis Chantrey always expressed a wish that the statue should face the south, in order that it might have the advantage of the sun, for which purpose the eminent sculptor suggested the removal of the ugly upper story of the Mansion House, which was accordingly taken down, to the manifest improvement of that edifice. Mr. Jones confirmed the statement, as to the opinion and wish of Sir Francis Chantrey. The committee, however, came to the resolution that, as the front of the Royal Exchange faced the west, it would, notwithstanding the impression upon the mind of so high an authority, be preposterous to turn the face of the statue away from that direction, and they accordingly agreed unanimously that the duke should front Cheapside. Mr. Turner, the other executor, informed the committee that the statue and pedestal had long been completed, and he trusted that by the 18th of June, the anniversary of the battle of Waterloo, the public would have a complete opportunity of judging of the merits of the performance. The committee seemed to entertain no doubt that on the anniversary of the memorable event the statue would be erected.

**CAUTION TO SURVEYORS OF THE HIGHWAYS.**—On Friday week, at Chandos House, Mr. William Wyatt, Surveyor of the Highways of Dunkerton, was fined 10s. and costs, for using his own team for repairing the parish highways without having first obtained from two justices a license authorizing him so to do.

**PUBLIC WALKS.**—A grant of 5,000*l.*, being the first grant from the fund of 10,000*l.* voted by Parliament for the purpose of providing public walks for the use of inhabitants of large towns, has been allotted to Oldham; a communication having been received to that effect, a short time ago, from Sir Thomas Freemantle, on behalf of Government. The appropriation of the funds is in the hands of the Commissioners of Woods and Forest, upon whom a deputation of the Oldham Police Commissioners waited some time ago on the subject, accompanied by their law clerk, Mr. Kay Clegg. It is understood that additional funds will be required to carry into effect the highly desirable object in view; and measures are to be taken forthwith to promote the design.—*Manchester Guardian.*

**NEW ALMSHOUSES AT MAIDSTONE.**—A desirable site near College-lane has been selected for the almshouses directed to be built and endowed by the will of the late Philip Corral, Esq. The erection will be of stone, and of a substantial nature.

**WINDOW GLASS.**—By the new scale of duties the Chancellor of the Exchequer proposes to reduce the duty upon white glass which is at present 2d. per lb., to the same as that upon green-bottle glass, which is only three farthings per lb.

We understand that at a meeting of the iron trade, held on the 17th ult., it was unanimously resolved, unasked, to advance the wages of the colliers and miners in the Monkland district 6d. per day, on condition of the absurd restriction by the miners to two-thirds of their out-put being given up.—*Glasgow Argus.*

### Tenders.

**TENDERS** delivered for painting, decorating, and generally repairing the Hall of the Worshipful Company of Saddlers, in Cheapside.—Samuel Angell, Esq., Architect. April 30.

Battam and Craike .....	£399
George Cooke .....	404
Bishop .....	427
Taylor .....	462
Larke .....	492
Sairs .....	510
Burton .....	534

**TENDERS** delivered for the first pair of a series of seven pairs of Cottages to be built at East Brixton for Mr. Thomas Bull.—Mr. John Thomas, Architect. April 30, 1844.

Cooper and Davies .....	£1,050
Bennett and Seaborne .....	1,000
Jacob .....	985
Crawley .....	976
Reynolds .....	950
Tichey and Simpson .....	915

### NOTICES OF CONTRACTS.

For the erection of a Bridge at Hilton, in the parish of Woolfield, Salop, and also for lowering and improving the upper part of Hilton Hill.—Plans, &c., at Mr. Stokes, Shipley. May 8.

For the erection of a Theatre at Wolverhampton.—Drawings, &c., at the Peacock Inn, Wolverhampton. Mr. Tichborne, Wolverhampton. May 6.

For re-building the Western Pier of the Hamber Dock Basin, and the removal of the present Pier included, or to be provided for in a separate tender, as may be most convenient.—Secretary to the Dock Company at Kingston-upon-Hull. Plans, &c., at Mr. Michael Lane's, Engineer, Castle-street, Hull. May 20.

For works required in the enlargement of the Reigate Union Workhouse at Redhill.—Plans, &c., at the Board-room. Mr. Thomas Hart, Clerk to the Guardians. May 6.

For repairs and alterations of the Branch Bank, Aylesbury.—G. H. Taylor, Esq., Architect, 22, Parliament-street, Westminster, and 22, Queen-street, City; or at the Branch Bank, Aylesbury. April 29.

For altering and completely finishing the carcasses of two Houses in Middleton-road, Queen's-road, Dalston.—Mr. James Clark, 4, Richmond-Terrace, Queen's-road, Dalston.

For building an Union House, at Lock's Bottom, Farnborough, Kent.—Mr. Henry Nottingham, Clerk to the Guardians, Keston, Kent. Plans, &c., at Messrs. Savage and Foden's, Architects, 31, Essex-street, Strand. May 10.

For making a plan and taking levels of all the drains in the town of Kingston-upon-Hull, and the Lordship of Myton.—Further particulars of Mr. R. Witty, Surveyor, 11, Sykes-street, Hull. May 22.

For the alterations and repairs of Wicken Church.

Plans, &c., Mr. W. N. Young, Surveyor, Mill-dell. May 6.

For building a new Church at West Lydford, Somerset.—Plans, &c., Mr. Phipps, Shepton Mallet. May 10.

For erection of a new Union Workhouse at Highland's Farm, in the parish of Cuckfield, Sussex.—Particulars, Plans, &c., of Mr. T. Wisden, Hampton-place, Western-road, Brighton. May 10.

For erecting a bridge over the Waveney, between Diss and Stoston.—Plans, &c., from 1st to 8th inst., at Mr. Farrow's, Diss; from 8th to 15th at Suffolk Hotel, Ipswich; and from 15th to 22nd at Royal Hotel, Norwich; Clare Algar, Secretary, Auctioneer and Land Surveyor, Diss. May 23.

For the erection of an Iron Bridge of one arch, of one hundred and ten feet span, intended to be built over the river Avon, at Bath.—P. George, Esq., Town Clerk, Bath.—Drawings, &c., at G. P. Manners, Esq., Architect, No. 1, Oxford-row, Bath. May 31.

For the executing of certain works for the improvement of Aberdeen Harbour.—Plans, &c., Mr. Abernethy, 69, Waterloo-quay, Aberdeen. June 20.

### Current Prices of Metals.

April 30, 1844.

	£. s. d.	£. s. d.
SPELTEN.—Foreign ton ..	22 15 0	23 0 0
" For delivery ..	0 0 0	22 0 0
ZINC.—English sheet ..	0 0 0	30 0 0
QUICKSILVER .....	per lb.	0 4 6
IRON.—English bar, &c. ....	per ton	6 0 0
" Nail rods .....	0 0 0	6 15 0
" Hoops .....	0 0 0	8 0 0
" Sheets .....	0 0 0	9 0 0
" Cargo in Wales ..	0 0 0	3 10 0
" Pig, No. 1, Wales ..	0 0 0	4 0 0
" No. 1, Clyde ..	0 0 0	3 10 0
" For, Swedish .....	9 15 0	10 0 0
" Russian, CORD .....		16 10 0
STEEL.—Swedish keg, p. ton	18 10 0	19 0 0
" Faggot ..	0 0 0	19 0 0
COPPER.—English sheathing, per lb. —	0 0 9	
" Old .....	ditto.	0 0 8
" Cake p. ton ..	0 0 0	84 10 0
" Tile .....	0 0 0	83 0 0
" S. American ..	0 0 0	75 0 0
TIN.—English, blocks, &c. cwt. ....		3 13 0
" bars .....	0 0 0	3 14 6
" Foreign, Banca ..	0 0 0	3 10 0
" Straits .....	0 0 0	3 4 0
" Peruvian ..	0 0 0	3 0 0
Tin plates, No. 1C. p. box	1 7 0	1 11 0
" No. 1X .....	1 13 0	1 17 0
" wasters 3s. p. box less		
LEAD.—Sheet milled .....	per ton	17 15 0
" Shot, patent ....	0 0 0	19 15 0
" Red .....		21 10 0
" White .....		23 10 0
PIG-LEAD.—English .....	0 0 0	17 0 0
" Spanish ..	0 0 0	16 10 0
" American ..	0 0 0	16 5 0

SHORT AND MAHONY, Brokers,

1, Newman's-court, Cornhill.

### TO OUR CORRESPONDENTS.

We have received, and have put in the engraver's hands, the drawings of the French Church. A historical memoir relating to its congregation and establishment would be acceptable.

We are afraid the sketches of Repton Church crypt are too rough and inaccurate to be executed by our engraver, who found great difficulty in doing so with our correspondent's last communication which is ready for insertion; but if furnished with all the exact dimensions, and with true sections of the mouldings and details of the work, with the jointing of the masonry in the walls, columns, arches, and vaultings clearly expressed, we should take pleasure in having the subject fully illustrated; perhaps on digging, complete base-mouldings to every part of the structure might be found. The details of the doorway, its construction and jointing, should also be given, as should, if possible, the thickness of the materials of the vaulting. Perhaps the joints of the vaulting might, to a certain extent, be shown on the plan, unless indeed there be a pavement worth representing.

We have received the letter of "A Pupil."

We have received the block plans of Widdington and Newport Churches, with an accompanying letter, but are unable to give any reply this week.

We have received the description of the "Great Britain Steam-ship," which will appear in our next.

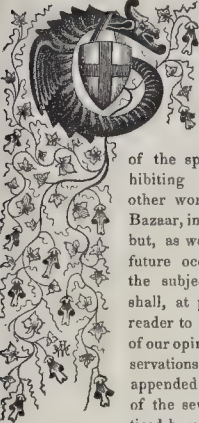
The drawings of Hand-rail Scrolls, &c., will be inserted in our next, as will the article upon Gothic arches, for which we could not find room in this number.



# The Builder.

NO. LXVI.

SATURDAY, MAY 11, 1844.



**GLASS-STAINING** is an art of so much importance to architecture that we this week go into a detailed account of the specimens now exhibiting gratis, with the other works of art, at the Bazaar, in St. James's-street; but, as we propose at some future occasion to resume the subject generally, we shall, at present, leave the reader to gather something of our opinions from the observations which we have appended to the description of the several designs noticed by us.

We must again state, that we think justice has not by any means been done to these specimens of glass-staining, by the mode in which they are exhibited, as during the greater part of the day the strong glow of light which is upon them most effectually prevents the beholder from having any thing like a correct impression of that which these works would produce when placed in the several windows of the Houses of Parliament; though we do not intend to plead altogether inexperience on the subject, yet, we admit, we were at first in some sort deceived, and by no means gave their several artists all the credit which they deserve; but, on repeating our visit at about five o'clock in the afternoon, when the sun had left the great skylight and was externally glowing upon the stained-glass itself, we then could see many of the subjects exhibited are of very considerable merit; and, when subdued by the necessary wire-guards, by the moderate quantity of aperture in which it is presumed they would be placed, and by the duskiest which would mostly come over them, if there be now much of vulgar glare and ill-assorted colouring, such disagreement and overpowering vulgarity, we imagine, would mostly disappear.

As we suppose a vast quantity of stained-glass will be used, we think many of those who have sent designs and specimens should be employed, choosing the best for cote-armoury, ornamental work, figures, and other departments, and preventing that monopoly which must end in much of the work being done in an inferior way, notwithstanding the application by the fortunate chosen to other competitors to do part of their work.

Most of their architectural adjuncts are in inferior taste; we know that it is not the glass-stainer's business to design these things, and that it belongs properly to the architect. We are aware that much of the pictorial architecture, which was introduced into the fine old stained-glass, was very execrable in design; but that forms no reason why the architecture introduced into a fine palatial edifice, built all at once, should have any such anomalous marks of inferiority.

In the windows of the magnificent Westminster Palace of Legislature, there is room enough, besides mere pictures of sovereigns and their arms, for all manner of subjects of the history of England and its church; and we hope to see such an application of the triumphs of pictorial skill, which delights in producing effects in various ways, each the best in its kind, by the heavenly severity of unbedaubed sculpture, by the subdued modesty of good painting, and by the permeable glow of the glass-stainer's matchless art.

We now proceed to our review of the subjects of stained-glass among the other

## DECORATIVE WORKS OF ART

Sent in, pursuant to the notices issued by her Majesty's Commissioners on the Fine Arts, now publicly Exhibiting.

58. Design for a stained-glass window, by John Summers.—The upper lights are occupied by figures under canopies taken from Henry VII.'s Chapel in Westminster Abbey; in the centre lights are placed Edward III. and his wife Philippa; on the right of the Queen is John of Eltham, and on the left of the King is the Earl of Warwick. The lower lights are occupied by Edward the Black Prince and the Princess, with the young Prince, afterwards Richard II. On the left of the Princess is Sir Guy de Bryan, and on the right of the Prince is Sir Oliver de Ingham.

A storied design of figures, with the further disadvantage of the figures being set upon pavements in perspective, though the figures, some of them at least, are above the eye; the large figures surmounted in the head tracery by very small ones, and these again by ornamental subjects too small to be read.

59. Design for a stained-glass window, representing Henry III. and his Queen, and Edward I. and his Queen, in the costume of their several reigns, with their heraldic insignia and badges, by Ward and Nixon.—A good design.

60. Design for a stained-glass window, by C. E. Gwilt.—The figures are those of the first eight kings after the Norman conquest, and the general design and ornaments are intended to be of coeval date and style with the new Palace.

An excellent, chaste, and elegant design, though the figures are left uncoloured; the pedestals and canopy-work being drawn in elevation, are wholly free from anomalous perspective.

61. Design for a stained-glass window, representing the arms of British sovereigns and of illustrious individuals of the corresponding periods from the Saxon Heptarchy to the present time, by Spence and Co.

A rich design, but the largeness of the escutcheons and the smallness of its figures disagreeable.

62. Design for a stained-glass window, by Charles Clutterbuck.—Intended as one of a series to represent the wars of the Houses of York and Lancaster.

Two fine historical subjects treated in a painter-like style, more agreeable than a monotonous repetition of scroll-work and shields.

63. Design for a stained-glass window, by Daniel Higgins.—The figures represented are, Princess Mary, Henry VIII., Prince Edward, and Princess Elizabeth, forming the family group of Henry VIII. The upper part of the window commences with a Gothic screen enriched with the royal arms, with strings of shields relating to Henry VIII., and finishes with the roses of York and Lancaster.

Has the merit of containing one story of picture, but its upper work not happily managed nor in pure taste.

64. Design for a stained-glass window, representing Henry VII. and Elizabeth of York after marriage, by Robert Morrow.

An unfinished sketch of considerable merit. 65. Design for a stained-glass window, by J. Hedgeland.—This design supposes the window to contain, in the lower compartments, wholelength figures representing the sovereigns of England, in regular succession from the reign of King Alfred; the upper compartments and the tracery openings being appropriated to the reception of devices, armorial bearings, mottoes, &c., appertaining respectively to the monarchs represented immediately underneath.

A very meritorious design of one story of figures which, however, have the common fault of being too stumpy.

66. Design for a stained-glass window, by Ballantine and Allan.—Meritorious, with good colouring, and the architecture in elevation instead of anomalous perspective.

67. Design for a stained-glass window for the House of Peers, by Cobbett and Son.—The four upper openings contain the arms and badges of the Tudor family. The four lower openings contain portraits of Henry VII.,

Henry VIII., Edward VI., and Queen Elizabeth, surrounded by similar arms and badges. Every part of the design has reference to the same subject.

A work of great merit, though the medallions of sovereigns, being finished in the modern miniature style, clash with the ancient insignia surrounding them.

68. Design for a stained-glass window, by William Warrington.—This design contains the armorial bearings, consisting of escutcheons, supporters, badges, collars of SS., and suns and roses of the following monarchs:—Henry IV., Henry V., Henry VI., Edward IV., Edward V., Richard III., Henry VII. (empanelled with those of Elizabeth of York), and Henry VIII. An excellent design.

69. Design for a stained-glass window, by James Warrington.—In the four principal openings are the arms of Henry V., Henry VI., Henry VII., and Henry VIII., enclosed by the garter, and surrounded by helmet, crest, and lambrequin. In the lower openings are the supporters of each monarch, holding banners emblazoned with his livery colours, and charged with his different badges. Of great merit.

70. Design for a stained-glass window, representing the badges of the four orders of British knighthood, with the arms of the founders, &c., by Henry Pether. A very rough unfinished sketch, of ability.

71. Design for a stained-glass window, by Edward Corbould.—Edward I. entering Westminster, after having vanquished the Welch, in 1282. A painter-like window of very great merit.

72. Design for a stained-glass window, by Edward Baillie.—The upper large openings contain portraits of four Kings of England, Henry V., VI., VII., and VIII. Over each are his arms and supporters, and under each is a medallion on which is either a subject or a figure illustrative of the period. The four lower openings contain portraits of four queens regnant of England. On the left, Queen Mary, with her arms and supporters. The medallion underneath represents the same queen and her royal consort, Philip of Spain. Next is Queen Elizabeth, with arms and supporters. The medallion contains her initials, with the date of her coronation and demise, with titles in a label, as in the others. The third is Queen Anne, with arms and supporters, initials and titles. The fourth is her most gracious Majesty Queen Victoria, with the arms of the United Kingdom. The subject on the medallion is intended to represent the signing of the treaty between the British and Chinese officers.

The observations upon No. 67 apply also to this design.

73. Design for a stained-glass window for the House of Peers, by Cobbett and Son.—The four large upper compartments contain portraits of her Majesty and Prince Albert on pedestals with canopies above. Her Majesty in her coronation robes; the Prince in the robes of the Order of the Garter. The four lower compartments are filled with the subject of King John ratifying the great charter of England.

A fine composition, but its several subjects each more complete than the whole.

74. Design for a stained-glass window, by J. A. Gibbs.—The four small openings at the top of the drawing represent the badges of the houses of York and Lancaster. The large left-hand opening represents the red dragon (being the cognizance of the Earl of Richmond) overcoming that of Richard III. The right-hand large opening illustrates that curious verse:—

"The cat, the rat, and Lovell the dog,  
Rule all England under a hog!"

alluding to the names of Ratcliffe, the king's minion, and Catesby, his spy, and to the king's cognizance, which was a boar. The four lower openings combine the battle of Bosworth Field. The arms are those of the principal personages engaged on that memorable day.

A good subject of the storied kind.

75. Design for a stained-glass window for the House of Lords, by Chance, Brothers, and Co.—The design exhibits four members of the House, a bishop, a warrior, a judge, and a statesman. The allegorical figures above (Piety, Valour, Justice, and Prudence) refer to the characters beneath, each standing on his coat of arms proper. In the upper part of the window are placed the arms of her



Majesty Queen Victoria, and those of his Royal Highness Prince Albert, together with those of London and Westminster, with emblems of the three kingdoms.

A good storied window of figures and pedestals in elevation, with minute backgrounds; but all the canopy-work and architectural decorations replete with elaborate Continental impurities.

76. Design of a complete window intended to represent Edward III. and his Queen Philippa. Beneath them, Edward the Black Prince and William of Wykeham. The four side compartments contain the various arms, badges, mottoes, &c., by Thomas Wilmshurst. —An excellent window, but perhaps requiring more depth of colour, light, and shade.

77. Design for a stained-glass window, representing Henry VIII. delivering the first English translation of the Bible to Cranmer, for the use of the people. In the upper compartments are the arms of Henry VIII. and Queen Anne Boleyn, and on either side are the arms of the principal ecclesiastical and lay peers who supported the Reformation. The various badges, &c., of the king are likewise introduced, by John Gregory Grace. —A well-designed window, but out of taste for the building.

110. Specimen of stained-glass, relating to the design No. 65, by J. Hedgeland. —A good figure, with rich though not quite harmonious colouring.

111. Specimen of stained-glass, a compartment of the design No. 71, by G. Hoadley. —The figure, placed in an artistic manner, less stiffly than glassy pictures usually are, but its glare requiring to be subdued.

112. Specimen of stained-glass, relating to the design No. 59, by Ward and Nixon. —Figure with arms and helmet richly painted, but spoiled in the exhibition by counter light.

117. Specimen of stained-glass, representing a compartment of the design No. 68, by Wm. Warrington. —A good subject, perhaps over dark, and with its leadwork over thick.

118. Specimen of stained-glass, representing a compartment of the design No. 73, by Cobbett and Son. —Contrasting, by its over-clean lightness, with the last.

129. Specimen of stained-glass, a portion of the design No. 77, by J. G. Grace. —Coat-armour very good.

130. Specimen of stained-glass, a portion of the design No. 61, by Spence and Co. —Some good drawing and colouring, but wanting in the breadth and depth suitable for the work.

131. Specimen of stained-glass, a compartment of the design No. 62, representing the Earl of Richmond receiving the Crown on Bosworth Field, by Charles Clutterbuck. —Well drawn, but its colouring poor and discordant.

132. Specimen of stained-glass, representing Henry VII., a compartment of the design No. 74, by J. A. Gibbs. —Good in colouring and drawing, though requiring depth in its accessories.

134. Specimen of stained-glass, a portion of the design No. 72, by Edward Baillie. —A very beautiful subject.

135. Specimen of stained-glass, relating to the design No. 49, by Robert Morrow. —Well drawn and beautifully finished, yet so almost totally shadeless, as to be a mere ghost, though shedding a glow around.

136. Specimen of stained-glass, relating to the design No. 66, by Ballantine and Allan. —A beautifully-painted subject, fine in colour, yet requiring more depth about the canopy-work.

137. Specimen of stained-glass, relating to the design No. 76, containing the arms of Edward III., by Thomas Wilmshurst. —Arms and varied forms, devices, bordering, and colouring, successfully worked; very suitable for some of the windows.

141. Specimen of stained-glass, relating to the design No. 75, by Chance and Co. —Well painted though with over-short figures, with the injurious effect of an over-blaze of light in parts, and some want of harmony by the injudicious introduction of pink.

142. Specimen of stained-glass, relating to the design No. 69, by James Warrington. —Very agreeable.

162. Specimen of stained-glass, a portion of the design No. 58, by John Summers. —A well-painted figure of the Black Prince, but with light and shade capable of improvement.

164. Specimen of stained-glass, relating to the design No. 63, by Daniel Higgins. —Well painted in a subdued style, yet with some lights too predominant.

#### *Additional Designs and Specimens of Stained-Glass.*

Near No. 77. A good design of intricate varied forms and colouring, by Wilmshurst, in the style of the glass at York Minster.

The martyrdom of St. Alban, an obituary window, by C. Clutterbuck; rather drolly devoted to the memory of the late estimable Archdeacon Watson.

Next No. 110. Window of Braxted Church, Essex, by W. Warrington, consisting of varied decorations and medallions of small pictorial subjects in the revived style of imperfect art, which, as painting and glass-staining advanced, our ancestors superseded by grand, effective, and speaking subjects, visible all over the largest building, a mode directly in the teeth of the wretched modern precepts of those who, unable to draw figures in any way fit to be seen, attempt to humbug people with the idea that while a Te Deum is scrawled in characters 6 inches high, which those who have not Prayer-books cannot read, 3 inches of altitude will suffice for representing in a coarse way the Saviour in a manner which requires the ascent of a ladder for the eye to make out at all.

Next No. 111. Window by Ward and Nixon, in a good style, consisting of cote-armour, well bordered with the leaves and flowers of roses.

Design by Warrington for a hall-window of Brazen-nose College, Oxford, consisting of armorial insignia, &c.

Next No. 112. A good window, by Wilmshurst, of varied subjects, fit for some parts of the Houses.

Drawing of a chancel-window of St. Peter's Church, Padstow, Cornwall, by Warrington. A good subject, of Christ and the Evangelists, surmounted by high canopy-work, instead of storying one set of figures over another.

Next No. 118. Design of the altar-window of St. Peter's Church, Stepey, but with stories of small subjects in medallions, instead of the effective grandeur of one subject, or one story of figures.

A piece, by Wilmshurst, in the style of the glass at York Minster; good.

Emblems of St. Mark and St. John, by E. Baillie, with borders; not in first-rate style.

Earnest the Pious, Duke of Brunswick, by E. Baillie; a fine, rich, and elaborately-painted window.

Two fair specimens of general ornamental work, by Baillie and by Wilmshurst.

Ascent of Calvary, painted for the Charterhouse, by C. Clutterbuck. The effect spoiled by the counter-glow of the skylights. Not a happy subject; we presume the figure of Christ is unfinished, its face and hands being in mere outline, and the drapery almost without a shade, except from the accidental disagreement in the different portions of glass of which the mere shape is made up, like a patchwork garment not in wear.

St. George; a fair subject, by W. Miller.

Moses, by Wilmshurst. A fine and effective window, though, perhaps, in too smooth a style of painting, except it be intended to be set almost close to the eye.

Near No. 130. Arms and badges, by J. Hedgeland. —Fairly painted, yet from the disagreement of yellow and pink not happy in colour.

Near No. 130. No. 2, by E. Baillie. —Requires more depth.

Near No. 137. Queen Elizabeth, by Robert Morrow. —A magnificent horror, in spite of elaborate work, mimicry of carving, hooped washing-tub like petticoat, pinking, jewelry, sceptre, orb, lace, and sovereignty, which render the English female Solon in appearance the ugliest, the stumpest, and most graceless of old washer women.

Near No. 142. Arms of Henry VIII., rich bordering, by G. Hoadley, shewing ability to execute design.

A Gothic interior, by Spence and Co.; a style applicable to some parts of the work.

Lion's head, by D. Higgins; well painted.

Two subjects of ornamental borders, by G. Hoadley, of merit.

(To be continued.)

#### TENTH EXHIBITION OF THE NEW SOCIETY OF PAINTERS IN WATER-COLOURS.

WE have visited the annual display of this rising society at its gallery, No. 53, Pall Mall, and have been much gratified by the evidences of artistic ability and execution; the collection contains many subjects of very considerable rank. We have, indeed, heard that it does not contain such eminently beautiful pictures as were in its last year's exhibition; we hardly know how this can be, but we are quite sure that taken as a whole it is superior, and contains fewer bad drawings, while some are really of surpassing merit. As a minute detail of subjects of general pictorial art would be totally unsuited to the nature of our columns, we are obliged to confine ourselves pretty nearly to such as relate to architecture, among which will be found many of very great value; and scarcely one of which we shall make mention would not be satisfactory, if taken home and honourably placed in quietude, apart from the disgusting glare, clashing, and confusion, which are the almost necessary concomitants of a public exhibition-room, the worst possible of all situations for doing justice to the merits of all pictures, except such as are merely painted for the purpose of eclipsing others.

No. 4. South front of Hampton Court Palace, David Cox, Jun. —A good architectural subject of the reign of William III.

No. 15. Schloss Elz, near the Moselle, W. Robertson. —A very fine drawing of a rock-fortress.

No. 16. In the Gardens, Haddon Hall, David Cox, Jun. —A terrace-staircase subject, prettily delineated.

No. 19. Part of Bolsover Castle, David Cox, Jun. —An architectural subject, shewing a doorway with a curved pediment.

No. 29. In Brittany, R. K. Penson. —A good drawing of old buildings.

No. 31. At Aylesford Priory, Kent, E. H. Wehnert. —A good ancient architectural subject of chimneys.

No. 34. St. Edmund's Chapel, Westminster Abbey, W. N. Hardwick. —A beautiful drawing.

No. 45. Buildings at Dinan, Brittany, William Oliver. —An architectural subject of considerable beauty.

No. 46. Cathedral, Aix-la-Chapelle, west entrance, James Fahey. —A curious subject of buildings, not architectural, yet affording some hints.

No. 53. At Cologne, G. Howse. —A beautiful drawing of architecture, water and shipping.

No. 84. A halt in the Nubian Desert, Henry Warren. —A superb drawing, broad, glowing, and natural.

No. 85. Old houses at Tilf, near Liege, W. Robertson. —A very interesting sketch.

No. 91. At Bacharach, James Fahey. —A good sketch of old buildings.

No. 125. —Exterior of Anne Boleyn's apartments, Hever Castle, David Cox, Jun. —A good drawing of rather anomalous architecture, with a three-storied stack of bay-windows in a corner, and open only on two sides, and with chimneys of an inferior character.

No. 133. Gateway at Allington Castle, Kent, E. H. Wehnert. —A good drawing.

No. 136. —Alfred H. Taylor. —Rich, broad, and glowing.

No. 146. A pic-nic, Powis Castle, David Cox, Jun. —A rich and superb drawing of architecture and figures.

No. 151. Staircase at "the Hotel of the Carp," Bacharach, G. Howse. —A good sketch of a curious subject.

No. 178. At Mayence, G. Howse. —A good drawing.

No. 213. At Quimperle, Brittany, William Oliver. —A good subject of ancient domestic architecture, treated in a painter-like style.

No. 217. The studio of Leonardo da Vinci, in the palace of Francis the First, John Chase. —A superb drawing of the peculiar architectural subject, decked in every part with the elaborate hard carving of the style.

No. 231. The tomb of the poet Gower — St. Mary Overies, Southwark, J. W. Archer. —A good sketch of an interesting subject.

No. 288. Buildings at Lamballe, Brittany, William Oliver. —A very beautiful drawing.

No. 316. Perdita and Florizel, E. H. Wehnert. —A capital drawing.

No. 321. In Boulogne Cathedral, T. S. Boys. —A small but good drawing.



## SOCIETY OF ARTS.

MAY 1.—T. Winkworth, Esq., in the chair.

The secretary read a paper on the reformed system of laying out and constructing railways, with a view to extending the benefits of the railway system to every part of the United Kingdom.

In 1839 Mr. Wisbaw laid his plan of working single lines before the Institution of Civil Engineers, and in 1840, after completing a detailed survey of all the railways in the United Kingdom, and making practical experiments to the extent of 15,000 miles as to the working of the trains on all the British railways at that time open to the public, revised and corrected his plans, and then made it public in the "Railways of Great Britain and Ireland."

Since that period the single way has made considerable progress, and engineers who scouted the idea of carrying on a large amount of traffic by the reciprocating system, are now laying out some of the principal lines on this system in a modified form, and it is understood that the great Holyhead line is to be constructed on this principle.

The mode of working a railway by this plan with any amount of traffic, may be thus described:—

The distances between the terminal and the nearest principal intermediate station, and between the two principal intermediate stations, are 20 miles respectively, which distances are made up of two engine-runs of equal length meeting together at the half-way stations.

To illustrate the mode of exchanging the trains which takes place at the exchange stations nearly simultaneously every hour, we need only describe this process between one of the terminal stations and the first principal intermediate station.

An engine (No. 1) starts from terminal station A, and another (No. 2) from the first principal intermediate station D, as the clock strikes eight, at an average speed of 25 miles an hour, including stoppages; the engines No. 1 and No. 2 will arrive by 24 minutes after eight.

At the exchange station C, where each engine-run is furnished with a large twin-table, capable of holding the engine and tender together, an engine (No. 3) is already on the up-line, ready to proceed with the up-train, and another (No. 4) on the down line, ready to proceed with the down-train.

The engines Nos. 1 and 2 which have just arrived are turned into the engine sheds on either side, and the engines Nos. 3 and 4 are connected with the up and down-trains respectively, and proceed forward precisely at 8 hours 30 minutes, there being six minutes (for the sake of example) allowed for the exchange for attaching or detaching carriages, &c., and for receiving and disembarking passengers.

At 8 hours 54 minutes, engine No. 3 will arrive with the up-train at the arrival platform of the terminal station A, where the passengers and luggage will be dispatched by omnibusses, &c.

In the meantime the nine o'clock down-train is preparing to start with engine No. 5, which has its steam up, and is waiting for the nine o'clock bell to be rung, or bugle-sounded. The clocks at each station throughout are required to be of uniform construction, and by first-rate makers, and regulated twice in 24 hours by means of the electro-galvanic telegraph, which is considered a necessary appendage to all main lines of railway.

At 24 minutes past nine, engine No. 5 will arrive with the second down-train at exchange station C, and engine No. 6 will also arrive within a minute before or after with a second up-train at the same station as on the first exchange; so, again, engines Nos. 1 and 2 are ready to proceed on the signal being given at 9 hours 30 minutes with the up and down-trains respectively; engines Nos. 5 and 6 are turned into the engine-sheds as before, and prepared to make the next exchange at 9 hours 54 minutes; engine No. 1 arrives at the terminal station A, as before, and engine No. 3 is again ready to start with the ten o'clock train, and so the reciprocating process is continued throughout the 24 hours at each of the intermediate exchange stations.

Intervals of one hour each for the starting of the trains, and also ten-mile runs are taken, merely for the sake of easy illustration, but

intervals of 90 minutes, which would give 16 daily trains, and longer runs, according to each particular case, would answer equally well.

The estimated cost of construction of a line 60 miles in length, taking the prices throughout on a liberal scale, is, including stations, furnishings, plants, &c. :—

Total cost of constructing the railway and stations	£824,787	8	2
Total cost of furnishing the railway and stations	101,320	0	0
	£926,107	8	2

Or, altogether, at the average rate of only 15,435l. 2s. 5d. per mile.

The annual revenue, with the amount of traffic, would amount to 324,339l. 1s. 4d.; and the annual expenses, including fund for depreciation of locomotives and stock, &c., and interest on loans, &c., 115,879l. 18s.

Thus the disbursements would amount, on an average, to 35·72l. per cent. on the gross revenue.

The English railways at present in operation extend to	1,608	miles.
The Scotch, .....	219	"
The Irish, .....	80	"

Making a total of ..... 1,907 "

If the reciprocating plan had been adopted, the total cost of all the British railways at present open to the public would only have been 29,434,345l., instead of considerably more than double that amount.

In 1841, Mr. Wisbaw laid down on his railway-map the lines requiring to complete the system throughout England, Scotland, and Ireland; from which it appears that

In England there remained to be constructed	1833	miles.
In Scotland, .....	210	"
In Ireland, .....	931	"

Making altogether ..... 2974 "

Which, if executed on the reciprocating system, would not exceed 45,903,690l., instead of 91,807,380l. if the ordinary double way be adopted.

The latter part of this paper was devoted to a consideration of the atmospheric system of railways, giving an account of its progress from the publication of Mr. Ballece's plan in 1824 to the present time.

The next paper read was by Mr. Galt, who has lately been examined before a committee of the House of Commons on his plan for railway reform.

The value, says Mr. Galt, of all the railway property in the United Kingdom is estimated at 93,000,000l., the price at which it could be purchased would pay 4l. 7s. per cent.; and as government could borrow money at little more than 3 per cent., there would be a clear profit of 1,165,000l. per annum, to be applied by government to meet the loss which would be incurred by a reduction of fares.

## INSTITUTION OF CIVIL ENGINEERS.

APRIL 30.—The President in the chair.

"A Description of the method employed for Repairing a Chimney 120 feet high, at Messrs. Cowper's Cotton Mills, Glasgow," by Joseph Colthurst, was read. The means adopted were thus described:—the workman was provided with a broad leather belt, to which was attached a strong spring-hook; staple-shaped ladder-irons, with flat gagged ends, were driven into the joints above each other, at intervals of 15 inches, by the man standing in them in succession as he ascended, until he reached the top; his safety was secured by fixing the spring-hook into the ladder-iron immediately opposite his waist, which enabled him to use both his hands when working, as rope was also passed round his waist and down inside the ladder-irons, to support him in case one of the irons broke or drew out; he thus succeeded in removing some ornamental plates of iron which had been loosened by a storm. In descending, the workmen took the ladder-irons out one after the other, the whole operation being performed in two days and a half. The total cost, including a bonus of 5l. to the workman, was only 13l.

The first part of a paper by Mr. W. Fair-

bairn, on the reduction of the magnetic ores of Samakoff (Turkey) was read; it commenced with reviewing the few attempts which had been made towards improving the method of treating the richer iron ores both of England and of foreign countries, the great English iron makers having restricted themselves to using the lean carbonates of iron, on account of the facilities they offered for working; the great advantages which might have resulted, both in the quantity and the quality of the metal produced from rich ores, have thus been neglected.

It is stated that Mr. Dhannes Dadian, an active and enterprising Armenian in the service of the Sublime Porte, brought to this country specimens of the magnetic iron ore and of bituminous coal found in the district of Samakoff, in Turkey. He had them analyzed at Paris and in England, and found that the ore was nearly a pure oxide of iron, containing about 63 per cent. of metal; that it was free from sulphur, arsenic, or other deleterious matters; and that there was mixed with it about 12 per cent. of silicious earth.

The ore was described as being found in the form of a fine sand covering extensive plains, where it had been deposited to the depth of several feet, probably by the action of water upon the mountains around, where a similar ore existed in considerable masses. In consequence of the favourable report of the assayists, and acting on the advice of Mr. Fairbairn, Mr. Dhannes Dadian determined to persevere in his projects, and his attention being directed to the process invented by Mr. Clay for producing malleable iron direct from the ore, as described in a paper read at the Institution of Civil Engineers, February 14, 1843, he secured that gentleman's services to conduct some experiments, and subsequently engaged him to proceed to Turkey to prosecute the working of the iron ore on an extensive scale.

Mr. Clay's report, and that of Mr. League, were fully given; they contained details of the various ingenious modes employed to work the ore, which, being in the state of a fine sand, either fell unmelting through the fire into the bottom of the furnace, or was blown out of the furnace-top by the force of the blast; at length Mr. Clay, thinking that if the ore could be deoxidized by a previous operation, it would be in a fitter state for fusion in the blast furnace, submitted it to a partial process, as far as causing it to form into lumps; in that form it was easily fused, and produced cast-iron of a peculiarly ductile fluid, and yet strong character, of which specimens were exhibited. The success of this plan was considered so complete, that the preparations were immediately commenced for erecting works in Turkey on a large scale.

Incidental to the subject of the glassy scorie of the iron furnaces, Mr. Clay mentioned that he had studied carefully the composition of crown-glass; he believes that he was the first to point out the true atomic character of glass, that its quality depends on the ingredients being compounded in certain definite atomic proportions, and that crown-glass is quinquasilicate of lime and soda. He arrived at these conclusions in the year 1835; and, at the works of Messrs. Chance at Birmingham, it was found, that on following the rules he laid down, the production of a constant quality of glass was inevitable. He then treated of the production of optical lenses and of the make of bottle-glass. The paper then returned to the forms of the furnaces proposed for working the Turkish iron ore; the various modes of treating it, and the nature of the flukes, &c., concluding the first part of the paper, with the details of the experiments made upon it at Manchester and at the Backbarrow works.

The following papers were announced to be read:—

No. 679. (Second part.) "On the relative strength and other properties of cast-iron from the Turkish and hoematite ores," by W. Fairbairn, M. Inst. C.E.

No. 675. "Description of a pair of iron Lock-gates, constructed in 1843, for the entrance of the west dock at Montrose," by J. Leslie, M. Inst. C.E.

No. 678. "Description of a coffer-dam used for closing the end of the Building-slip at her Majesty's Dockyard, Woolwich," by B. Snow, Assoc. Inst. C.E.

No. 670. "Account of the plan adopted by William Preston White, for raising the



Innisfail steamer, sunk in the river Lee, near Cork (Ireland)," by G. P. White, Assoc. Inst. C.E.

MAY 7.—The President in the chair.

The second part of Mr. Fairbairn's paper which remained unfinished from the last meeting was read. It noticed the remarkable richness and purity of the iron ores of the East, and the superior quality of the Damascus steel produced from iron made apparently in the rudest and most primitive manner; it was remarkable that up to the present time there had been but little change in the manner of manufacturing charcoal-iron even in England. This might be accounted for by the small quantity of wood charcoal used for smelting iron, but it appeared that, with the exception of that which was sent into Staffordshire and South Wales, for mingling with the lean ores of the coal measures, but little of the hematite or rich ores of Lancashire, Cumberland, Cornwall, or Devonshire was used, although in richness and in quality of metal they equalled those of foreign countries.

The paper then entered at length upon the experiments on the transverse strength of the Turkish iron, and also of the iron from other rich ores presenting the results in a tabular form mingled with those which had been reported on previous occasions in the Transactions of the Philosophical Society of Manchester, and in the reports of the British Association. These tables were arranged so as to afford the means of comparison of the strength and other qualities of various irons, and also for practical purposes, to furnish a guide for selecting such irons as by proper mixture of the different kinds would enable unerring results to be arrived at by the founder when engaged in producing castings for the engineer, the architect, or for various purposes in the arts or in constructions. Simple rules were also given for finding the breaking weight of beams cast from the fifty-two kinds of iron which had been experimented upon. The importance of the subject of the paper, the novelty of the application of Mr. Clay's system, and the unwearied attention of Mr. Fairbairn, together with Mr. Hodgkinson, in the numerous experiments they had made, were fully appreciated by the meeting, and it was announced that the valuable tables would speedily be published entire in the minutes of proceedings of the Institution.

A specimen of steel made from the Turkish ore, and a knife manufactured from it by Mr. Durham, of Regent-street, were exhibited and were much admired.

A letter was read from Dr. Schaffhaeuti, drawing attention to some experiments made by Sir David Brewster on the prismatic colours generated in homogeneous bodies when pressure was applied to them. These experiments were recorded in the Philosophical Transactions for 1816; they furnished a method of rendering visible and of measuring the mechanical changes which take place during the compression, dilatation, or bending of transparent bodies. He also stated that the tints produced by polarized light were correct measures of the compressing and dilating forces, and by employing transparent gums of different elasticities, the changes which occurred in bodies before they were either broken or crushed could be ascertained, and that, forming models of arches of simple refracting substances, such as gum, copal, &c., giving different degrees of roughness to the touching surfaces of the voussoirs, and exposing the model to polarized light, the results of any degree of friction at the joints would be readily observed.

It was stated that similar experiments had been tried by Mr. Bist, at Paris, almost simultaneously with Dr. Brewster, and that, without doubt, this had materially assisted Dr. Robison in his valuable treatise on the strength of materials.

A description of the iron dock-gates at Montrose harbour, by Mr. James Leslie, M. Inst. C.E., was then read. These gates were described in great detail, giving all the dimensions of the several parts, which were fully shewn by some elaborate drawings.

Their framing is of cast-iron, covered on both sides with wrought-iron plates  $\frac{3}{4}$  inch and  $\frac{1}{2}$  inch thick, riveted on so as to be watertight, and to render the gates buoyant and partly to compensate for the weight of metal

in them, which is about 87 tons. The gates are 55 feet wide and 22 feet 6 inches deep, and are entirely composed of iron, except their bottom bars and the false mitres, which are of oak. The sluice-valves are of iron, without any brass on their faces, but their backs are covered with zinc plates, and the bolts had zinc nuts screwed over the iron ones, in order to check the oxidation of the iron by the galvanic action of the two metals.

A general account of Montrose Harbour was given, and it appeared that although there had existed some doubt as to the successful formation of a harbour in such bad ground, being entirely sand and gravel, which stands full of water to within a few feet of the surface, the work having been submitted to Mr. Walker, president of the institution, and having his approval, had been satisfactorily executed, and stands well.

A model of the large swinging-jib crane used by the contractors at Granton Pier, Edinburgh, and a drawing of the mode of raising the stand-pipe at the East London Works, by Mr. Wicksteed, were exhibited.

The following candidates were balloted for and elected:—Messrs. H. Clutton, S. Hocking, C. Ower, T. Brunton, and G. Evans, as associates.

The following papers were announced to be read at the meeting of May 14th.

No. 681. "Account of the atmospheric railway," by J. Samuda, Assoc. Inst. C.E.

No. 678. "Description of a coffer-dam used for closing the ends of building-slips of her Majesty's Dockyard, Woolwich," by B. Snow, Assoc. Inst. C.E.

#### OXFORD ARCHITECTURAL SOCIETY.

MAY 1.—The Rev. the Master of University College in the chair.

The following new members were admitted:—T. A. Bowden, Esq., Magdalene Hall; G. Blomfield, Esq., Exeter College; Mr. Margetts, Church Decorator, St. John's-street.

The following presents were received:—The Journal of the British Archaeological Association, No. 1, by the committee of the Association.

Rubbings of brasses from Roydon Church, Essex, by Rev. H. S. Burr, Christ Church.

Drawings from the Churches of Chittlehampton, Devon; and Allington, Newton Tony, and Cholderton, Wilts, by Rev. W. Grey, Magdalene Hall.

Architectural Nomenclature of the Middle Ages, by Robert Willis, M.A., F.R.S., &c., Jacksonian Professor in the University of Cambridge, by the author.

Lithographic Views of Churches near Tamworth, by Rev. J. Hanbury, Thatcham, Berks.

The report of the proceedings of the society during the past term was laid on the table.

The chairman again recommended the British Archaeological Association to the notice of the members, and Mr. Parker observed that its object is to have members enrolled in every county or, if possible, in every parish, so that no modern improvements or alterations could be made, or any antiquarian discoveries could possibly take place, without the knowledge of the central committee in London. The secretaries of the Oxford Society are authorized to receive the names of those who are willing to join the association.

Mr. Burr, in presenting his rubbings of brasses, regretted that some delay had occurred which rendered him unable to add a rubbing of a fine brass which he had lately copied from the Cathedral of Seville, but which he trusted would soon arrive.

A paper was read by J. E. Millard, Esq., of Magdalene College, on monuments and grave-stones, recommending the revival of flat monumental stones, or of coped stones, ornamented with crosses of various forms, with inscriptions if necessary, or with emblems expressing the profession or employment of the deceased, according to the ancient custom. The average cost of an ornamented coped stone is estimated, by a person well versed in such matters, at four pounds, while that of a common head-stone is usually three guineas, and even a small brass would cost ten pounds. The paper was illustrated by a number of drawings of stone coffin-lids, and flat grave-stones, ornamented with a great variety of

devices, of which, however, the cross generally formed the leading feature, and of a curious boss in the cloisters of Norwich Cathedral, on which a funeral is represented, with eleven monks surrounding a stone coffin in the act of lowering the lid.

The chairman observed, that the adoption of these flat grave-stones, though very desirable, would be attended with much inconvenience in crowded church-yards, and that their use must necessarily be almost confined to the top of brick graves; but wherever their use is practicable, they are infinitely preferable to the modern tombs with which our church-yards are disfigured. He thought, however, that head-stones, made ornamental according to such designs as those furnished by Mr. Paget and Mr. Armstrong, would often be found more convenient than flat stones.

A member observed, that for the graves of the poor, which Mr. Millard appeared to have chiefly in view, the simple wooden cross at the head, with the name or initials and the date, a custom scarcely yet obsolete, was preferable to any memorial of greater pretension, or of a more lasting material.

#### ELEMENTARY ESSAY ON MORTAR AND CEMENTS.

BY JAMES WYLLSON, HON. SEC. B.A.A.D.

(Continued from p. 227.)

36. These nodular cement-stones are outwardly something like a bulbous root, that is, composed of concentric hollow spheres or layers; the latter are imperfectly defined, but peel away gradually with the action of the atmosphere, being clayey and slightly slaty in texture. The nucleus of the stone is of a more compact formation, though frequently intersected by fissures filled with glistening calcareous laminae, dividing it into nearly cubical fragments. The cement is made by subjecting the best of them broken into small pieces and separated by alternate strata of small coal, in a proportion of about eight to one, to a strong red heat for from thirty to forty hours, in a kiln kept in constant operation, after which they are ground to powder in a mill. The cement being liable to lose its adhesive power by exposure to the air, is then immediately packed in casks, air and water tight; when only part of a cask is used, the remainder should be repacked in a smaller one, to keep it in good condition, although it would take many months to render it altogether useless. Good cement, when perfectly burnt, is light in weight and of a light-brown colour; when imperfectly roasted, it is heavy and dark; if overdone, black, with carbonized particles interspersed. Some makers mix the scoria of copper with the burnt stone before grinding, and which, being principally composed of oxide and sulphuret of iron, is a very good addition, if introduced in due moderation.

37. It is supposed that the principal part of the lime in the cement combines with the ferruginous clay during the burning, leaving but a small portion to assume the state of hydrate on being wetted, and to return to the state of carbonate by reabsorption of carbonic acid from the atmosphere; and therefore it seems that it undergoes much less change than common mortar is subject to. Cement is not considered good unless it rise to a high temperature when mixed, although this principle never exists in it to such a degree as would be the case if water were thrown on it immediately after burning, but previous to the stones being ground, cause it to fall down into powder, as in the case of common lime.

38. Roman cement is chiefly valuable for its property of resisting the action of water; it does not stand heat well,—indeed, a moderate degree soon destroys all its tenacity. It is used for all building, whether of masonry or bricklayer's work, subject to be wet or damp, constantly or only occasionally. It is also, on account of its property of setting quickly and being incompressible (unless under a load that would crush the bricks or stones themselves), admirably calculated for carrying up such slender piers or other parts as would be in danger of derangement from the weight of the superimposed work, if constructed with common slowly-binding mortar; as well as for the joints of old work, and a variety of purposes demanding especial care. It may be used either by itself, as in water-cisterns and tanks, casting small ornaments, &c., or with a considerable



mixture of sand, and even with yellow chalk-lime, furnishing still a water-cement of good quality at a cost materially lower. In such aquatic operations as are executed by tide-work, that is, at low-water only, it is often used alone; but in dry situations, one part of cement and two of sand are common; and in stuccoing, even one to three may be sufficient; but how much sand may be added necessarily depends on the quality of the cement, and it is a general rule that that is the best which hardens with the largest proportion of sand: such as will not take from  $1\frac{1}{2}$  to 2, and retain a strong cohesive power, cannot be considered good. This part of the subject is very important to observe, not only in an economical point of view, but in reference to the increased facility in working which is obtained by the addition of sand; for as by itself it sets rapidly, and only a small quantity may on that account be prepared for use at one time, the workman has the less difficulty to contend with in floating an extent of surface, in proportion as it is combined with more sand. It is not at all elastic, and therefore when worked it should not be disturbed; nor ought it to be applied where there is any liability to warp or change in any way. Contradictory statements are made relative to its admitting of being laid on in more than one coat, some averring that if hatched over like the pricking-up coat of common plaster-work, another and another being added, will perfectly combine together; but its decided rejection of wet sees an overpowering argument against this supposition, seeing that the inward evaporation from the coat last applied not being absorbed by the previous one, must necessarily form a separating medium: thus, a second coat may be considered as little better than hung upon the first by means of the keys formed by the hatching; and the conclusion is, that its adhesion can in no case be complete to any surface which is of a nature similarly unfavourable to a previous coat of itself.

39. Preparatory to stuccoing, brickwork should be cleaned and damped over, the latter to prevent its too much absorbing the moisture, and giving it thereby a porousness of structure unfavourable to the perfect exclusion of wet; also to facilitate its adhesion. It is said that if the sand happen to be moist previous to mixing, the cement must be used immediately. With the genuine cement, in consequence of its setting so quickly, a skilful workman alone can produce good work; and the hand-float requires to be used with great care.

40. The LIAS LIMES are obtained from a dark-blue or dove-coloured stone, of an earthy or slaty structure, very abundant at Barrow-on-Soar, in Leicestershire; Watchet and Bath, Somersetshire; Lyme Regis, Dorsetshire; and Abergthaw, Glamorganshire. Those of Lyme Regis and Abergthaw are used in London; the latter is somewhat the better in quality and burning; by exposure to the weather they assume outwardly a liver-brownish hue; when burnt, they are buff. They are extensively employed for outside stuccoing, and are the only kind of stone-lime much used for that purpose, for which they are by some esteemed superior to the Roman cement, being less liable to blister and crack; and from their resemblance to building-stone when finished, not requiring to be coloured. The proportions commonly used in stuccoing are three parts coarse sharp sand to one part lime for a first coat, and two of fine sand to one of lime for finishing: the lime should be carefully screened. Lias lime being considerable dearer than the Dorking grey chalk lime, partly owing to the greater quantity of fuel and longer time required in its burning, is not much employed about town in forming water-cement; the chalk lime aforesaid generally answering that purpose sufficiently well, although not quite so strong: it is argillaceous, ferruginous in its nature. The proportion of clay in those of Watchet, Bath, and Abergthaw, is, according to one authority, about  $1\frac{1}{4}$  per cent.; in that of Barrow, the average of three analyses gave about  $1\frac{1}{2}$ ; that is, nearly, but as high as  $\frac{1}{3}$  has been stated. These limes are said to continue a long time good if kept in close casks; and especially if slaked to powder and closely packed: they are superior to all the five calcareous stones mentioned in article 11. The Athenæum Club-house, Charing-cross Hospital, and the

Blind Asylum in St. George's Fields, were built with lias stone-lime.

41. The hydraulic limes obtained in the vicinity of Strasburg are said to form cement of excellent quality.

42. Water-cements may be formed artificially by calcining together the different ingredients which compose natural substances of known hydraulic character; therefore, where these cannot be procured naturally, there can seldom be much difficulty in obtaining satisfactory substitutes, even superior in quality to the others, according as they are regulated with more or less precision in the relative proportions of their essential components, and with the omission of such as are not necessary. 53 per cent. by weight of carbonate of lime, 18 of protoxide of iron, and 29 of silica and alumina in equal parts, have been stated as affording the desired result; about 30 per cent. of slaked lime, mixed with the other two ingredients after their calcination, serving if deemed more expedient, instead of the quantity of carbonate above mentioned. Bergman, a Swedish chemist, who is considered to have been the first to give an analysis of a hydraulic limestone, found that of Lena, in Sweden, to contain 90 per cent. of lime, 4 of clay, and 6 of oxide of manganese; and he was of opinion that the latter gave the hydraulic character to the lime, and was necessary in all water-cements. Guyton de Morveau, a French chemist, was the first to make an artificial hydraulic lime; and he composed it by calcining together pulverized lime, clay, and black oxide of manganese, in proportions corresponding with the Lena limestone, agreeably to Bergman's analysis. He also attributed to the manganese the merit of affording the aquatic property. This, indeed, was in accordance with the opinion that at one time prevailed; but which, however, gave way to the one permanently established, that it is clay which is essential, and that manganese is indifferent, although a little of the latter, added to mortar, makes it harden under water; as is also the case with iron. The hydraulic limestones or marls of Senonches and St. Catherine's, near Rouen, on being analyzed, were found to contain 68 per cent. of carbonate of lime, 12 of alumina, 6 of sand, 2 of oxide of iron, and 12 of water.

43. But it is not only by the method above indicated that water-cements can be factitiously obtained; for many of excellent quality are formed by mixing with common mortar a selection from a large variety of non-calcareous substances, very diversified in their natures yet affording to the mortar the property of indurating under water: wood and coal ashes and cinders, coal-dust, tile and brick-dust, pounded tiles and clinkers, burnt clay, pounded pottery, forge-scales, roasted iron-ore, pumice-stone, basalts, powdered quick-lime, and others, of which there will be occasion to treat, are put in requisition for this purpose.

(To be continued.)

#### IMPROVEMENTS IN THE METROPOLIS.

KENSINGTON.—Her Majesty's Commissioners of Woods and Forests have decided upon the plans to be carried into effect for the formation of a new avenue, to be called the Queen's-road, extending from the Uxbridge road to High-street, Kensington, being the site of the late Royal Kitchen-gardens. Twenty-one detached villas, have already been commenced upon either side, and each of these will be surrounded by nearly an acre of garden ground. Various designs for the villas, gates, and lodges, have been submitted to the Commissioners, and those of Messrs. Wyatt and Brandon, Mr. Owen Jones, and Mr. Kendall have been decided upon. In the plans selected, all of which are in the Italian mode, are designs for mansions to be built of stone, and some of them contain upwards of 40 rooms, and in most are apartments *en suite* upwards of 100 feet in length. The greater portion of these structures are already secured by aristocratic and wealthy families; and Mr. Blashfield, the lessee under the Crown, has undertaken to have them finished during the coming summer. The villas upon the east side command a view of Kensington-gardens. The road will be upwards of a mile in length, and 70 feet wide, and will connect

the two great western roads. The government, police, lighting, sewerage, and indeed the entire management, is to be under the control of the Commissioners of Woods and Forests, who are about to build two lodge entrances, and to select and pay liveried gatekeepers and other subordinates, to render the undertaking as complete as possible.

ST. GILES-IN-THE-FIELDS.—The locality called the Rookery, which is situate on the line of the new street that is to connect Oxford-street and Holborn, near Southampton-street, and which for many years has been the resort of the abandoned of both sexes, is about to be removed for the improvements in this neighbourhood. Sixty houses, forming Buckenridge-street on the north, and Church-street on the west, have been sold by private contract (it not being thought advisable to dispose of them by auction, in consequence of their low value), and several men are now employed in their removal. The purchaser of the property, which belonged to Colonel Buckenridge, has great difficulty in getting rid of the inmates, and in some of the houses, though the roofs have been taken off, they still remain. The occupants of the different premises to be cleared away have received notice from the Commissioners of Woods and Forests to quit, so that in a short time a wide area of ground will be open for the erection of the new buildings, including the large stone-yard in George-street, which belonged to the parish of St. Giles-in-the-Fields, which was sold a few days ago, and the station-house of the E division, in the room of which the Commissioners of the Metropolitan Police have purchased three houses in Clerk's-buildings, Broad-street, St. Giles's, behind which cells are being erected.

TRAFALGAR-SQUARE.—Several men have been this week engaged in sculpturing the basement of the Nelson pillar; and there appears to be little doubt but that orders have been given to complete this national memorial as speedily as possible. The small portion of the promenade laid down in cement was scarcely completed on the day of admission of the public, and was consequently not set. Much of it is therefore broken, the portion being that placed between the bitumen, some of which is also broken away. Sticks, stones, umbrellas, and, in some cases, hammers have been employed by the public to test the solidity of the works,—all these attempts would probably have been successfully resisted had full time been allowed for the cement and bitumen properly to harden. The damage done will have to be repaired by the laying down of blocks of the like material sufficiently hardened at the manufactory of the patentees without allowing it to be subjected to the "practical experimentalism" of the public. It is said to be in contemplation to remove the turrets from the top of the National Gallery, and it is further said to be the intention of the commissioners to order the preparation of another statue to be placed on the north-west pedestal in the square, instead of removing that of George III., as previously contemplated.

ETON COLLEGE.—It has been notified to the authorities of the college that his Royal Highness Prince Albert will lay the foundation-stone of the extensive new buildings which are to be erected forthwith, at an expense of 26,000*l.*, immediately contiguous to the ancient edifice, in that portion of the premises known as Weston's yard. The precise period for the laying of the foundation-stone is not yet determined upon. It is expected, however, to take place about the middle of next month.

The statue of the late Duke of Gordon has been placed on its pedestal, in Castle-street, Aberdeen. The statue is by Campbell, and is 11 feet 3 inches in height; including the base and pedestal, the height, in all, is 21 feet 6 inches.

WOOD PAVING.—As an instance of despatch with which wood-paving may be laid down, the Metropolitan Company received orders, late on the evening of last Saturday week, to pave 2700 yards at the Bricklayers' Arms terminus, which they completed on Tuesday night.

Above two thousand pictures, many of them of singular merit, have been rejected at the Royal Academy, owing to want of space.





INTERIOR VIEW OF ST. OLAVE'S CHURCH, SOUTHWARK, AFTER THE LATE FIRE.

We this week present our readers with a view of the interior of this beautiful work of the architect, Flitcroft, as it appeared after the fire. This sketch shews the fine effect of the tower, which is of no great altitude, as seen from the confined space of the church when its roof was burnt off, the walls, tower, and colonnade producing something of the appearance of a classical atrium or uncovered temple. The tower itself is of considerable beauty and originality, in a fine and simple style of architecture, and perhaps is Flitcroft's best piece of design.

The roof, which was finished with a fine ornamental groined ceiling, is now being restored. The whole of this church was finished in a very high style, and when perfectly restored, for which sufficient details and information remain, we trust will long escape such another misfortune, and as long laugh to scorn those ignorant people scarcely half skin-deep in knowledge of Gothic architecture, who, in their rash, unscientific, and ill-regulated minds, denounce many of our finest ecclesiastical buildings, Pagan, though containing deco-

tions much in the style of those edifices in which Christ's apostles and Constantine and the fathers all worshipped. Between them and the freemasons lies this difference, the freemasons united the best science of the Egyptians, Greeks, and Romans, with their own wonderful shrewdness, whereas these modern critics throw overboard the architectural science of all the three. We have in hand some exceedingly interesting further illustrations of this most valuable example of metropolitan church architecture, with which we are sure our readers will be much pleased.

NEWS  
OF THE  
BUILDER



## PETRALOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 230.)

All kinds of rock decompose under atmospheric influences, the chemical and mechanical causes of decomposition varying in every region of the earth; all kinds of rock are produced by chemical and mechanical action. The evidence of their decomposition is continually before our eyes and requires no demonstration; but the forming action being local and not general, depending upon long and continuous atmospheric heat in particular regions, or taking place chemically within the bowels of the earth, is of necessity inaccessible to most men, and, therefore, requires demonstrable evidence to support it, until the truth becomes firmly established upon the conjoint evidence of observing men. Marbles form in most countries, being calcareous matter cemented together by siliceous, calcareous, or argillaceous earth; porphyry, sienite, gneiss, granites of varieties are produced under a continuous atmospheric heat, or by electro-chemical action, when the matter is disposed within the bowels of the earth or in mountainous districts. Slate rocks are produced from the induration of clay by mechanical pressure and cohesion, and by chemical change in the disposition of the particles of which they are composed. The stratified nature of these and also many of the crystalline rocks is another demonstrable proof that they are formed by sedimentary deposition of the earths.

Let any one examine the various stone quarries of this country, and he will most assuredly discover rock in almost every stage of formation, geologists will say in almost every stage of decomposition, but admitting this assertion, it gives a most decided negative to their notions of the primary nature of rocks. Again, the continued action of the atmosphere is evidently a condition of their assuming the perfect state of solidity, for many species degenerate as we dip into the earth, first losing their hardness, and eventually passing by transition into earths and clays. The lodging of water within the earth favours the conglomeration of silica and the generation of siliceous aggregates; and, uniting with the acids and salts abstracted by them from the mineral beds through which they percolate, or are conveyed by fissures and veins, they become the active agents of generation of various mineral bodies; thus sparry quartz is almost universally disposed in veins, and is the first crystalline product manifest in clay beds and in cavernous apertures of the earth; nay, sparry concretions are continually forming before our eyes, and walls and roofs of deserted mines soon become covered with them. The causes of effects manifest as quartz are therefore palpably existing in the present day, even in this country.

In the vast expanse of this planet, forming the middle regions of the earth, the sands, pebbles, marls, and clays, are palpably produced by organic action, and the consequent changes of matter as it enters the fossil and mineral kingdom; in one region we find extensive ranges of carbonate of lime formed and still forming, intersected by vast ranges of sands, the causes of their production being still in active operation; in another we observe these primary earths covered with thick deposits of vegetable earth; in neither the one nor the other do we evidence their origin as proceeding from the decomposition of rocks, for in the first instance no species other than limestone rock is yet called into being, in the second, the very nature of the soil proclaims its origin, as the extent and magnitude of the tropical

vegetation bears evidence of its continuous increase.

As atmospheric and chemical influences and also mechanical action determine the nature, character, and qualities of rocks, so they also determine the changes they undergo after their primary formation from the earths aggregated by sedimentary deposition or elaborated by organic species. The sands which contributed to fill up the ancient canal of the Ptolemies, connecting the Red Sea with the Nile, have become agglutinated into very hard sandstone, which now conceals the original bed; on the other hand, the temple of Denderah, being built of a species of sandstone uniting with much lime, is rapidly decomposing; the nature of the cement which binds the sands together in one coherent mass always determines its powers of resistance to atmospheric influences. In many parts of Asia and Africa, in Australia, and South America, porphyry, basalt, sienite, marbles, and varieties of crystalline rock form under long-continued atmospheric influences, and are apparently indestructible; in other regions of the globe they rapidly decay when they become exposed to atmospheric influences, or to the mechanical action of the winds and rains. The traveller, as he stands in the midst of the ruins of the magnificent temple at Luxor, observes that many of the granites and calcareous stones have rather improved their condition by age, becoming harder and more sonorous; others having a natural cement inimical to their preservation, have suffered partial or entire decomposition; the celebrated obelisks were very recently in a beautiful state of preservation, presenting the same, and most probably a higher state of finish than when turned out of the hand of the sculptor: gothic barbarism, led on by men of science, caused the removal of one of these obelisks to Paris, and its appearance among them was regarded as a national triumph. What is it now? a monument of the folly of the times in which we live, a reproach to civilized people, who for the sake of a childish triumph of national vanity, have broken the charm attached to it while surrounded by historical associations and revered relics of antiquity. In a few years, unless art can contend successfully against Time, this monument will be laid low in the dust.

On the shores of Great Britain the action of rolling beaches is exemplified in the waste and in the rounding of pebbles, and by giving them polished surfaces. Men seeing, and understanding these phenomena, carry their notions abroad, and wherever similar appearances present themselves, they suppose and maintain that the same causes have produced them; thus the first false link in the chain of induction being formed, they proceed to build their edifice thereon, cementing it together with theoretic fallacies and idle imaginings. In arid regions, where rains never fall, where the abrasion of waters has never taken place, the like phenomena are to be observed, vast plains being covered with rounded pebbles and polished surfaces; but here we have other causes of effects dissimilar to those observable in British strata; numerous species of mollusca in the act of silicifying lose their asperities, and become highly polished stones; echini, turtles' eggs, and other rounded bodies preserve their outer configuration through successive changes, and even aggregate masses, on consolidating into porphyritic and jasper bodies, assume that high polish which it is almost beyond the reach of art to imitate. Again, upon examining the crystalline rocks in this country, geologists find quartz to be the sole constituent of some species, and the chief ingredient of others; from these rocks they demonstrate the primary existence of quartz, and witnessing the corroding influences palpably manifest in this country and the mountainous districts of the Continent, they readily embrace the notions of M. Saussure and other geologists of the last century, contending for the generation of sands and pebbles by the desquamation of rocks; but the manifest phenomena of other regions carry us beyond the narrow boundaries prescribed by geology, developing the origin of quartz and of quartzose aggregates, as well as the origin of the earths from which, in aggregate, they are produced.

It has been observed by practical men that all species of rock belonging to this country exhibit greater durability as they approach the crystalline structure, but much depends upon the nature of the earth which forms the

cement of the crystalline particles as well as upon the nature of the local influences exercised upon it. Geologists speak of mosses and other vegetable species decomposing the rock on which they grow, and deriving therefrom the material of their organic structure; but the innumerable facts observable around us testify otherwise, for the rock or stone is no sooner covered with vegetation than the corrosion previously carried on over its exposed surface ceases, and ages may elapse without further sensible change. There is a proof of this adduced by the committee appointed to select the building material of the two Houses of Parliament; they found the frustra of columns and other blocks of stone that were quarried at the time of the erection of St. Paul's Cathedral, now lying in the island of Portland, near the quarries from whence they were obtained, coated entirely with lichens, and thus hermetically sealed from the atmosphere, presenting the same freshness as when first put out of hand, even to the chisel-marks, while the same stone forming the exterior of the cathedral exhibits in some places a considerable extent of decomposition.

The calcareous marles of all countries are dissimilar in their qualities, although the varieties have a close relationship to the material of the rocks and beds which overlie them; but these rocks, as I have previously observed, do not decompose until they become exposed to a humid atmosphere, or to the action of running streams. Thus, in the mountains of Abyssinia, of Lebanon and Arabia, there is a waste proportionate to the violence of the rains and running streams. Again, exposed to the action of the ocean waves, and even to the ocean breeze, the crystalline rock decomposes or corrodes; and monuments erected near the sea-coast, whatever may be the nature of their material, always suffer more or less from these causes, even in those regions that are most favourable for the forming of rock. Pompey's Pillar, standing near the old port of Alexandria, corrodes seaward, although composed of porphyry the most durable of all varieties of rock. Cleopatra's Needle exhibits the same effects, being corroded seaward, and maintaining its freshness of appearance on the two sides exposed to the hot, drying winds of the desert. The same phenomena may be observed in forts disposed near the sea-coast in all regions, the saline waters being inimical to most species of rock. In like manner, the rank soils forming deltas in tropical climates are equally unfavourable to every kind of stone, nay, even to the formation of stone, for the nitrous earths rapidly devour them all, and the rank luxuriance of these climates is such, that a village or town is no sooner deserted, than the very stones appear to vegetate, the peupl and other trees of rapid growth springing up from the crevices, and as their roots enlarge, the stones give way, splitting downwards, until the whole fabric is levelled to the dust. Even bricks in Bengal soon share the same fate, the nitrous salts being a component of them all.

The common gravel of England possesses neither beauty nor variety, its aggregates being generally of the nature of petrifications or flints. The stones of the Isle of Wight consist in bulk of aggregate of echini radiati, and the bodies or portions of bodies of varieties of species common to tropical seas, and of necessity produced under the same influences, being all of them in the silicified or mineralized state, and much of the British strata is composed of the like material, embracing the reliques of gigantic lizards and other extinct oceanic animals, together with the reliques of elephants, rhinoceroses, hippopotami, and other land animals, which can only exist and propagate in their generations under the conditions of a climate found within the tropics. The causes of these effects, which excite our wonder and stimulate our inquiries, I shall not under this head attempt to explain, but let us suppose another great change in the axis of rotation of the earth, whereby England is once more disposed beneath tropical influences; the sure and certain results would be an immediate change of action, and in the atomic disposition of many bodies: the clay beds would indurate into schistus or slate of varieties; the coarse gravels of this country would in numerous instances become converted into siliceous and aluminous gems; nay, the very rocks, in which the living principle exists, directing their



changes and preserving their entirety, would change in themselves and become the productive sources of changes in the various mineral bodies composing their veins, or filling up their fractures. Again, its chalk beds would be converted into marble—its indurated limestones would assume the crystalline texture—its clays would concrete into nodules of quartz, mica, felspar, and other compounds, and its verdant forests would disappear, giving place to trees, plants, and grasses of another nature, and of a nobler growth.

(To be continued.)

#### METROPOLITAN IMPROVEMENTS.

(Continued from p. 231.)

##### THE PLAN OF MR. PAGE.

The principles of Mr. Page's plan are distinct in character from those of Mr. Walker, and, in some respects, opposed to them. It proposes an embankment with side channels, the embankment of itself forming a continuous public terrace. Assuming every abstraction of tidal water from a navigable river to be injurious to the navigation below the locality of the embankment, by depriving a portion of the river of its scour, Mr. Page proposes, first, to avoid encroaching upon the capacity of the river for the reception of its tidal waters, and to make the prevention of encroachments at any future period, as far as practicable, a leading feature. Secondly, to leave to the wharfmasters and others interested in the trade of the locality the possession of their present accommodations on the river shore; and, thirdly, to provide increased facilities of communication between the east and west ends of town by a public road constructed in the river.

The details of a plan professing to be founded upon these principles must, it is obvious, be far more extensive and complicated in their character than those of any plan based upon an alternation of solid embankments and recesses only. A river-wall interposed between the navigable channel and the shore must have openings to afford facilities of intercourse between the two; the position of these openings would form one subject for inquiry—their width, another—the facilities of access at different states of the tide, another. These openings could, of course, be passable only by bridges; and those bridges, in accordance with one of the leading principles of Mr. Page's plan, should be of sufficient width and height to admit of the accustomed traffic of any locality at any state of the tide. On the other hand, Mr. Page's terrace was to pass under the respective bridges which connect the Middlesex and Surrey shores of the river; and hence it would appear impossible entirely to satisfy one of these conditions without conflicting, in some measure, with the other.

Another point, the importance of which was not to be overlooked, was the convertibility of these side channels into docks or floating basins. The treatment of this question involved the discussion of locks, their position, their capabilities, their size, and their probable cost. The relative advantages of tidal-docks and floating basins, in reference to the trade and the navigable interests of the river; the supervision necessary to the regulation of either; their respective tendencies to silt, and the facilities for cleansing and keeping them free from mud, furnished further subject for inquiry, and, the commissioners are compelled to add, for much conflicting opinion.

Of the plan before the commission a copy will be found inserted in the appendix, together with a statement of its objects and alleged advantages, drawn up by Mr. Page at our suggestion. As its features were comparatively new, and as we had not before us, as in the consideration of Mr. Walker's plan, a body of existing evidence to refer to, we were induced by these and the causes previously mentioned to examine Mr. Page at great length, and to enter minutely into detail on matters some of them exclusively technical in their character, and to which therefore it is scarcely necessary to refer in this report, except as to their relative importance to, and bearing upon the main subject of inquiry.

Looking to the principles which Mr. Page assumes as forming the basis of his plan, its consideration may be divided, as stated by himself, under three heads; viz.—

1. As any embankment constructed upon

these principles may affect the Thames as a navigable river.

2. As it may affect the wharfmasters and other proprietors on its banks; and

3. As it may improve the means of communication in the metropolis by opening new facilities for traffic, and for promoting generally the health and convenience of the public.

The first of these considerations opened of itself an extensive field of inquiry, and involved a class of interests not so much connected with the locality immediately concerned as with the Pool and lower portions of the river. We trust that the magnitude and importance of these interests have not been forgotten.

The abstraction of the tidal water from a river, wherever an embankment is projected upon its shores, and the prejudicial consequences necessarily arising from that abstraction, are topics upon which, of course, this commission can be competent to express an opinion only upon the evidence before it. The expediency of maintaining, if not increasing the volume of tidal water in the higher portions of the Thames, is stated by Mr. Page to have suggested a leading feature of his plan, and many of the letters and papers already referred to as inserted in the appendix to this report are addressed to this interesting but necessarily difficult branch of the inquiry. Of the soundness of the principle which it is the object of these papers to enforce, and looking to the embankment of the locality under consideration as part only of a larger system of improvement, which is at this moment professed to be in operation in various parts of the river, of its great practical value, we can entertain no doubt whatever; and, if the evidence before us is not altogether so concurrent as might have been desired as to its application to that particular locality, irrespective of other portions of the river, yet the very conflict of opinions has had its use in impressing upon us the necessity of caution.

The plan under consideration was, of course, open to little positive objection on this head. Captain Maughan, indeed, considered even Mr. Page's embankment as involving *prima facie* a violation of his own principle, inasmuch as it would displace by its own bulk a portion of that water, and, *pro tanto*, abstract it from the scour of the river below. In the letter, however, addressed by Captain Maughan to the chairman of the commission, he observes, that, assuming the water in the side channels "to pass in and out with the tide, Mr. Page's plan, compared with the other plans, would curtail in a lessened degree the tidal water; while one of his propositions being to remove the mud-banks and other inequalities of the river above low-water mark, it is probable that the cubic spaces so gained would equal those lost by the terraces, and that thus the river below would sustain no injury."

Its merits, therefore, are to be tested, in the first instance, with reference to the trade of the river shore. The principle objection to which it is obnoxious may perhaps be best stated in the words of Mr. Harvey, a general wharfing, in considerable trade, occupying the Grand Junction Wharf, Whitefriars:—"I consider that any obstruction, whether by wall or otherwise, which would prevent me from getting my barge into the stream, at any time while she was afloat, would be a disadvantage. The embankment itself would be an obstruction; wherever a barge lies now, whether we want to go up or down, we have only to put her astern and get into the stream. If there is a flood-gate, and we have to go out at one particular spot, we must accommodate the other craft, so as to come out at that particular place. At present it requires a good deal of contrivance to place a large barge alongside of our wharf; and, if the room were much lessened, it would be almost impracticable." To a question whether his objections were confined to the inconvenience of access, he replied, "The inconvenience of access is one point. Then it shortens my water-way. If the embankment take place outside what we consider our present water-way, I could not of course complain, except as to the impediment of access." Mr. Pocock, the owner of an extensive coal-wharf in the same neighbourhood, concurred in these objections of Mr. Harvey. The outer pile of Mr. Harvey's wharf was stated to be 160

feet—that of Mr. Pocock's wharf to be from 180 to 190 feet from the shore; the space assigned to these wharfs, upon Mr. Page's plan, was about 140 feet; the space usually granted by the city, according to Mr. Richard Lambert Jones, from 70 to 100 feet.

A further reference, however, to the evidence of Mr. Jones on this point may help to clear up much of this difficulty. In reference to Mr. Page's plan, he observes, "I dare say the coal merchants would say, at first starting, that there is not sufficient room for them; for I know enough of the applications by the various coal merchants to the corporation of London to put piles in, and to have what they called floating craft; but we never can confine them to that; though they may ask for one pile, they will carry it further out. We confine them that they shall not come out more than five or six craft into the river; and they will take the liberty of having seven or eight; that is, they make the warehouses for coals on the river, instead of having them on the land, as they are at Liverpool and other outports; it is the cheapest warehouse they can get."

Mr. Tayler, on the other hand, of the firm of Dalgleish and Tayler, coal merchants and general wharfingers in Scotland-yard, to a question as to the bearing of this plan of embankment on their interests as wharfingers, replied, "I should rather have the river (speaking of it as merely connected with our business) as it is. It would give us a great deal more trouble getting out and in of this dock; it would impede our business a little, but I think not to a material degree." These gentlemen are the occupiers of two wharfs adjoining to each other, at which the average number of these barges is about 30, the mooring room at one of them alone being sufficient for 53.

Of the professional opinions obtained by the commission upon this part of the question there were none addressed directly to the reasonable sufficiency of Mr. Page's inner water-way. No doubt, however, as to its sufficiency is expressed by these gentlemen in the discussion of any portions of Mr. Page's plan, or of the modifications of which it was represented to be susceptible; and the commission think it will be clear, from the general tenor of their evidence, that no such doubt was entertained.

The evidence of these gentlemen as to the merits of the plan under consideration, as it would affect the wharfingers and other proprietors on the bank of the river, involved questions of detail upon which it was necessarily difficult for the commission to obtain, or indeed for them to give, direct and unqualified answers. Having no personal interests to serve, the tendency of their evidence was rather to suggest alterations than to take objections, upon all the really practical parts of the inquiry. The reply of Captain Maughan to one of the questions affords an illustration of this statement:—"Mr. Page's plan," he observes, "admits of two modes of application, either with open entrances (or entrances open only during particular periods of the tide), or locks, which would make his side channels floating basins; but the object of it, I understand, is to leave the wharfs as they are at present, and otherwise to meet the exigencies of the trade, whichever mode of entrance may be more convenient;" and the bulk of the evidence on this point is accordingly associated with one or other of the modes of application above adverted to.

**FIRE-PROOF ARCHITECTURE, GLASTONBURY.**—The kitchen is a very curious example of domestic architecture, of comparatively recent date; the following story is told of its origin:—Henry VIII. one day said to the abbot, who had offended him, but professedly in reproof of the sensual indulgences which he appeared to believe disgraced the monastery, that he would burn the kitchen; upon which the abbot haughtily replied that he would build such a kitchen that not all the wood in the royal forest should be sufficient to carry the threat into execution; forthwith he built the existing structure.—*Knights' "Old England."*

The British Association for the Advancement of Science will assemble in York on the 26th, 27th, 28th, and 30th of September, and on the 1st and 2nd of October next.



# HEIGHTS ABOVE TRINITY DATUM BETWEEN BLACKFRIARS-BRIDGE AND WHITEHALL.

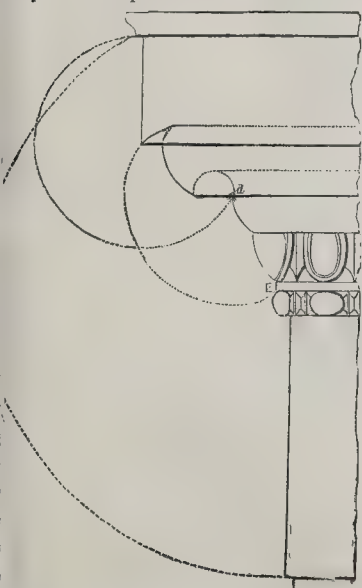
At the several Points undermentioned of the nearest line of Communication parallel with the River; including Chatham-place, Blackfriars, and the east end of Whitehall-place, at their respective junctions with the River: taken by direction of the Commission, July, 1843.

(From the Report of the Commissioners for the Improvement of the Metropolis.)

	Ft. In.
Chatham-place. Pavement at the top of the Bridge Stairs .....	16 8
Fleet-street. East end of. Centre of roadway .....	15 11
" Opposite St. Bride's Church .....	21 2
" " Crown-court .....	27 5
" " Water-lane .....	30 7
" " St. Dunstan's-court .....	34 1
" " Fetter-lane .....	38 4
" " St. Dunstan's Church .....	38 6
" " Chancery-lane .....	36 6
" " At Temple Bar .....	35 3
The Strand. St. Clement's Church (east end) .....	30 9
" Opposite Arundel-street .....	34 8
" " Norfolk-street .....	36 7
" " Surrey-street .....	37 2
" " Somerset House .....	39 3
" " Wellington-street .....	37 3
" " Exeter-street .....	36 7
" " Southampton-street .....	35 1
" " Agar-street .....	35 0
" " Hungerford Market .....	28 11
" " Morley's Hotel (west angle) .....	19 9
Statue of Charles the First .....	13 0
Whitehall, Opposite Craig's-court .....	6 2
" " Scotland-yard .....	4 5
Whitehall-place (west end) .....	4 8
Whitehall-place (east end) .....	5 10

## COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.—No. V.

To the note in which the symmetry of the ante-capital of the Parthenon Doric is touched upon, we might have added, "There is another and more general visual symmetry in the parts of this capital, arising from the abacus, and the mouldings beneath it being visually equal to the great face beneath them, as exhibited by the circular curve struck from the centre E. In this case the Greeks, who studied visual symmetry, have not taken into account the small ogee crowning the abacus, as the shade-line beneath it forms to the eye the visible line of partition, and the enriched bead which is separated from the enriched echinus by a very broad sunk fillet, is added to the lower portion and discarded from the upper part of the capital.



If the small crowning abacus had been carved with enrichment, it would, by its shades, have been distinctly visible, and would have been taken into the admeasurement with the

abacus and other mouldings. If also the enriched bead had been intended to be so included with the other mouldings, there would have been no deep, wide, shady division between it and the enriched echinus.—Ed.

ARCHITECT.—Preferring generally to illustrate in the words of others rather than in my own, the meaning of terms selected by me, I do not think that I can choose better for the readers of THE BUILDER than the following passage from "Three Lectures on Architecture in England," by the Rev. Henry Rose, rector of Brington, a little work full of sound sense and judicious observations.

"The word architect is of Greek derivation, and is compounded of two Greek words, *ἀρχός*, chief, and *τέκτων*, artificer or workman; the word *ἀρχιτέκτων*, therefore, signifies a chief or head workman in any kind of art; but by custom it has long since been referred to the art of building only, perhaps ever since it has been anglicized into the word architect, and adopted into our language. The original word occurs once, and only once, in the Greek text of the New Testament,\* where the translators have very properly rendered it by the corresponding compound English word master-builder; I say properly, because it is quite clear from the context, that no other art but that of building can be alluded to in that passage. Perhaps the word architect was not then in use, and to have translated the word *ἀρχιτέκτων* only into architect would have been no translation at all, at least to the unlearned.

In all other passages in Scripture in which allusion is made to builders and building, another word is used which has only that one meaning. Let it be remembered then that the word architect literally signifies, not merely an artificer of any kind, but a chief, head, or master artificer, i.e. one who is a perfect master of his art whatever it may be, one who is not employed in the mechanical part of his calling, but who is so much the head over others employed in the same as to furnish designs and superintend their execution. If, then, the word architect be referred to the art of building only, it must mean a master-builder, one who is master of the art of building, and not a builder only, so that every builder is not an architect; and as architecture is the work of an architect, every building is not necessarily architecture; indeed, nothing deserves this honourable appellation but what is really good, i.e. the production of one who is a master of the art. This distinction between architecture and building should never be lost sight of; that it has been is the great misfortune of this building-age, wherein many builders have imagined themselves to be architects, and have been employed in that capacity, and architects have too frequently been occupied in the lower walks of the art, instead of confining themselves to their peculiar province—design.† Builders and architects should go hand in hand, but never encroach on each other's provinces. A builder should direct the construction of the edifice, he should take care that the foundations are sufficient to support the walls intended to be raised upon them, and the walls again should be able to sustain the roof, and resist the outward thrust; he should take care that the whole edifice is fitly framed together, and sound in every part. But the architect has a much higher path to pursue, his work is something over and above this, which is the mechanical part of his profession; he has to design and plan, he has to consider dimensions, proportions, decorations; he aims to produce some appropriate effect, for architecture is quite capable of this, and is found to affect the imagination much in the same way as poetry, sculpture, painting, do, and as music also does.\*\*

\* "According to the grace of God which is given unto me, as a wise master-builder, I have laid the foundation, and another buildeth thereon."—1 Corinthians, iii. 10.

† Would that this profound truth were impressed on the hearts of our builders with the weight it deserves! We should not then see the dreadful things which are daily passed off under the much-abused title of architecture.

‡ [The usual English denomination of an architect at the time of the translation of the Bible seems to have been "deviser of buildings."—Ed.]

\*\* [This gentleman seems to have fallen into the mistake common to many unprofessional, and to some professional, persons, of imagining that it is not the architect's business to provide for every thing the most minute with regard to the foundation and every other part of the construction of an

To the above definition, the more valuable as coming from an unprofessional person, a few illustrations may be permitted from one who is in the profession, to which he feels it an honour to belong,—a profession which he entered, not with a view to sordid gain or perishable reward, but with an onward gaze to that enduring fame which attends a zealous endeavour to uphold the character of the profession as an artist and a gentleman. And, first, it may seem strange that it should be thought necessary to lay down the pronunciation of the word; but the writer has heard, as doubtless many have, persons, who although not classically educated would yet be considered as far from illiterate, pronounce the first syllable of the word as in arch-bishop.

In ancient times it would appear that less distinctions existed between the terms applied to the liberal professions and the mechanical arts (as we now consider them), than are given by us, and that a term was used for the architect or designer not very unlike that given to the workman or artisan. Thus in Lucian the Greek word *banaiskos*, mechanic, was applied not less to Phidias or Polykleitos than to the common mason; and so also Plutarch, in his life of Pericles, classes together a number of arts, with no distinction between the liberal professions and the mechanical arts. In Homer architects are only called *τέκτονες*, workmen, whilst Plato terms them *ἀρχιτέκτονες*, or chief workmen, and Thucydides gives them a similar appellation, *τεκτονῶν*, which is only reversing Plato's expression, and Xenophon calls them *phil-oiko-domoi*, which may be rendered friends of house-building. But although in the democratic states of Greece few distinctions were allowed but such as grew out of political or military employments, yet we have abundant proofs that architects who distinguished themselves by their genius and skill were honoured in the estimation of their countrymen, as was Byzes, of Naxos, to whom a statue was voted for his invention of a peculiar kind of roof; and Plato tells us that the pay of an architect was from 22 to 26 times that of a common builder. In Holy Writ we find honourable mention of two persons who are expressly styled "architects" by Josephus, viz. Bezaleel and Aholiab, men chosen of illustrious lineage, the latter being of the tribe of Dan, and the former the grandson of Miriam, the prophetess, which fact we learn from Josephus (Antiq. B. iii., c. 6, s. 1), who expressly states that she was the wife of Hur, who is recorded in Exodus as the grandfather of Bezaleel (ch. xxxi. v. 2). We find the Almighty himself vouchsafing to declare of Bezaleel, "I have filled him with the spirit of God, in wisdom, and in understanding, and in knowledge, and in all manner of workmanship, to devise cunning works, to work in gold, and in silver, and in brass, and in cutting of stones to set them, and in carving of timber, to work in all manner of workmanship." (v. 3, 4, 5.) Should it not, therefore, be a warning to architects of all times that nothing sordid, or mean, or selfish, should be allowed to belong to that profession which the Great Designer of all things thus honoured with his especial favour in the persons of Bezaleel and Aholiab?

The vast and varied amount of knowledge which was expected in an architect proves the estimation in which the profession was held by the ancients. Pythius, the famous architect of the Ionic temple of Minerva, Polias, at Priene, who, in the time of Alexander the Great, wrote a treatise on Architecture, required therein that an architect should possess

edifice. From the minds of men having been overtaken with this fatal error, have arisen in modern times the many failures in construction and the many failures in taste; thence so many modern works of so-called tasteful architecture are now being lashed by Welby Pugin with severity of criticism, because they violate structural principles, though no one has ever departed more widely than himself from the great Free-masonic structural truths, which threw a halo of wisdom over the works of the middle-ages. It will be our duty, at no great length of time hereafter, to separate the wheat from the chaff, the mushroom from the wheat, the solid from the hollow, the philosophical from the ignorant, the historical from the false, the doctrinal from the dogmatical, grouped in so motley a way in the unhappy works of that unhappy author, who has not written a single page which, if he could become a man of deep study, he would not suppress at any cost.—Ed.]



a more profound knowledge of each particular science than was necessary for a man who only exercised one of those sciences. It is not surprising, therefore, that Plato declared it to be a rarity to find a good architect in Greece. Vitruvius, however, in quoting this assertion, observes with great justness, that "It is even rare, in the course of a century, to find a man superlatively excellent in any profession; why then is it expected that an architect should equal Apelles in painting, Myron and Polyctetus in sculpture, Hippocrates in medicine, Aristoxenus in music, or Aristarchus in purity of language?"

Vitruvius, with that more moderate view which is taken in modern days, adds, "If an architect be sufficiently master in all the arts connected with his profession, to judge perfectly of the merit of their productions, it is the most that should be insisted upon."

Again, we learn from Cassiodorus, who gives a letter from the Emperor Theodosius addressed to his architect, Symmachus, on the proposed erection of a splendid palace, how much was looked for in an architect, and also the respect in which he was held by the great and powerful. "What employment more honourable, what function more glorious, than this which places you within the reach of transmitting to the most distant ages edifices which will ensure you the admiration of posterity! For you are required to direct the mason, sculptor of marble, founder of bronze, workmen in stucco and plaster, and painter in mosaic. You are required to teach them that of which they are ignorant, and to resolve the difficulties which this army of men who work under your guidance propose to you, and who are to have recourse to your enlightened judgment. Behold, then, how much knowledge he ought to have who has so many to instruct. But you will also gather the fruits of their labours; and the success of their works, which you shall have well conducted, will make your eulogy, and will become your most flattering recompense. For this reason we wish, whatever you may be charged to build, be done with so much intelligence and solidity, that only in the freshness of their date may the new differ from the ancient erections. That will be possible to you, if a base cupidity never incline you to deprive the workmen of a part of our bounty. It is easy to make yourself obeyed if they receive an honest and competent salary, without fraud or reserve. A generous hand animates the genius of the arts; and all the ardour of the artist is directed to his work, when he is not distracted by care for a subsistence. Further, consider what the distinctions are with which you are decorated: you walk immediately before our person, in the midst of a numerous retinue, having the golden rod in hand, a prerogative which, by your approaching so near to us, announces that it is to you that we have confided the execution of our palace."

Vitruvius among ancient writers, and of moderns, Alberti, Vasari, Chambers, Laugier, and many other excellent authors, have dwelt largely on the qualifications required in architects, and not only in the intellectual endowments, but on the moral qualities in which they should abound: and, as it might be expected, honour and probity rank foremost in the catalogue. Vitruvius says that an architect ought to be a model for all virtues, and that honour and not sordid interest should be the object of his proceedings. Laugier observes that when an architect suffers the desire to enrich himself to prevail, all sentiments of honour are perverted. And one of our latest writers has wisely said, "Good architecture can alone result from mutual confidence;—confidence on the part of the patron that he is employing a man of skill and integrity, who, he is sure, will be of benefit to him; and confidence on the part of the professor, that his pains, judgment, and labour will be appreciated according to their worth and honesty: architecture so practised is above most arts and professions; practised otherwise, it becomes the most injurious, the most extravagant, and the lowest of trades." (Specifications for Practical Architecture, by A. Bartholomew, architect: a work which, notwithstanding that the title is somewhat discouraging to unprofessional readers, contains in its first portions most excellent matter of general interest on the past and present state, and future

prospects, of architecture; and it is only necessary, in support of this opinion, to quote the words of the best living judge of such matters—"This is one of the most valuable works to the English practical architect that has ever appeared."—Gwilt's Encyc.)

The word is very similar in many languages; *architector* and *architectus* in Latin, *architecte* in French, and *architetto* in Italian, all derived from the Greek. In the German, the word used is *ban-meister*, which we may clearly trace to the Greek *baueuog*, *banauos*, a mechanic or artificer, and *μητρος*, whence our master; the German term, therefore, has the same meaning as architect in the New Testament, where it is translated as master-builder. The word has been well rendered *chief constructor* by Mr. Bartholomew in the work alluded to above. G. R. F.

#### THE EGYPTIAN-HALL, MANSION-HOUSE.

THE splendid banquetting-room at the Mansion-house, known as the Egyptian-hall, has recently been repaired and decorated. The walls and ceilings are finished off in a delicate fawn colour, the chasteness of which is considerably heightened by being what is technically called flatted, which, by preventing the disagreeable appearance of gloss adds much to the purity of the style and colour. Various ornaments and decorations attached to the walls and ceilings, as also the statues occupying the series of niches on that side of the hall which is opposite the grand entrance, are picked out in a suitable tint, to afford a relief to the general colour. The most striking alteration that has been made is in the appearance of the double row of lofty columns and pilasters which extend from one end of the hall to the other, and the entablature and curved roof by which they are surmounted. The length of the hall being about 90 feet, and its breadth 60, there are 10 of those columns and pilasters on each side, standing out about 10 feet from the walls. The whole of the shafts have been recut and the arisies of the fillets and sweep of the flutes made perfectly true, thus removing many blemishes and irregularities which before disfigured them. Instead of their former colour, which was an imitation of Sienna marble, they are now painted French white, a change which contributes wonderfully to the improvement of the general aspect of the room; while the effect of this delicate colour is considerably heightened by the whole of the fillets of the shafts, together with the fillets and smaller toruses in the basis and the capitals of the columns and pilasters, being gilt in pure gold. The several enriched members in the entablature, and particularly the cornice, with the enrichments on the modillions, and rosettes on the soffites, have also, for the first time, been heightened up in gold, and now present a peculiarly elegant appearance. The concave ceiling, which extends the whole length of the hall and across from one row of columns to the other, is divided into 45 square compartments, or coffers, each containing a large rosette. In each of these coffers there has been added an enriched moulding of egg and tongue, corresponding in form and pattern with a similar ornament in the entablature; besides which, there has been placed along the centre of the margins dividing the coffers bold wreaths composed of the laurel leaf, with bands at their intersections. These additional ornaments have entirely relieved the ceiling of the plainness which formerly characterized it, and, together with rosettes, being all heightened in gold, make it harmonize with the colouring and enrichments of the entablature and columns. The whole of the works have been executed according to designs and specifications prepared by Mr. Bunning, the present architect and surveyor of the corporation. The contractor was Mr. Taylor, who during the last mayoralty fulfilled a contract admirably for extensive repairs and decorations in other parts of the Mansion-house. The amount of the late contract was merely 1,400*l.*, and, notwithstanding the extent and variety of the works, the amount has not been exceeded by the addition of the slightest sum for "extras," a circumstance which speaks much for the professional accuracy and judgment of the gentleman who designed and executed them.—*Times*.

#### RAILWAY INTELLIGENCE.

**Croydon Railway.**—Opening of the *Bricklayers' Arms Station*.—This morning, May 1, the terminus was opened, despite the lamentable accident which happened so recently. Every thing is again restored, and the greatest pains have been taken to render safety doubly secure by cross braces and struts to the roofs, &c. The whole of the platforms, passages, and waiting-rooms, to the extent of at least 40,000 feet, have been laid by the Seyssel Asphalte Company, and present a remarkably even surface, and is indeed so close a resemblance to a light-coloured slate, that until the spectator's attention is drawn to the tablets inserted here and there in the asphalt, he is left in surprise as to the manner by which so large a surface could be so uniformly laid down. There is also the flat roof of the colonnade, laid with the same material in lieu of lead. It contains five thousand feet, and is free from those rolls which are necessary to secure the joints of that metal. The façade of the terminus is a very novel one, and reflects great credit upon Mr. Lewis Cubitt, the architect, and the whole of the works, which have been entrusted to Messrs. Grissell and Peto, are finished in the best possible manner.—*Railway Times*.

**Branch Railway to Worcester.**—A communication has been received by M. Pierpoint, Esq., from the office of the Lords of the Committee of Privy Council for Trade, fixing by their award in writing that the terminus of a branch line of railway to connect the city of Worcester with the main line of the Birmingham and Gloucester Railway shall be in the angular spot of ground to the westward of the Bath road, where the Albion Inn is now situated; from whence the Branch line shall pass to the westward of the said road, and cross over it by a bridge near Duckbrook. Another branch diverging from the main branch is to be carried so as to communicate with the Severn to the southward of the canal basins. The branch is to pass entirely to the southward of Mr. Berkeley's property, unless the company can obtain the consent of that gentleman to allow it to pass through any part thereof; and the junction with the main line is to be to the southward of the Spetchley station, but as near to it as is consistent with the proviso respecting Mr. Berkeley's property.—*Worcester Journal*.

**Aberdeen Railway.**—All differences being adjusted by the rival projectors, a prospectus has been by them jointly issued. From this we learn that the total length of the line is to be 66 miles, including branches. Commencing at the harbour and wet docks in the centre of Aberdeen, it proceeds by the villages of Cove, Portlethen, Skateraw, and others, to the county town of Stonehaven; thence through the fertile district of the Mearns, near to the villages of Drumlithie, Auchinblae, and Laurencekirk, by Marykirk, to Brechin, and having a branch to the docks at Montrose. From Brechin it is proposed that the line shall be continued to Frickheim on the one hand, forming there a junction with the railways already finished to Arbroath and Dundee, and the Edinburgh and Northern, through Fife; and, on the other hand, to be continued to Forfar, where it will meet the Northern Junction Railway from Perth, through Strathmore, thus connecting it with the Scottish central line.

**Railway to Dorchester.**—A meeting on the subject of forming a railway between this town and Dorchester is to take place at Matcham's Royal Hotel on Thursday next. The proposed plan will take in the towns of Poole and Weymouth, bringing them into immediate communication with Dorchester and Southampton. At the same time the Salisbury branch will be within about eight miles. It is the intention at present to make the terminus at Hill. Mr. Brunel is likely to be the engineer.—*Salisbury Journal*.

**Taff Vale Railway.**—On Thursday week the Branch Railway from the Lantwit Colliery, projected and completed by Thomas Powell, Esq., to the main line of the Taff Vale Railway at Merthyr, was opened. The occasion was one of great rejoicing along the line, flags and banners placed at intervals greeted the engine on its way, and with the roar of small artillery welcomed this new acquisition to the Taff Vale Railway.



The Great Western Railway Company propose making a railway from Thingley, near Corsham, through Melksham (with a branch to Devizes) to Staverton factory, Trowbridge and Bradford, thence to Dilton's Marsh and Westbury to Warminster (with a branch to Frome), and through Heytesbury and other places to Salisbury.

A petition to the House of Commons against the passing of the Newbury and Basingstoke Branch Railway Bill, now before Parliament, is in the course of signature in Newbury and the neighbourhood.

## Correspondence.

### "GREAT BRITAIN" STEAM-SHIP.

SIR,—In consequence of the blunder of the sapient builders of the above "gem of the sea" (which, as all gems should be, is safely *boord* up), owing to the want of foresight, or perhaps, boy-like, "having an eye bigger than the belly," such is the fate of this splendid specimen of naval architecture, which has been honoured by his Royal Highness Prince Albert's admiration and approval. The above Goliath of the sea rests in the basin of the Bristol float, where its exit is denied in the eleventh hour by its bulk, being far beyond the embouchure, as will be seen by the following dimensions, which may for accuracy be relied upon.

Draft of water	ft. ins.
Breadth at the line of floatation	43 5
Breadth of the lock on the water-line	44 34
Breadth of ship 5 feet above water-line	43 8
Breadth of lock at coping 7 feet above water-line	44 104

The computed weight of the ship is 1,000 tons, and the height required to be lifted from 44 to 5 feet; even then the coping-stones must be removed. The widening of the lock would cost about 10,000*l.*, the expense of which the Bristol Dock Company will not incur, and it is currently reported the Great Western Steam Navigation Company have not the means. By the above statement the ship is 3 ft. 104 ins. wider than the lock. To obviate this great error, why not have recourse to the plan of raising vessels by the air-tight flexible cases (Austin's patent), exceeding in power 1,400 tons, under her bottom from end to end, and thereby securely lifting her without the least straining or injuring the vessel? I have been an eye-witness of their capability on other vessels.

I am, Sir, &c. VULCAN.

### ALTERATIONS AT THE CARLTON CLUB-HOUSE.

SIR,—Your correspondent in last week's *BUILDER* has not mentioned that out of the number of architects who were invited to send designs for altering the Carlton Club, a very large number, including most of those whose names are familiar to the public, declined the invitation, so that the competition, whether of merit or of interest, lies, in reality, among some four or five of them.

A select trio constitute the committee to decide, and the name of one of these is, at any rate, well known in matters of taste connected with architectural pursuits.

A great increase in all respects on the present dimensions of the building, so as to render it a worthy neighbour to its great political opponent, seems to be a very main feature in the conditions imposed; and we may hope that no parsimonious restriction of funds will cramp the abilities of the architect (whoever may be chosen for that office), as was the case with the present building, now about to be "reformed." Your obedient servant,

May 6th, 1844. X.

SIR,—In continuance of the information sent you last week relative to this competition, I have to inform you, for insertion in *THE BUILDER*, that designs were sent in by the following eminent architects:—

Mr. Sydney Smirke, Berkeley-square.  
Mr. Bascvi, Saville-row.  
Messrs. Lee and Bury, Golden-square.  
Mr. Railton, Carlton-chambers.  
Mr. Salvin, Saville-row.  
Mr. Hopper, Connaught-terrace.

The other architects written to declined sending in designs for various reasons.

The committee are now investigating the designs, to enable them to draw up a recommendationary report for presentation to the gene-

ral meeting of the club next week, when it is presumed some decision will be made; in the interim the drawings are open for the inspection of the members from 2 until 6 o'clock every day.

After the decision of the club, I will endeavour to send you a slight description of the several designs.

I am, Sir, your obedient servant,

A SUBSCRIBER FROM THE FIRST.

### VENTILATION OF CHURCHES.

SIR,—I am glad that you have alluded to the "Bad Ventilation" of Churches, for I am sure that they would be more frequented but for their too often tainted atmosphere, not to mention that hebetude of mind which your extract from Dr. Reid's work on Ventilation has so well pointed out; the drowsiness and sleep which we have all so often experienced, when listening even to a short and good sermon, is no doubt owing to our brains being supplied with blood in an insufficiently purified state.

The same want of ventilation is but too common in our houses, especially in summer, when the currents produced by fires no longer ventilate them; and when it is customary with our good (?) housewives to stop up the chimneys even of bed-rooms, and the chambers of the sick, though a fire, on the contrary, would be there serviceable.

Indeed, John Bull has yet to learn that fresh air is a pabulum of life more necessary than food; and trusting, therefore, that this subject will be again adverted to in your pages, I will no further now intrude on them by denouncing as very badly ventilated the church at Axminster, in Devonshire; where, one day last summer, it gave me pain to see so many around me, who, to my medical eye, appeared to be on the verge of apoplexy.

Yours, &c.,

PLANTAGENET.

SIR,—Will you be so kind as to inform me through your paper who was the architect of St. Paul's Church, Wilton-place, and where the hat-pegs there used are to be purchased? I should also esteem it a favour if you would inform me what is the proper name for the room situated between the shop and what would in any other house be called the first-floor; examples of the above may be seen over the shops of the Regent-circus, at Piccadilly, also over Messrs. Fortnum and Mason's shop, in Piccadilly, and also at the Athenæum Club, at the corner of Pall Mall and Waterloo-place; by answering the above you will confer a favour on

Your humble servant,

A SUBSCRIBER.

[The architect is Mr. Cundy. We cannot ourselves give the information required relative to the hat-pegs. The English name for the place mentioned by our correspondent is "half-story," but the terms most frequently used are the Italian one, "*mezzanine*," which means the same thing, and the French one "*entre-sol*." Intermediate rooms of this denomination ought never to be used except where some small apartments, requiring only a moderate altitude, are on the same story with very lofty ones. The schemes resorted to for lighting such apartments, when they appear in classical architecture, are mostly ruinous to the good aspect of a design.—Ed.]

### ROOFING OF THE HOUSES OF PARLIAMENT.

SIR,—Can you, or any of your correspondents, describe by drawing, if possible, the iron roofing of the Houses of Parliament, and the manner in which the galvanized plates are applied for covering, and the probable cost thereof? this information would much oblige

Cheltenham, May 6. A SUBSCRIBER.

### GOVERNMENT TRIGONOMETRICAL SURVEY.

—WORKSHOP.—On Prospect Hill, about one mile from Workshop, on the Doncaster Road, an observatory from 45 to 50 feet high, constructed of larch poles, has recently been erected by the officers and surveyors engaged on the Trigonometrical Survey of the Northern Counties of England. The object is to obtain a sight of Sutton-in-Ashfield, near Mansfield, where an erection of the same description has recently been constructed, also to complete a number of lines running into Lincolnshire and other places.

## Miscellaneous.

**CAST-IRON LIGHTHOUSE.**—The attention of the curious for some time past has been directed to an immense iron building which, for the last two or three months, has been progressing at the establishment of Messrs. Cottam and Hallen, ironfounders, of the Cornwall-road, Lambeth. It is to be a light-house made entirely of cast-iron, one of the first that has ever been constructed. It is composed of 130 iron plates averaging 8 feet by 6, and an inch and a quarter thick. These plates, ten of which make a circumference, are connected together by wrought-iron bolts, screws, and sheet-iron, the interstices being filled up with cement. Its diameter at the base is 24 feet, gradually decreasing to a width of 14 at the top, where it is surmounted by a gallery 20 feet wide, which is encircled by iron railings 4 feet high. In the centre of this gallery is the lantern, surmounted by a cone 8 feet high, and which is also made of cast-iron. Its total altitude is 137 feet. The top of the building is gained by a staircase of iron fixed to the sides. The structure is divided into nine chambers, the floors and ceilings of which are made of sheet-iron fastened to the sides, and to a cast-iron pillar which goes to the top of the building. It is lighted by windows 18 inches square, and glazed with strong plate-glass. Its total weight is about 300 tons. It is to be fixed on one of the Bermuda islands, on a rock 250 feet high, consequently its total height from the sea to the top of the lantern will be 387 feet. Such a building as this has been for a long time a great desideratum in these islands, for during the winter, which begins in November and ends in April, these islands are subject to severe north-west gales, which frequently dismast ships crossing these latitudes; indeed, there is scarcely a winter passes without 18 or 20 vessels being driven in by stress of weather, or forced on the rocks, which run out many miles to north and north-west.

**BURIED TREASURE.**—In a field at Croal-chapel, near Closeburn limekilns, while a man named Wightman was engaged in ploughing a piece of ground, which, till last year, had not been previously turned up, having formed part of Barnmoor Wood, he came upon a large number of old silver coins, of Edward I. of England, and of the Roberts and Davids of Scotland. It was considered that not fewer than 10,000 pieces were found. The discoverer of the treasure, however, was not sufficiently selfish to conceal his prize; but having given notice of the circumstance to some of his neighbours, crowds immediately assembled, of men, women, and children, from all parts of the neighbourhood, and numbers of the thrifty housewives were seen literally carrying away the money in lapfuls.—*Dumfries Standard*.

**ROMAN COINS FOUND AT RAYNE.**—Mr. Goss lately found on his premises at Rayne the following Roman coins:—A Vespasian, small silver; a Trajan, ditto; ditto, large brass; an Antoninus, small silver; one, ditto, illegible; a fragment, ditto, ditto; a Julia, small plated; two others, ditto, illegible; two others, large brass, ditto.—The most recent would appear to be that of Antoninus, who died A.D. 202, so that probably these coins have lain in the earth upwards of 1,600 years.—*Chelmsford Chronicle*.

The foundation-stone of a new church for the townships of Great Wyley and Cheslyn Hay, in the parish of Cannock, was laid on Tuesday week. The ceremony was performed by the Rev. W. Gresley, Frebendary of Lichfield, in the presence of several of the neighbouring clergy and gentry, and a large concourse of spectators. The church will be built entirely of stone, in the early English style, leaving the tower and south aisle to be erected at some future period.

**NATIONAL SCHOOLS, SUTTON-IN-ASHFIELD.**—His Grace the Duke of Portland has subscribed the sum of one hundred pounds to the fund for the erection of national schools in this populous place.

The Marquis of Abercorn has granted an appropriate site to Mr. Colquhoun, the engineer, for gas works, in order that the town of Strabane may be lighted with gas; and his lordship has also given an annual donation towards the expense.



**PHENOMENA OF SOUND.**—Many remarkable sounds in nature are produced by repeated reflection from surfaces. In some situations the sound of a cascade is concentrated by the surface of a neighbouring cave, so that a person accidentally entering it is startled at the uproar. In the gardens of Les Rochas, once the well-known residence of Madame de Sevigné, is a remarkable echo, which illustrates finely the conducting and reverberating power of a flat surface. The Chateau des Rochas is situated not far from the interesting and ancient town of Vitre. A broad gravel walk on a dead flat conducts through the garden to the house. In the centre of this, on a particular spot, the listener is placed at the distance of about ten or twelve yards from another person, who, similarly placed, addresses him in a low and, in the common acceptance of the term, *inaudible* whisper, when "Lo! what myriads rise!" for immediately, from thousands and tens of thousands of invisible tongues starting from the earth beneath, or as if every pebble were gifted with powers of speech, the sentence is repeated with a slight hissing sound, not unlike the whirling of small shot passing through the air. On removing from this spot, however trifling the distance, the intensity of the repetition is sensibly diminished, and within a few feet ceases to be heard. Under the idea that the ground was hollow beneath, the soil has been dug up to a considerable depth, but without discovering any clue to the solution of the mystery. On looking round for any external cause, the observer who has supplied this description, says, "I felt inclined to attribute the phenomenon to the reflecting powers of a semicircular low garden wall, a few yards in the rear of the listener, and in front of the speaker, although there was no apparent connection between the transmission of sound from the gravel walk and this wall. The gardener, however, to whom I suggested this, assured me that I was wrong, since within his memory the wall had been taken down and rebuilt, and that in the interim there was no perceptible alteration in the unaccountable evolution of these singular sounds."

**YORK.—THE GREAT CLOCK BELL.**—A second meeting of the churchwardens of the several parishes in York was held at St. Peter's School Room, on Wednesday evening week. It was stated by W. Oldfield, Esq., who occupied the chair, that the two gas companies had expressed their readiness to contribute to the fund, and that the sum which they intended each to give was ten guineas. Mr. John Robinson, of Stonegate, read a letter which he had received from J. B. Rudd, Esq., of Guisbro', in which that gentleman intimated his intention of subscribing 5*l.* in case the weight of the bell should not be less than eight tons, and 1*l.* for every additional cwt. which the bell shall weigh above eight tons. Mr. Rudd also suggested that the question as to the name of the bell should be at once settled by calling it "St. Peter," after the minister. Mr. White suggested the propriety of steps being taken to secure an arrangement for the bell, when erected, being thrown open to the inspection of the public, free of expense. There was a strong feeling on this subject, and he felt sure that many persons would be deterred from subscribing, if they thought that the bell was to be shut up and inaccessible, except by payment of fees to the vergers at the cathedral. The meeting adjourned.

**MOZART'S MONUMENT.**—A Vienna journal mentions a circumstance which reflects great honour on the celebrated singer, Madame Hasselt Barth. That lady has recently erected, at her own expense, a monument over the too long neglected grave of Mozart. On a table of grey marble are inscribed, in letters of gold, "Jung, gross, spat, erkannt, nie erreicht," (young, great, late acknowledged, never equalled). This inscription, briefly characterising the talent of Mozart, is surmounted by a medallion head of the great composer. It may be mentioned that the hitherto unauthenticated dates of Mozart's death and burial are now verified beyond doubt. The uncertainty which prevailed respecting the place of his interment is now also removed. His grave was supposed to be in the Matzleindorfer churchyard; but it is now certain that his ashes repose in the St. Marxer burial-place.—*Foreign Quarterly Review.*

### Tenders.

**TENDERS delivered for new Schools in Bunhill-row.**—J. Griffith, Esq., Architect. May 3.

Curtis .....	£1,470
Piper .....	1,451
Grimsdell .....	1,427
Ward .....	1,423
Lee .....	1,389
Haines and Co. ....	1,364

**TENDERS delivered to the Town Council of Northampton, on Tuesday, April 30, for building a new Town Gaol:—**

Wilson (Birmingham) .....	£14,300
Ireson (Northampton) .....	14,200
Masters and Mott (ditto) .....	13,975
Kirk (Sleaford) .....	13,540
Wykes (Leicester) .....	13,518

**TENDERS delivered for the erection of warehouses, Friday-street, City, the 9th inst., at 11 o'clock in the forenoon.**

Mansfield .....	£17,950
Lee .....	17,650
Bridger .....	17,525
Cubitt .....	17,480
Nicholson .....	17,390
Baker .....	17,373
Jackson .....	17,307
Winsland .....	17,147
Piper .....	16,987
Webb .....	16,860
Lawrence .....	16,687
Grissell .....	16,598
Burton .....	16,515
Grimsdale .....	16,390

### Current Prices of Metals.

May 7, 1844.

	£.	s.	d.	£.	s.	d.
SPELTER.—Foreign ton ..	0	0	0	23	0	0
" For delivery ..	21	15	0	22	0	0
ZINC.—English sheet ....	0	0	0	30	0	0
QUICKSILVER .....	per lb.	0	4	6		
IRON.—English bar, &c. ....	per ton	6	10	0		
" Nail rods .....	0	0	0	7	0	0
" Hoops .....	8	0	0	8	10	0
" Sheets .....	9	5	0	9	10	0
" Cargo in Wales .....	0	0	0	5	15	0
" Pig, No. 1, Wales .....	4	0	0	4	5	0
" No. 1, Clyde .....	3	8	0	3	10	0
" For., Swedish .....	0	0	0	10	10	0
" Russian, COND. ....				16	10	0
STEEL.—Swedish keg, p. ton ..	0	0	0	19	0	0
" " Faggot .....	0	0	0	19	10	0
COPPER.—English sheathing, per lb. ....	0	0	0	9	½	
" Old .....	ditto.	0	0	8	½	
" Cake p. ton .....	0	0	0	83	0	0
" Tile .....	0	0	0	82	0	0
" S. American .....	75	0	0	76	0	0
TIN.—English, blocks, &c. cwt. ....				3	13	0
" bars .....	0	0	0	3	14	6
" Foreign, Banca .....	0	0	0	3	8	0
" Straits .....	0	0	0	3	4	0
" Peruvian .....	0	0	0	3	0	0
Tin plates, No. 10, p. box ..	1	8	0	1	12	0
" No. 12 .....	1	14	0	1	18	0
" wasters 3s. p. box less ..						
LEAD.—Sheet milled .....	per ton	17	15	0		
" Shot, patent .....	0	0	0	19	15	0
" Red .....				21	10	0
" White .....				23	10	0
PIG-LEAD.—English .....	0	0	0	17	0	0
" Spanish .....	0	0	0	16	10	0
" American .....	0	0	0	16	5	0

**SHORT AND MAHONY, Brokers,**  
1, Newmarket-court, Cornhill.

### ERRATA.

Page 224, col. 3, line 42 from bottom, for "Warwick" read "Norwich."  
Page 229, col. 3, line 35, for "remains" read "remain."

### TO OUR CORRESPONDENTS.

We have transmitted to the patentees for explanation the letter of our Newcastle correspondent. We have only stated the endeavour. The cost will be given best by the makers, who, we hope, will satisfy our correspondent.

Our correspondent who wishes to shade the base of a column, correctly, will find it quite a mathematical affair, and not one of guess. The forms of all shadows depend upon the shapes of the objects intercepting light and of those receiving it. We refer our correspondent to Goult's and Nicholson's works, and to the study of nature, whose parallel rays are partly ousted by one object, and partly received by another, hence shadows of particular forms are said to fall, though the proper phrase would be to say "they are left."

We are requested to state that Messrs. Burton's estimate for the repair of Sadlers' Hall was 427*l.* and not 534*l.*

It would be impossible for our engraver to execute properly the architectural details of the Tipperary Church from the sketches sent to us, they not being made out with sufficient exactness.

Bishop Ridley's Seal by all means.

We are unable this week to answer our other correspondents, and have, through want of space, reluctantly been compelled to omit several valuable articles which are set up ready for insertion.

### NOTICES OF CONTRACTS.

For painting Bramtree Union Workhouse.—Mr. Poole, Workhouse. May 13.

For the works required at Mutford Bridge.—Plans, &c., Mr. George Thompson, County Surveyor; J. H. Borton, Bury St. Edmunds. May 15.

For building and finishing Hotel opposite Railway Station, Nottingham.—Plans, &c., Mr. Winter, Surveyor. May 15.

For re-building the Western Pier of the Humber Dock Basin, and the removal of the present Pier included, or to be provided for in a separate tender, as may be most convenient.—Secretary to the Dock Company at Kingston-upon-Hull. Plans, &c., at Mr. Michael Lane's, Engineer, Castle-street, Hull. May 20.

For making a plan and taking levels of all the drains in the town of Kingston-upon-Hull, and the Lordship of Myton.—Further particulars of Mr. R. Witty, Surveyor, 11, Sykes-street, Hull. May 22.

For erecting a bridge over the Waveney, between Diss and Stoston.—Plans, &c., from 1st to 8th inst., at Mr. Farrow's, Diss; from 8th to 15th at Suffolk Hotel, Ipswich; and from 15th to 22nd at Royal Hotel, Norwich; Clara Algar, Secretary, Auctioneer and Land Surveyor, Diss. May 23.

For the erection of an Iron Bridge of one arch, of one hundred and ten feet span, intended to be built over the river Avon, at Bath.—P. George, Esq., Town Clerk, Bath.—Drawings, &c., at G. P. Manners, Esq., Architect, No. 1, Oxford-row, Bath. May 31.

For enlarging, straightening, and improving the course of the rivers Devon and Smite, and the Cardyke, in the parishes of Hawton, Farndon, &c. &c., in the counties of Nottingham and Leicester, and for the erection of, building, enlarging, &c., the several bridges connected with the above works.—Specifications, &c., Mr. Talents, Newark. June 1.

For the executing of certain works for the improvement of Aberdeen Harbour.—Plans, &c., Mr. Abernethy, 69, Waterloo-quay, Aberdeen. June 20.

### PREMIUM.

£50 for the selected plan, elevation, and estimate for the erection of two Chapels and an entrance lodge, with gateway, on the eastern side of Southampton Cemetery.—Plan and section of ground Mr. Doswell, Albion-place, Southampton; C. E. Deacon, Secretary. May 22.

### MEETINGS OF SCIENTIFIC BODIES,

To-day and during the ensuing week.

**SATURDAY, MAY 11.**—*Royal Botanic*, Regent's-park, 4 P.M.; *Asiatic*, 14, Grafton-street, 2 P.M. (anniversary).

**MONDAY, 13.**—*Geographical*, 3, Waterloo-place, 8½ P.M.; *Medical*, Bolt-court, Fleet-street, 8 P.M.

**TUESDAY, 14.**—*Civil Engineers*, 25, Great George-street, 8 P.M.; *Medical and Chirurgical*, 53, Berners-street, 8½ P.M.; *Zoological*, 57, Pall Mall, 8½ P.M.; *Free-asons of the Church*, 18th Chapter, 8 P.M.

**WEDNESDAY, 15.**—*Society of Arts*, Adelphi, 8 P.M.; *Geological*, Somerset House, 8½ P.M.; *Microscopical*, 21, Regent-street, 8 P.M.

**THURSDAY, 16.**—*Royal*, Somerset House, 8½ P.M.; *Antiquaries*, Somerset House, 8 P.M.

**FRIDAY, 17.**—*Royal Institution*, Albemarle-street, 8½ P.M.



# The Builder.

NO. LXVII.

SATURDAY, MAY 18, 1844.

## ANTIPPE

would most probably have scolded us for continuing this week the subject of the Exhibition of the

Works of Art; but with even more probability would she have scolded us for omitting to do so, if her husband had chanced to be an architectural decorator, or an embosser of leather, instead of the sagest of Grecian philosophers, as a Frenchman once told us, through

being the son of a "sage-femme." However, we this week continue our review, reserving for the present our more general and closing remarks.

The exhibition contains many specimens of paving, in various styles, and of various materials, most of the patterns which might be used with propriety in the proposed work are of encaustic tiles, the majority of the others are, more or less, out of the right character, and only shew (for this case) variety of material and dexterity of workmanship.

82. Designs for ornamental pavement; the first representing the arms of the barons present at the granting of Magna Charta; the second representing the arms of her Majesty's Commissioners on the Fine Arts; by Richard Prosser.—This contains some good armorial picturing.

86. Design for ornamental pavement, by C. Burton.—Not exactly in the right taste. Good mosaic, but not in character.

89. (Repeated.) Designs for mosaic pavement, by Owen Jones.—This pavement is supposed to be formed partly of encaustic tiles and partly of pieces of porcelain of various colours, proposed to be executed according to the patent process of Mr. Prosser, of Birmingham.

Rather in the Moresco style.

92. Design for an ornamental pavement, shewing the application of some of the specimens exhibited by Messrs. Singer and Co., by Henry Pether.—The vacant space in the centre of the design is left for the pedestal of a statue of her Majesty. The adjacent diaper is composed of encaustic tiles. The design consists of an interweaving of the ribbons of the four principal orders of knighthood with their legends, surrounding the respective badges of the orders. No. 116 A is a specimen of this part of the design. The eight circular panels, bearing the arms and emblems of the kingdom, might also be formed of encaustic tiles, but are capable of being wrought in mosaic-work formed of small tesserae, which would be preferable, as calculated to last for ages. The space between this portion and the general border is proposed to be all mosaic, of the Gothic or Tudor foliage: one of the leaves of the full size is wrought in the slab No. 116

B. The border is intended to receive the Tudor badges, or similar enrichments, with the arms of her Majesty and of his Royal Highness Prince Albert. The outer margin is proposed to be of British marble, and the shields (for arms), of mosaic or encaustic tiles, are calculated to conceal the juncture of the slabs.

Not altogether happy—best in some of the detached parts.

113. (Repeated.) Seventeen specimens of ornamental inlaid and tessellated pavement. 113 A. corresponding designs, by Samuel Mayer.—Among these are good and effective patterns; in some cases, however, the jointing is imperfect; some specimens, with patterns in lines, producing the effect of shading, might be used for a portion of the work. The marbled specimens not so good.

114. (Repeated.) Five specimens of encaustic tiles for pavement. 114 A. Designs for ornamental tiles, by Copeland and Garrett.—Some of these are good and appropriate.

115. (Repeated.) Six specimens of ornamental pavement, composed of encaustic or inlaid tiles, with examples of glazed and unglazed grounds; manufactured in the plastic state under Wright's prolonged patent. 115 A. Design for an ornamental pavement, by Minton and Co.—These are of various merit; some of the tiles with writing are very good.

116. (Repeated.) Eleven specimens of ornamental pavement, by A. Singer and Co.—Among these are some good subjects, with effective colouring; some of them of tesserae are imperfectly jointed, and the forms broken.

119. (Repeated.) Thirteen specimens of ornamental and inlaid pavement. 119 A. Design for ornamental tiles, by H. and R. Haywood.—Some of the patterns are effective, though with the slippery inconvenience of high glaze.

120. (Repeated.) Five specimens of ornamental pavement. 120 A. Design for ornamental tiles, by Chamberlain and Co.—Many of these are excellent, and quite applicable. We presume the colours may be made and varied in any manner which the architect may desire.

121. Specimen of inlaid pavement, composed of serpentine stone, found entirely in the county of Cornwall; by Thomas Jago.—Doubtful, though might be introduced in part of the work.

123. Specimen of ornamental pavement; by Thomas Grimsley.—Arms in yellow in a broad style, upon an Indian-red ground, extremely effective.

124. (Repeated.) Specimens of mosaic pavement, composed of Derbyshire and Staffordshire marbles. The specimen of mosaic work, above No. 124, representing a portrait of her Majesty, is partly composed of foreign marbles; by William Milnes.—Might be introduced in part, if the materials be of approved hardness.

125. Specimen of composition pavement, in imitation of those found in Pompeii; by Paterson and Son.—Disagreeable in effect.

126. (Repeated.) Specimens of painted decorations and painted hangings, by F. and J. Grace.—Containing arms and legends, and might, under Mr. Barry's direction, be partly used.

133. Specimen of tessellated wood pavement, by Crannis and Kemp.—This affords a fair example of work, though not in suitable style, and the wood has greatly shrunk.

138. Specimen of inlaid flooring, by Austin and Rammel.—This is a mode of forming

decorative floors which appears to be applicable.

139. Specimens of the material (proposed to be employed for the designs, No. 89) manufactured by Messrs. Minton and Co. under Prosser's patent, and put together by Messrs. Parker, Wyatt, and Co., by Owen Jones.—These are good.

143. (Repeated.) Specimen of decorative painting, adapted for stained-glass, by William Warrington.—In the surface-style of work, rather flat and tawdry; one specimen, in pale, as at the south end of the Savoy Chapel, extremely disagreeable to look at.

146. (Repeated.) Specimens of decorative painting, by John Goodison.—A large arabesque in the illuminated style, with a blue ground.—Inadmissible.

147. A panel painted in Fresco, containing the figure of Henry VII., with the supporters and peculiar badges of that king, by F. and J. Grace.—A mixture of portrait and surface-painting, without depth, and with harsh outlines.

148. Specimen of decorative painting, by James West.—In the Byzantine mosaic style of painting, with gilding, harsh black outlines, and little shading, to be all done, except the outlines, by very inferior artists.

149. Specimen of decorative painting, by Thomas Clark.—Scroll-work and foliage; in spite of some gothic forms, not adapted to the place.

150. Specimen of decorative painting, by J. H. Lloyd.—Perhaps adapted to some part of the work, yet replete with the unnatural stiffness and other defects of inferior art now being attempted to be fixed upon architectural decoration.

151. (Repeated.) Specimens of decorative painting, by Leonard William Collman.—A style of work which, under the direction of the architect, and from his designs, would be appropriate.

152. (Repeated.) Specimens of decorative painting, by W. B. Simpson.—Though in form of ornament unsuited to the building, yet in management of colour, gilding, and workmanship, very effective and beautiful.

154. (Repeated.) Three specimens of decorative painting, executed by the students of the School of Design, under the direction of Mr. Wilson.—Though not pure in design, yet, with alterations, suitable for the work.

156. Specimen of decorative painting, by F. and J. Grace.—An emblazoned panel, illustrating the foundation of the Order of the Garter. The border is formed by a series of coats of arms of the twenty-six first knights. In the centre of the panel is the patron St. George conquering the dragon; above him is the badge of the sun issuing from a cloud, adopted after the battle of Crecy.

Not pure in design, yet, being rich and magnificent, would be suitable, under the chastening of the architect.

157. Specimen in the style of ancient decorative painting, by Coulton and Elliott.—Of very considerable beauty; the quiet green-grounded work, slightly heightened with gold, is chaste, elegant, tasteful, and appropriate.

158. Specimen of decorative painting and writing.—A piece of trivial and childish waggery, idle, ugly, and though not original, from its absurdity bordering upon the blasphemous.

159. Specimen of ornamental pavement, by H. P. Vaile.—Partly admissible, but ornamental designs very far from pure.

160. Specimen of green slate unpolished pavement, ornamented with inlaid mosaic tiles, 160 A. Corresponding design, by W. North.—Good, and, under the architect's approbation, applicable.

165. Specimen of inlaid flooring, by Samuel Pratt, Jun.—Good work, but patterns out of taste.

166. Specimens of inlaid flooring, by Anthony Binns.—Some very good work.



DESCRIPTIVE CATALOGUE OF THE  
RAFFAELLO TAPESTRIES.

*Executed at Brussels in 1517, by order of Pope Leo X. From the celebrated Cartoons at Hampton Court. Now exhibiting at the Gallery, No. 213, Piccadilly.*

While the public attention has of late been so much directed to architectural decoration, we cannot do better than to say a few words on the subject of the celebrated Raffaello Tapestries.

Perhaps no other mode of decorating the walls of buildings yields such beauty and magnificence, or affords a greater opportunity of bringing out the skill of eminent artists. It is true, that while some of the paintings of the old masters, through a happy union of materials and execution, have by time become rather perfected than injured, others have miserably faded. So in tapestries, when they become venerable, like these, the same vicissitudes must be expected: the effect of centuries of dust and damp must be reckoned upon. These, however, are no more faded than might have been expected under the most fortunate circumstances. No doubt their lights must have become somewhat deadened, and in some portions of the dark tones, the colour seems to have chipped off, leaving the thread light, as though not worked in grain; and we were informed of the curious circumstance, that the distances in the pictures, which are perhaps now over-vivid for such subdued parts of an effect, had entirely disappeared from the tapestries, through being packed up in cases during ten years, and only slowly returned to view after exposure to the light.

These works, which are exciting comparatively little notice in this vast metropolis, where so many rivals claim attention, on the first day of their exhibition at Manchester, caused so much excitement among the manufacturers, that no less than 800 persons visited them; and at Liverpool their exhibition-room was almost equally thronged.

This exhibition consists of seven magnificent pieces of tapestry, forming part of the set of ten, presented by Pope Leo the Tenth to King Henry the Eighth.

When Leo was embellishing the galleries and walls of the Vatican, he commissioned Raffaello D'Urbino to furnish designs for a series of tapestries from scriptural subjects; and to this circumstance the world is indebted for the celebrated cartoons of that master, which were designed by him expressly and entirely for this purpose. Leo caused two sets of the tapestries to be executed at Brussels, which were done from the instructions of Raffaello himself, and under the constant superintendence of his talented pupils, Bernard Von Orley and Michael Coxis.

One set continues to adorn the walls of the Vatican after having been twice carried away among the most valuable spoils which the fortune of war put into the hands of the conquerors:—the first time at the sack of Rome by Bourbon's army in 1526, after which they were restored during the Pontificate of Julius the Third by the Duke of Montmorenci:—they were carried away the second time on the invasion of Italy by the French in 1798, and were restored by purchase to 1814.

The other set, of which the present exhibition forms a portion, having been presented as before mentioned, remained in the possession of the Crown of England until the death of Charles the First, and were considered as some of the most valuable ornaments of the royal palace at Whitehall. They were sold in the time of Cromwell to the Spanish ambassador, Don Alonzo de Cardenas, and by him carried to Spain; they were afterwards in possession of the Duke of Alva's family until 1823, when they became the property of Mr. Tupper, the British consul, who brought them back to England; and from him they passed into the hands of the late proprietor.

From these circumstances, the authenticity of which is well attested, they possess a value and interest altogether different from, and superior to any other works of the kind in existence, with the exception of the duplicate series at Rome. They are remarkable for being finished representations of the original designs of Raffaello, and for the singular fidelity with which the spirit and expression of the immortal artist are carried out. They are also very valuable to the lovers of the

arts, as serving to correct the errors that were committed by Cooke when he repaired the cartoons by order of King William the Third, which had been cut into strips, and defaced and otherwise injured by the use made of them as patterns for the tapestry, and moreover some of the pieces had been lost. These tapestries claim the merit of shewing the designs of Raffaello in their perfect state.

Nine only of these are in existence—seven corresponding to the Cartoons at Hampton Court, and two others, namely, the Stoning of St. Stephen, and the Conversion of St. Paul, of which the Cartoons are irretrievably lost. They are all in an excellent and equal state of preservation, the colours having suffered comparatively little from the lapse of nearly 330 years. It has been found impossible to obtain in London, at the present season, a gallery of sufficient height and size to exhibit these tapestries at the distances from which they should be viewed, as, although their details are finished with the nicest accuracy, and bear the closest inspection, the effect of the whole is best felt and understood from a distance: and two of the pieces, viz. the Death of Ananias, and Paul preaching at Athens, are of necessity excluded from want of room.

No. 1. *Christ's Charge to St. Peter.*—Dimensions, 18 feet 7 inches wide, 12 feet 8 inches high.

The locality is the Lake or Sea of Tiberias—numerous buildings (part of the city of Tiberias) form a beautiful back landscape. The figure of Christ in this tapestry is undoubtedly one of the most noble representations of our Saviour that was ever conceived and executed. His air of Divine composure and calm dignity contrast finely with the fervent devotion of the kneeling St. Peter, who is listening to the command of his master, "Feed my sheep." St. James and St. John are the two next figures, the latter strikingly characterized by an expression of affectionate attention: the figure further back in profile is St. Andrew, and is of finished elegance. Behind St. Andrew is St. Thomas, with a book in his hand; this figure is marked by an inquiring position. The heads of all the Apostles are finely diversified, and many nice distinctions and gradations of character are portrayed. The graceful draperies are elaborately and beautifully wrought, and the colours harmoniously blended.

In comparing the tapestries with the Cartoons, it will be observed that they are exactly reversed in position. In the latter, all the figures are left-handed, in order to render the tapestry perfect and right-handed; and the figures, &c. on the right side of the one are on the left of the other.

No. 2. *St. Paul and St. Barnabas at Lystra.*—Dimensions, 19 feet 4 inches wide, 13 feet high.

On the right, St. Paul and St. Barnabas are standing beneath a portico—the former indignantly forbidding the sacrifice: "Sirs! why do ye these things?" averting his head and rending his clothes; St. Barnabas, with clasped hands, implores Heaven to stop the profanation. The sacrificial group is of especial force and beauty. The Priest of Jupiter, of Herculean proportions, is raising an axe to strike down one of the oxen. A young man, supposed to be Timothy, is endeavouring to arrest his arm. Another priest, of strongly-developed muscular powers, is bringing in a ram. On the foreground appears the cripple, who has just been restored, clasping his hands in the eagerness of gratitude and joy—his crutches lie useless at his feet, and an old man raises his garment with a look of astonishment at the restored limb. In the background is the Forum of Lystra, with several temples, and a statue of Mercury.

This subject is an instance of the consummate skill of Raffaello in bringing together a variety of circumstances, so as to make his story perfectly intelligible. The figures and heads, as well as the grouping and drawing, are perfect. The whole is full of movement, interest, and dramatic effect, and the spirit and power with which all these are expressed in the tapestry are most wonderful.

No. 3. *The Beautiful Gate of the Temple.*—Dimensions, 18 feet 4 inches wide, 13 feet high.

The magnificent composition before us offers great scope for display and contrast. The

architectural details are expressed with singular accuracy and effect in this tapestry, while the expression and character of the actors in this wonder-stirring scene are vividly portrayed. To appreciate the great merit with which the architectural part is executed, it is desirable to view this subject from as great a distance as the limits of the gallery will allow.

The figure of St. Peter, who is holding by the hand a miserably deformed cripple, is one of much dignity and grace, mingled with full confidence in the power by which he speaks the words "Rise up and walk." The expressive and well-formed head and neck, and finely delineated hand and foot, are severally seen in themselves. The beloved disciple's countenance expresses benevolence and deep compassion. The misery and distortion of the cripples are made as striking as possible, to contrast with the elegant and graceful figures abounding in this tapestry. The young female on the right, who is carrying an offering to the temple (and leading a child with another pair of doves), is considered a model of feminine beauty. Immediately over the cripple is a fine Jewish head strongly expressing doubt and incredulity: between him and St. John is another of much dignity and lofty sentiment. In the cartoon, probably from having been rubbed and effaced, the deep wrinkles in his forehead have been converted into a fillet, which is decidedly injurious to the expression—this alteration is further proved by a sketch from the original, drawn by Antonio, now in the British Museum, which is perfectly free from fillet or other covering. The figures between St. John and the beautiful female, another female on the other side, with a splendid head-dress, and carrying an infant, and the figures between the columns, are all most worthy of observation, for the diversity of character and expression they offer. On the whole it may be considered that as this is one of the most striking of the invaluable designs of Raffaello, so is it also one of the most effective of the tapestries, when viewed in proper light and from a right distance.

No. 4. *The Miraculous Draught of Fishes.*—Dimensions 14 feet 6 inches wide, 12 feet 9 inches high.

With this subject Raffaello commenced his great undertaking of a series of cartoon drawings, illustrative of some of the principal events recorded in the New Testament, for the execution of these tapestries.

The locality is the lake of Gennesareth, where "as the people pressed upon him to hear his words," our Saviour entered into the boat of one of the fishermen, and "prayed him to thrust out a little from the land."

The point of time is that when having, in obedience to the Divine command, let down their nets, although they had "toiled all the night and had taken nothing," they inclosed such a "multitude of fishes that the nets began to break;" and Peter, awe-struck and terrified at the presence of a Being of supernatural power, falls on his knees exclaiming, "Depart from me, for I am a sinful man, O Lord!" Throughout the whole of this composition nothing is tame or weak.

In the action and form of our Saviour we discover the usual felicity of the artist's genius. The Divine composure of Omnipotence, the simple and graceful posture, the countenance radiant with benignity, the hand which wielded the elements raised in accordance with his words, contrast finely with the merely human character of his companions. The head is in the most graceful style of manly beauty; so meekly grand, so benevolent, and yet so full of power.

In the air and attitude of St. Peter, is denoted that precipitate temperament which caused him to place himself foremost on all occasions. His countenance expresses mingled wonder, humility, and awe. There is also a striking difference between the rough hardy fisherman, the man of toilsome occupation, and the same person when represented as the inspired apostle, full of dignity and grace. (See the Beautiful Gate.)

The third figure is St. Andrew, the brother of St. Peter; his attitude is finely conceived and skillfully expressed; the entire figure is evidently actuated by an instantaneous and powerful impulse of awe and deference; the head and beard are finely proportioned.

In the second boat are the two sons of Zebedee, James and John, both still engaged



in securing the unexpected prize; they are nearly divested of clothing, and in positions favourable to the display of muscular strength. The last in the group is Zebedee, who is depicted as a fisherman, attentive only to the management of his little vessel. On the shore may be seen distant groups of people, part of those who had thronged together to hear the words of our Saviour.

*No. 5. The Stoning of St. Stephen.*—Dimensions, 13 feet wide, 12 feet 10 inches high.

The admirers of Raffaello will not fail to estimate as precious relics, the work now before us, and the next tapestry in this collection, the Conversion of St. Paul, of which the cartoon drawings are unfortunately lost, and no other representations remain but the duplicate tapestries in the Vatican.

As a work of art this composition unites a variety of excellences, and the first glance is sufficient to declare it the work of Raffaello. The peculiar attitudes are so chosen, as to display, in the most striking manner, his vast knowledge in anatomical science. With intuitive and never-failing skill he has seized the leading points of the subject, at the precise moment best suited for representation; he has worked up the tragic scene in accordance with the text of Scripture; and has portrayed the characters with so much strength of feeling, and disposed of them in the grouping so effectively, that the spectator is at once master of the whole subject.

The holy martyr is on his knees; a more perfect picture of calm submission, and entire resignation cannot be conceived. There is nothing like fear, or pain, or anger. "Lord, lay not this sin to their charge!"

The contrast between him and the savage and enraged actors in this scene of cruelty is very forcible. In the stupendous figure which is represented in a stooping posture, picking up a large stone, the drawing and the strength are alike wonderful. Another individual in this group cannot fail to arrest especial attention, by his fine attitude, muscular development, and powerful action; he is grasping a large piece of rock, and in the act of hurling it on the devoted head of the martyr, with such well-directed aim, as to make the beholder shudder. The drawing of this splendid figure is exquisite. Saul, seated, with the clothes lying at his feet, is on the right side of the picture.

The beautiful group at the top of this tapestry increases our admiration of the artist, who, with so much skill and tact, could combine such variety of subject and expression.

*No. 6. The Conversion of Saint Paul.*—Dimensions, 18 feet 3 inches wide, 13 feet high.

As before stated, there is no cartoon of this subject remaining. The tapestry before us is replete with life and energy. The appalling flash of heavenly light, the determined leader struck to the earth, the terror and dismay of the troopers and followers, are presented to the eye in a manner and with a spirit truly surprising; the Scripture narrative is embodied with astonishing vigour and effect.

The lofty walls and towers, battlements and turrets, of the city of Damascus, occupy the background. Great care and skill have been exercised in depicting the gorgeous dress, military trappings, and peculiar ornaments of the prostrate chief, as well as the warlike accoutrements, &c. worn by his followers; not merely for their great beauty, but also as illustrative of Asiatic costume and peculiarities, one of these may be mentioned: the tail of the grey horse is brown, which is in accordance with the custom frequently practised in Asia, of dying the tails of horses. There is much beauty in the two figures who are seizing the horse of Saul, and in the spirited delineation of the affrighted animal.

The sublime group at the top is in Raffaello's best manner—the figure of our Saviour is executed with remarkable vigour, and is full of dignity and majesty; the colours of the draperies are arranged with the most signal propriety and judgment; and the subject before us proves the power of tapestry to convey in the most striking manner the vivid imaginings of the immortal artist.

*No. 7. Elymas struck with Blindness.*—Dimensions, 19 feet 10 inches wide, 13 feet high.

The scene lies in Paphos, a city of Cyprus. The Proconsul, Sergius Paulus, is seated in

the Hall of Justice surrounded by his officers. The commanding figure of St. Paul, denouncing vengeance on the sorcerer, his fine outstretched arm carrying with it the force of an electric shock on the crouching form of Elymas, "blind to his fingers' ends," and groping his way, may well be cited as a triumph of consummate skill.

This composition is especially remarkable for concentration of effect. The figures are portrayed with such extraordinary truth to nature, that they appear almost to breathe and think. On the right of Elymas is an individual whose desire to satisfy his doubts is expressed in the most lively manner: a female richly attired, supposed to be the wife of Elymas, is indignantly pointing to the Apostle as the author of the catastrophe. The Roman magistrate, who became a convert, is here represented with all the dignity of state; his countenance and person evince strong emotion.

In the cartoon for this subject at Hampton Court, four feet in length of the drawing has been lost. It contained the part of the building on the right of St. Paul, in which is a niche holding a statue and a fine bas-relief. The tapestry exhibits the whole as designed by Raffaello.

The two following tapestries are necessarily excluded from this exhibition from want of room.

*No. 8. The Death of Ananias.*—Dimensions, 19 feet wide, 13 feet high.

The first glance at this awfully grand composition conveys the lively impression of a recent catastrophe which is still in the act of completion.

The writhing form of Ananias, with distorted limbs and death-stricken countenance, lies on the foreground. The agony is verging to the last point, and the spectator almost expects to see the body, which is partly upheld by the left arm with the wrist bent nearly double by the weight, fall prostrate. The anatomical proportions of this figure are portrayed in the tapestry with amazing force.

Intense emotion is exhibited by two persons immediately in front of Ananias. The countenance and outstretched hands of the male figure denote the instant of the event, and express a perfect concentration of horror. It is supposed to be Barnabas, who had recently become a convert. The female, who is of great beauty, appears to be preparing to escape from the dreadful scene, and at the same time unable to withdraw her eyes from it; further on, on the same side, may be seen St. John, assisted by his brother St. James, distributing relief to the necessitous. On the left of the falling Ananias is a most expressive and highly-finished figure. It is that of a Jew, with a turban on his head, bending over the sufferer. From head to foot this figure indicates powerful feeling. Another is pointing to the Apostles as the authors of this event. On the extreme left is a female figure engaged in counting money, supposed to be Sapphira.

In the centre of the picture, nine of the Apostles stand together on a raised platform: St. Peter in the middle is in the act of speaking. The firm attitude, the severe look, the hand pointed towards the culprit, denote the terrible result of the words "Thou hast not lied unto men, but unto God!" The whole group on the platform is of extraordinary merit; several of the figures are little inferior in interest and dignity to St. Peter himself.

The greatest writers and critics of the fine arts, Vasari, Lanzi, and others, have lingered over the duplicate tapestry on this subject at Rome, and declare it to contain the highest qualities of the great designer.

*No. 9. St. Paul preaching at Athens.*—Dimensions, 15 feet 2 inches wide, 12 feet 6 inches high.

This splendid composition is not surpassed by any of its predecessors in force of expression and beauty of execution.

St. Paul, of imposing dimensions, is standing on elevated steps preaching to the Athenians in the Areopagus. We at once recognize in him the great Apostle of the Gentiles.

Directly in front of St. Paul are four very remarkable personages. Nothing can be imagined more highly intellectual than this group of thinking figures, each so absorbed in attention, and yet so varied and individualized. The Stoic, with folded arms, and cloak muffled round him (as if retiring within himself for meditation), appears to think from head to

foot. The Cynic is resting with both hands on his crutch, his severe countenance and impatient gesture, shewn by the raised heel and bent knee, indicate his disapprobation of the speaker and his doctrine. The disciple of Epicurus is distinctly characterized in the mild, placid countenance of the third figure. It expresses attention, without deep interest or conviction, and that habitual, easy acquiescence, which was their first principle. The next is probably the head of a philosopher of some other sect. The finger on his mouth is expressive of caution and prudence. The space between the last-mentioned character and the Apostle is filled by a group of persons of various ages, who appear to be discussing some one of the novel doctrines they have just heard. Behind St. Paul are three individuals of character quite distinct from the philosophical group; the figure in the red cap is supposed to be a likeness of Leo the Tenth. The one in the sitting posture leaning with his hands on his stick, is designed and executed with much care and force. In the cartoon, as it is at present, this head, and that of the young Greek immediately over the head of the Cynic, have suffered considerably from repairs. There is much simple dignity in the standing figure between the one leaning on his stick and that representing Leo the Tenth. On the extreme left, in the foreground, are two figures of great interest and beauty. They represent Dionysius and Damaris, who are recorded by the sacred historian as converts on this occasion. These heads are exquisite for drawing and graceful expression; the hands and general figures appear to partake in the eager satisfaction with which they listen to the apostle's words.

No one of Raffaello's designs has furnished more subjects for artistic study than the one under consideration.

Their proprietor has offered, for the sum of 6,000*l.*, to restore these genuine works to the British Crown, whose property they formerly were, and whose they ought undoubtedly to be; but we understand this offer has been most unaccountably rejected.

The nation still possesses the original bull, sent by the Pope, constituting Henry VIII. Defender of the Faith, and we lately saw it at the Rolls' House, Chancery-lane; it is in fine preservation, and its seal consists of a beautiful pendent medal of gold, struck on purpose for the occasion, and so large, that its bullion alone is worth about eight guineas.

#### INSTITUTION OF CIVIL ENGINEERS.

MAY 14. — William Cubitt, V.P., in the chair.

The paper read was an account by Mr. J. Samuda, Assoc. Inst. C.E., of the Atmospheric Railway. It commenced with the general principles of the system, describing it as a system of working railways, in which the moving power is communicated by means of a continuous pipe or main laid between the rails, and for exhaustion divided by valves into suitable lengths. A partial vacuum is formed in the pipe by air-pumps, worked by machinery, at intervals along the line. Along the upper side of the main is a continuous aperture, which is covered by a leather valve, guarded above and below with iron plates, hinged on one side to the pipe, and falling into a groove containing a mixture of wax and tallow on the opposite side, so as to close the aperture. A piston is attached at some distance, in front of and beneath the leading carriage of the train, and, by means of a packing of leather, fits within the main pipe, so as to be nearly air-tight. When a vacuum is formed in the main in front of the piston, and in the direction in which the train is to travel, the air, impinging on the other side of the piston, carries it forward with a velocity due to its pressure upon the area of the piston, which being attached to the leading carriage, carries the train forward with it; the valve which covers the continuous opening along the main is opened by a frame and wheels, which precede the carriage, and it is closed and sealed down as the train proceeds, by a heater, which slightly melts the wax and tallow as it passes over it.

The details of all these parts of the contrivance were then given, and were illustrated by a series of drawings. The paper then proceeded to notice the early attempts at using the pressure of the atmosphere for conveying



goods and passengers; the proposals of Medhurst in 1810, of Vallance (of Brighton), and others. It appeared that the first intentions were, to have exhausted cylinders of considerable area, within which the carriages should travel; but as it naturally was objected that the passengers might not approve of this mode of conveyance through a continuous tunnel, means were devised for connecting the piston within the tube with the carriages travelling upon the rails outside it; and, after numerous attempts, Messrs. Clegg and Samuda succeeded in the system described, and which, after being tried for some time, imperfectly, at Wormwood Scrubs, has been carried out practically on the line from Kingstown to Dalkey, near Dublin, a distance of 1½ miles, up a series of inclines averaging 1 in 115.

It appeared that most of the previous attempts had failed chiefly because the continuous valve was defective, and that Mr. Clegg suggested the use of wax and tallow, which had proved so successful as a means of hermetically sealing up the opening caused by the passage of each train.

The manner of applying the power was then examined, and the adaptation of the electric telegraph, for giving the signals of the time for starting the engines at periods along the line, was shewn. The accumulation of power in the main, from forming a vacuum previously to the arrival of the train at each division, was shewn to be in proportion to the degree of vacuum which was formed.

The friction of the various working parts was stated to be very small, and that on the Kingstown and Dalkey line it was scarcely appreciable.

The leakage of the valve, &c. was then examined, and it was argued, that the power lost by leakage was inversely as the speed of the trains, for the faster the piston passed along, the less time the pipe would be under exhaustion, and consequently the less time would the leakage exist. Experiments upon the 15 in. main, on the Dalkey line, shewed that five horse power would be required to overcome the leakage of three miles of railway.

The system was stated to be peculiarly applicable to such steep inclines as, with locomotive engines, would be called bad gradients; for so long as the steepness of the inclines was not too great for the trains to descend without the use of the break, no power was lost, and the cost of working was no greater than on a dead level, for the whole of the additional power required to overcome gravity, while ascending the incline, was restored in descending, particularly when the planes were of great length, and at a convenient inclination; in which latter case, there would be a slight saving in working an undulating line.

The safety from collision between the trains was much argued upon, and it was stated to be impossible for the trains to approach nearer than three miles to each other, unless at the stations especially appointed for the purpose. Single lines of railway could therefore be worked with safety.

The cost of working was then fully examined, and, taking for data the results of the expenses on the Dalkey line, and supposing the system to be adapted to a line of 112 miles long, similar to the London and Birmingham Railway, on which the cost of working with locomotives was stated to be:—

Per train per mile, for haulage .... 15d.

Ditto for maintenance 8½d.

The cost of working the atmospheric apparatus would be:—

Per train per mile, for haulage .... 5½d.

Ditto for maintenance 5½d.

with the additional advantage of travelling at a mean speed of 50 miles per hour, instead of between 20 and 25 miles per hour, as with the locomotive system.

The discussion of the paper, and upon the merits of the system, was commenced, but as the interest of it would be lost by giving it in a disjointed form, it is reserved until after the meeting of Tuesday, the 21st inst., when the discussion will be renewed.

The papers announced to be read at the meeting of May 21st were:—

No. 670, "Account of the plan adopted by William Preston White for raising the Innisfail steamer, sunk in the river Lee, near Cork (Ireland)," by G. P. White, Assoc. Inst. C.E.

No. 552, "Essay upon the causes of preventing and method of determining the amount of priming in Steam Boilers," by R. Pollock.

No. 678, "Description of a Cofferdam used for closing the end of the Building-slips at H.M.'s Dockyard, Woolwich," by B. Snow, Assoc. Inst. C.E.

#### COOKE'S ELECTRIC TELEGRAPH FOR THE SAFE WORKING OF SINGLE LINES OF RAILWAY.

The extraordinary saving in the formation of railways where a double line can be dispensed with, and safety and punctuality secured by only a "single line," with tidings at proper intervals, renders the full elucidation of the powers of this invention of the utmost importance, not only to projectors and engineers of proposed new lines, but to the public at large. W. F. Cooke, Esq., having been requested by several gentlemen connected with railways to give them an opportunity of inspecting the apparatus, previous to its being sent to its destination, the Norwich and Yarmouth Railway, it was exhibited in operation at the Society of Arts, Mr. Cooke attending to give any explanation required. The principle on which this form of telegraph is constructed is founded on Oersted's celebrated discovery, that a magnetic compass needle may, through the agency of a voltaic current, be invested with an artificial polarity; and that a magnetic needle placed parallel, and near to a conducting wire, will, during the transmission of the current, stand at right angles to the disc. The apparatus for carrying out this principle consists of a handsome polished mahogany case, precisely similar to a modern cheffonier, the lower part containing the batteries, the upper five dials with magnetic pointers in the centre of each, as follows, with a handle to each:—

Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.
Norwich.	Brandon Junction.	Brandall.	Reedham.	Yarmouth.					

Above this is a case of smaller dimensions, containing the "Speaking Telegraph," having a dial, with the letters of the alphabet, numerals, &c., with two magnetic pointers, shandles, and a variety of conventional signals, &c., together forming an elegant structure of cabinet-work, about five feet six inches in height; the pointers are suspended vertically, on an axis moving freely through the face of the dial; behind is another magnetic pointer, so that they move together on the same axis; the conducting wire is coiled many times longitudinally round a frame in which the magnet moves, to subject the magnet to the multiplied deflecting force of the voltaic current, and the magnet's motion is limited on both sides by stops. The motion of the handle either right or left completes the circuit of the conducting wire with the voltaic battery, and deflects the needle in the same direction. The length of the Norwich and Yarmouth line is 20½ miles, with two intermediate sidings at Reedham and Brandall. The conducting wires extend along the whole line, suspended in the air on wooden standards nine feet high; strong posts of timber are firmly fixed in the ground every quarter of a mile, from which the wires are strained, and between every two "straining posts" are placed seven others, 55 yards apart, for supports. There are a number of winding apparatus on each straining post and at all the wires, and carefully insulated by being attached to non-conductors, of earthenware, and covered with boxes with holes for the clear passage of each wire, as, if not perfectly insulated in wet weather, the dampness of the wood in connection with the fire would conduct the electric current into the earth. The experiments at the Society of Arts were highly interesting and satisfactory to all who have witnessed them. Six telegraphs were stationed in distant parts of the Society's rooms in the Adelphi, and the correspondence kept up was perfect and rapid. General Pasley has carefully investigated its action, and approves of it in every respect, and took notes of the number of signals, &c. it passes in a minute. The Lords of the Admiralty also honoured Mr. Cooke with a visit last week, and expressed their high satisfaction at the result of all the experiments exhibited at the Adelphi, as well as on the Great Western from Paddington to Slough.

#### COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.—No. VI.

EXCHANGE.—The place in which merchants, brokers, and others meet to transact business.

The interest which is taken by the public in the New Royal Exchange induces me to submit to the readers of the BUILDER a few observations on the subject.

In the time of Henry the Eighth, and long afterwards, such a building was called the *Burse*. This word, as well as *purse*, is evidently derived from the Greek *βύρα*, *bursa*, which comes from a Hebrew word, signifying a *skin* or *hide*, the substantive of a verb which means to sever, because the skin is separated from the body. The word is found in many languages: in Latin *bursa* stands for an *ox-hide*, as well as for a *purse*, which, like bottles, were anciently of leather, made of course from skins.\*

When Dido obtained her territory in Carthage, by inclosing a space of ground by means of a bull's hide cut into small thongs, she built in the midst a citadel, which she called *Byrsa*, to commemorate the exploit.

Devenere locos, ubi nunc ingentia cernes  
Moenia, surgentemque novæ Carthaginiæ arcem;  
Mercatique solum, facti de nomine Byrsam,  
Taurino quantum possent circundare tergo.  
Virgil, Æn. I. 365.

Hence the name was given to the place in which merchants were accustomed to meet, which in Paris is called la *Bourse Royale*, whilst in the midst a citadel, which she called *Byrsa*, to commemorate the exploit.

"Where merchants most do congregate."  
In our language the treasurer of Colleges at the Universities is called a *Bursar*; and we say to disburse, to reimburse.

Mr. Gwill, in his Encyclopædia of Architecture (p. 799), observes that "the Exchange at Amsterdam seems for a long time to have prevailed as the model for all others. It was commenced in 1608, and finished in 1613, and its architect was Cornelius Dankers de Ry. It is about 271 feet long, and about 152 feet wide. The whole edifice is supported on three large arcades, under which flow as many canals. On the ground floor is a portico surrounding a court, above which are halls supported on 46 piers. The divisions are numbered and assigned each to a particular nation, or class of merchants. In the court, and within the enclosure, is the place of meeting for mercantile affairs."

The first Royal Exchange in London, however, was commenced in the year 1566 by Sir Thomas Gresham, son of Sir Richard Gresham, called "the King's Merchant," who had endeavoured, but in vain, to erect a suitable building for the merchants, hitherto accustomed to meet in the open air. In the year 1571, Queen Elizabeth went from the house of Sir Thomas Gresham to visit the new "Burse;" and "after that she had viewed every part thereof above the ground, especially the *Pawne*, which was richly furnished with all sortes of the finest wares in the city, she caused the same to be proclaimed the *Royall Exchange*, and so to be called from thenceforth, and not otherwise." The building of Sir Thomas Gresham was almost entirely consumed in the great fire in 1666, and the new structure was from the designs of one of the city surveyors, Mr. Edward Jerman, and not, as has been supposed, from those of Sir Christopher Wren. The new Exchange was opened in 1669; it was considerably repaired in 1767, and again in 1820, when the stone tower was rebuilt, from the design of Mr. George Smith. A second time has the 'Change been destroyed by fire, and again it has arisen from its ashes. The new building, which is familiar to most persons, is designed by Mr. William Tite, and is rapidly approaching its completion. Its portico is a copy of the famous entrance to the Pantheon at Rome.

Mr. Gwill considers the Bourse of Paris an admirable model, both in distribution and design, and describing it, says—"The edifice in question was begun in 1808, under the designs of Brogniart, and completed by Labarre at a much protracted period. The general

\* Thus, in the New Testament, when we read of the danger of putting new wine into old bottles (Luke i. 37), we must understand that the bottles were made of skins, just as in the present day in Italy and other warm countries, wine is kept in bottles of skins.



form on the plan is a parallelogram of 212 feet by 126 feet. It is surrounded by an unbroken peristyle of 66 Corinthian columns, supporting an entablature and attic. The peristyle forms a covered gallery, to which the ascent is by a flight of steps extending the whole width of the western front. The intercolumniations on the walls are filled in with two tiers, one above the other, of arched windows, separated by a Doric entablature, and surmounted by a decorated frieze. The roof is formed entirely of iron and copper. In the centre of the parallelogram is the *salle de la bourse*, or great hall, 116 feet long and 76 feet broad, wherein the merchants and brokers assemble. The Doric order is that used, with arcades round the sides, and between the arcades are inscribed the names of the principal mercantile cities in the world. The ceiling is formed by a cove, and in the centre a large skylight serves for lighting the great hall just described. It is rich in sculpture, and decorated with monochrome paintings, to imitate bassi-relievi, 16 in the whole, that is, five on each long, and three on each short, side. They are all allegorical. The hall conveniently contains 2,000 persons."

Sir Christopher Wren was of opinion that an exchange should be formed upon the model of the forum of the ancients, and it is supposed that the basilicas of the Romans were used for such a purpose. G. R. F.

#### THAMES EMBANKMENT.

As the commissioners "for the improvement of the metropolis," in spite of the rebuff administered by government to their proposition of an additional coal-tax for defraying the expense of the Thames embankment, have manifested some intention of persevering in that notable project, we recur to their report for the purpose of enabling those of our readers who cannot afford time to examine it for themselves, to judge how far the resolutions of the commissioners respecting the general question of the Thames embankment, and the particular plan selected by them, are consistent with the evidence collected in that voluminous document.

At the close of the report we find the following passage:—

"We have observed with great satisfaction the almost unanimous concurrence in opinion upon all the main topics to which our inquiries were directed among the scientific and professional gentlemen thus consulted; and it was with a corresponding confidence that we finally came to the following resolutions:—

"1. That it appears to the commission that the present state of the river Thames above London-bridge is such as to render highly expedient the adoption of some proceedings for remedying the existing defects, and for preventing the further deterioration of the navigation.

"2. That for securing these important objects, an embankment of the river would be the most effective measure.

"3. That though a general embankment between Vauxhall and London bridges appears to be highly expedient, yet that it is most urgently required on that portion of the Middlesex, or left bank of the river, which lies between Westminster and Blackfriars bridges.

"4. That such an embankment might be advantageously combined with the formation of a carriage and foot-line of communication between Scotland-yard and Blackfriars-bridge, whereby the great objects of public recreation and health would be promoted, and considerable relief be given to the existing insufficient thoroughfares between the eastern and western districts of the metropolis.

"5. That by the adoption of the general principles of embankment presented in the plan of Mr. Page, or plan B (with certain modifications which have been suggested, and others which may be suggested hereafter), there is reason to expect that the great public benefit of the improvement of the river, and the obtaining a new line of communication, may be acquired without detriment to the trade now conducted on the Middlesex shore."

The mention of plan B in the foregoing resolutions requires a few words by way of explanation. It may be necessary to remind our readers, that the inquiry upon which the report was founded was chiefly directed to three distinct plans for the embankment of the

Thames, designated by the letters A, B, C. The first of these was proposed by Mr. Walker, the second by Mr. Page, and the third by Mr. Barry, a member of the commission. Plan A contemplated the formation of a continuous line of quays along the Middlesex shore, at the elevation of four feet above high-water mark, with occasional recesses for the accommodation of trade, occupying about one-third of the whole length of the line. Upon this, if deemed expedient, might be constructed a roadway on arches of 100 feet span, crossing the recesses, and accommodating its level to that of the bridges which it was intended to intersect.

In plan B (the one adopted by the commissioners) a very different arrangement is proposed. Its author, Mr. Page (who, by the bye, was acting engineer in the Thames Tunnel), apparently ambitious of producing as useful a work above the surface of the river as his predecessor had made beneath it, has devised a novel and ingenious mode of perambulating the Thames by means of a detached quay, running nearly parallel to the shore, between which and itself a channel is to be left open for the purposes of trade. The quay is to be reserved for the accommodation of the traffic which is expected to be diverted thither from the other thoroughfares of the metropolis, while access to the wharfs on shore will be obtained only through floodgates, established at stated intervals, in the quay itself.

In plan C, to which a very moderate space is assigned in the report, an attempt is made to combine the respective advantages of plans A and B, by constructing a line of solid embankment with narrow slips, extending in shore for the reception of barges.

Let us now proceed to consider how far the report of the commissioners as to "the almost unanimous concurrence in opinion upon all the main topics, among the scientific and professional gentlemen who were consulted," is borne out by their respective evidence. And first, with regard to the question of the necessity and expediency of any general embankment at all, we are sorely baffled in our attempts to discover this unanimity of sentiment. On referring to the tabular appendix before mentioned, we find that, out of the eight "scientific and professional gentlemen" consulted, two, viz. Mr. Hartley and Mr. Rennie, do not think an embankment necessary at all. The former states it as his opinion, that the object intended may be accomplished "by dredging, at a much less expense than by a general embankment;" and the latter, that "the object cannot be better accomplished than by a well-organized system of dredging." Mr. Macneil speaks of dredging in conjunction with walls and embankments, but says not a word about the necessity of a general embankment. Mr. Rendel, though on the whole favourable to an embankment, "does not think it expedient to embank the Surrey side, and disapproves the plans submitted, as each carries the embankment too far." He is of opinion, that, "concurrently with any plan of embankment, it will be absolutely necessary to dredge the bed of the river to its proper depth and width." Now considering the very great importance attached by these gentlemen to a uniform system of dredging, we are surprised to find that remedy entirely thrown overboard in the report, or rather treated as a positive evil. Either the authorities in question are good for nothing, or they are very cavalierly treated by the commissioners. As to their unanimity, it is pretty clear on which side that lies. Of the other four gentlemen who are decidedly favourable to a general embankment, Captain Beaufort, hydrographer to the Admiralty, says little or nothing. Mr. Cubitt says, that "a continuous embankment is not absolutely necessary all along both sides of the Thames; . . . nor is it necessary to execute all parts at the same time." On the other hand, Mr. Gordon says, "that embankments on both sides are highly expedient, and should be carried out as part of the same plan, and at the same time." And Mr. Giles, in a still more positive tone, pronounces the embankment "equally necessary on both sides of the river, and" that it "should be executed at one and the same time."

So much for the "almost unanimous concurrence of the scientific and professional

gentlemen" as to the question of a general embankment. Equally discordant are their opinions upon the next and most important resolution—the particular plan adopted by the Committee.

The evidence as to the relative merits of the respective plans A, B, and C, is classed under the following heads:—

1. As to the effect of each upon the navigation of the river.
2. As to the trade upon the shores.
3. As to the facilities for traffic by land.
4. As to the accumulation of mud.
5. As to the sewerage.

The questions relating to the first head are evidently proposed with a view to elicit as little information as possible respecting plan B, since, with one exception, they have reference only to plans A and C. The answers, however, are very different from what the nature of the questions would have led one to expect. The questions amount to this—whether the operation of plans A and C upon the tidal water of the river would be injurious to the navigation? The answers are five to three to the effect that it would not. Of the other three, only one, that of Mr. Rennie, is decidedly adverse.

The questions involved under the second head are such as can only be satisfactorily answered by persons practically acquainted with the necessities of the trade, and the solution must therefore be sought in another part of the report, where the evidence of those witnesses is given at length. The answers of the scientific and professional gentlemen are as follows:—Captain Beaufort, hydrographer to the Admiralty, and Mr. Giles, are in favour of plan A. The rest are all in favour of plan B, though differing materially as to its application.

Of the wharfingers and lightermen examined on this branch of the subject, the majority are decidedly adverse to the side channel proposed in plan B, which they consider would encroach seriously upon their present accommodation.

The questions under the third head, which relate to the facilities for land communication afforded by the respective plans, are met with a similar diversity of opinion. The general question, it should be observed, is put directly as to A and C, but only indirectly as to B. Of the answers, four are in favour of plan A, three are adverse, and the other equally in favour of all.

On the tendency of each plan to favour the accumulation of mud, which forms the topic of the fourth head, the answers are by no means so unanimous as represented in the report. Of the eight authorities above mentioned, Captain Beaufort, Mr. Cubitt, and Mr. L. Gordon think the same objection applicable to all the plans, but in the greatest degree to plan C. Mr. Macneil is of opinion that the docks or channels in plan B would have a greater tendency to "silt up" than the recesses in plan A; but that in both cases the mud may be easily removed. Mr. Rendel, on the other hand, holds that the channels in plan B will "silt up" the least of the two, but they will require artificial means to keep them clear. Mr. Hartley and Mr. Rennie incline to plan B; while Mr. Giles thinks that both the recesses of plan A and the channels of plan B will be kept clear by the wash of steam-boats and other artificial applications. All doubt upon this point, however, is removed from our minds by the evidence of Mr. Walker, who adduces the most conclusive proofs that no considerable accumulation of mud would take place in the recesses of plan A, and mentions the circumstance that several parties who had objected to the embankment for the new Houses of Parliament on this very score have withdrawn their objections, because they could not substantiate damages.

As the question of sewerage is but little affected by any of the proposed plans, we shall cite no evidence on that head. Enough has been said, we think, to shew that, considering the great diversity of sentiment which prevails as to the general expediency, the details, and the consequences of an embankment, as regards the navigation, the trade, and, above all, the safety of the bridges, the Commissioners would act wisely in turning their attention to improvements of a more practical and less questionable character.—*Times*.





LONGITUDINAL SECTION OF ST. OLAVE'S CHURCH, SOUTHWARK.

(Reduced from the Architect's original drawing in the Royal Library at the British Museum.)

SCALE. 10 5 0 10 20 30 40 50 60 70 80 FEET.

#### ST. OLAVE'S CHURCH, SOUTHWARK.

The following interesting particulars relative to the appointment of the architect, and the building and cost of the church, were read by Mr. Alfred Bartholomew, at the last meeting of the Freemasons of the Church. We intend in our next number to present our readers with an elevation and plans of the spire of the church as designed to have been built, and some further interesting particulars relating to the church.

Mr. Bartholomew stated, that in the Royal Library, in the British Museum, are preserved the original drawings made by the architect for the fabric, a reduced copy of one of which we give this week.

The former old church having, it appears, partly fallen, application was made to the legislature, and from the original document, which still exists in Mr. Corner's possession, Mr. Bartholomew read the following form of application:—

"To the Honble. the Commons of Great Britain in Parliament assembled.—The humble petition of Philip Ayscough, Clerk, Rector, Edmund Brown, Daniel Alexander, and William Lessoe, churchwardens of the parish of St. Olave, in the city of London and borough of Southwark, in the county of Surrey, and other inhabitants of the said parish, whose names are hereunto subscribed.

Sheweth:—That the church of the said parish is a very ancient fabric, and that considerable sums of money have been laid out in repairing and supporting the same, notwithstanding which part thereof is lately fallen down, and the remaining part, which is now standing, is in a very ruinous condition, and in the opinion of able workmen, who have sur-

veyed the same, is absolutely necessary to be rebuilt.

Therefore your petitioners humbly pray this honble. House, that leave may be given to bring in a Bill to enable the parishioners of the said parish to rebuild the said church in such manner as to this honble. House shall seem meet.

And your petitioners shall ever pray, &c."

(Followed by 76 signatures.)

An Act of Parliament for the rebuilding of this church having been obtained, appointing trustees, the work was proceeded with, and in the original minute-book of the church-trust, are the following entries:—

"July 6, 1737.—The said trustees took into consid<sup>n</sup> the business of a surveyor to the intended new church, upon which Mr. Fleetcraft and Mr. Porter attended, and they were separately called in, and being asked sev<sup>l</sup> questions ab<sup>t</sup> the business of a surveyor, and what they intended to do under the character and denomination of a surveyor, Mr. Fleetcraft informed the said trustees of his intention and design, and that he would perform his business as a surveyor for 4*l*. per c*t*. Mr. Porter also informed the s<sup>d</sup> trustees to the same purpose, and offered to perform the same at 2*l*. per cent.; but the same being debated, as well in regard to the difference of price and the proposals of the said surveyors as also of the prov<sup>d</sup> ability of Mr. Fleetcraft, a previous question was putt, whether the s<sup>d</sup> trustees sho<sup>d</sup> at this time proceed to the choice of a surveyor. Ordered, that the s<sup>d</sup> trustees do proceed to a choice.

It was moved, that the s<sup>d</sup> trustees put up Mr. Fleetcraft and Mr. Porter separately, to be surveyor of the new church, and, upon major-

rity of hands held up, the choice fell upon Mr. Fleetcraft. The said trustees, after the said choice was over, informed Mr. Fleetcraft, that as they chose him their surveyor, they hoped he would abate somewhat of his proposall. He replied that he would contract for no less than 4*l*. p. c*t*.; but in regard to the parish he wo<sup>d</sup> be obliged to make a deduction of an half p. c*t*. Ordered accordingly.

Aug. 17, 1737.—This day Mr. Fleetcraft attended with a ground plan, and also a plan of the church and steeple, and also a view of the inside and outside of the east end, but the said trustees came to no resolution.

Sept. 14.—Mr. Fleetcraft's clerk attended at this meeting with several drawings, intended for the rebuilding of the church, w<sup>h</sup> the said trustees having viewed, and maturely considered, do approve of, as the drawings for the rebuilding the same."

About this time it seems Mr. Dance the elder, who was architect of the city "Mansion House," and who had been employed to give evidence in Parliament relative to the necessity of rebuilding the church, applied for payment; and that the men of St. Olave's were economical, will be further seen by the following entry:—

"Sept. 23<sup>th</sup>, 1737.—Reported that Mr. Dance had sent a letter to the treasurer that he made a demand of 5 guineas for his attend<sup>ce</sup> at the House of Lords, and had sent a letter for the purpose, which was read; and upon debating the same, it was agreed that he should have 3 guineas."

Then occurs the following rather summary minute:—

"Ordered, that the monuments of the church and tombstones in the church-yard be advertised in the *Daily Advertiser* and *Daily Gazetteer*, that unless the owners come to take them down within a month, they will be pulled down and sold to the best bidder." But,

12 Oct.—No advertisement had been made, because the east end was too ruinous for workmen to safely go there.

At length the design for the church approached completion, as will be seen by the following minutes:—

"9<sup>th</sup> Nov<sup>r</sup>, 1737.—Mr. FLITCROFT (for the first time spelled correctly) attended with the plans, elevations, and sections of the designs for St. Olave's Church, which were approved of by the trustees, as also an alteration proposed to be made in the front, by introducing two windows proposed in the said drawing, which drawings were all signed by the trustees."

These are the very drawings with one tier of windows, and all signed, which are now at the British Museum; however, by another minute of the same day,

"Mr. Flitcroft was desired to draw and deliver copies of the said drawings to Mr. Hucks treasurer."

The drawings being perfected, the following minutes of further proceedings occur:—

"Dec. 7, 1737.—This day Mr. Flitcroft again attended with the copies of sev<sup>l</sup> elevations for rebuilding the church approved off and agreed with the last meeting, and the commtee then desired the said Mr. Flitcroft to make estimates of the particular charges of the sev<sup>l</sup> kinds of work to be performed by the sev<sup>l</sup> workmen, and what the said church and steeple may be built for, and also such other directions for the use of the materials of the old church, the better to enable the commtee to contract and agree with workmen for the purpose; and at the same time left the said copies in the hands of Mr. Hucks, the treasurer, for the perusal of the said committee.

Jan. 18<sup>th</sup>, 1737.—This day Mr. Flitcraft attended the trustees, and that the alteration of the roof and of the ceiling, as the same is now laid before them, were approved off; and, at the same time, produced and read over the general measures, and also the particul<sup>r</sup> of the masons work, bricklayers work, and carpenters work, intended for the building of the new church, which were in like manner approved off."

After this tenders for the execution of the work were obtained; and the little coquettings with the tradesmen who offered their services, are not without affording amusement, as will be seen by the next extracts:—

"Feb. 1<sup>st</sup>, 1737.—This day Mr. Dunn for himself, and Mr. Townsend the mason, Mr. Devall, and Mr. Horsenaille, masons, and also Mr.



White Mr. Cole and Mr. Pratt, bricklayers, attended with their sev<sup>l</sup> proposals; and upon reading the masons proposals in their sev<sup>l</sup> turns,

Mr. Dunn's amounted to .. £2513 0 0  
Mr. Horsenail's " to .. 2470 0 0  
Mr. Devall's " to .. 2450 0 0

But Mr. Horsenail and Mr. Devall's being the two lowest, and so near each other, they were severally called in, and ask'd if they would lessen their proposals, and then they were desired to withdraw to consider thereof; upon which Mr. Horsenail and Mr. Devall withdrew, and signed a further proposal which amounted to 2425*l*.; but even that was objected to as being too large a sum for the intended business, and they were then informed by Mr. Fleetcroft that the masons work may be completed for the sum of 2277*l*.; and if they thought proper to contract for that sum, they were at liberty to renew their proposal; and being again called in, Mr. Devall and Mr. Horsenail agreed to perform the business for the sum of 2277*l*., and both signed their proposals accordingly.

After which Mr. Cole, Mr. Pratt, and Mr. White, the bricklayers, proposals were respectively read, and the amount of

Mr. Cole's Proposal was .. .. £1030  
Mr. Pratt's " " " " 940  
Mr. White " " " " 905

Mr. White being called in, acquainted the trustees that Mr. Pratt was intended to be concerned with him, and they both agreed to perform the bricklayers work for 905*l*., and signed their proposals accordingly.

"Feb. 15th, 1737.—The following tenders were received for the carpenters work:—

Mr. Barnard .. .. £263  
— Phillips .. .. 855  
— Palkney .. .. 800  
— Spencer .. .. 640  
— Tail .. .. 967  
— Taylor .. .. 650  
— Marquand .. .. 580  
— Martyr .. .. 582

Whereupon Mr. Marquand was declared to have the contracts, and signed his proposal."

The chief works thus contracted for progressed till the approach of winter, when, as usual with our prudent ancestors, they were suspended, as appears by the following entry:—

"Nov. 2nd, 1738.—Ordered that the masons and bricklayers work be, on acc<sup>t</sup> of the season, suspended till spring."

In the mean while, as this was, in those good old times of sound work, a comparatively cheap church, we find—

"Jan. 31st, 1738.—Mr. Flitcroft proposed for the approbation of the trustees, that the fronts of the galleries of the church should be wrought in deal, which would be cheaper than having them wrought in plain wainscot. Upon debating the same, it was ordered that the galleries be wrought in deal."

And this was perhaps the first occasion of using deal in metropolitan church-work. Wren's joiners' work seeming to be all of "Right wainscot;" nevertheless, though at that time so comparatively dear a commodity, iron was not spared in the building, as appears by the next extract:—

"Sept. 26, 1739.—Mr. Hucks reports that there has been 168 dozen & 5 new cramps, weight 23c. 2q. 18lbs., delivered and made use of with the walls of the new church and tower, besides several dozens of old cramps. Screw bolts, 4c. 0q. 17lbs. Wall hooks, 3qrs. 15lbs. Three chain-bars and rings in the tower, 23c. 1q. 18lb., all which cost 75*l*. 19s. 7d."

Then costly chandeliers were ordered, and how cautious were the trustees not to be cheated, is shewn by the following entries:—

"The commissioners agreed with Mr. Bright-head, of St. Margaret's Hill, for the making, within 2 months, of two brass branches, as at Christ Church, Newgate-street, at 35*l*. each, and the treasurer, or some other person, to see that the same weigh 2c. 3q. 0lbs., within 14lbs. each before they be laquered.

24 Oct. The treasurer was requested by the trustees to get some judicious person to assist him in looking upon the branches, to see that the same are finished in a workmanlike manner, and that the said branches be every way finished according to contract."

But what would a modern radical parish say to the outlay, then so large, for a chancel-table, or for iron pew-hinges, as next appears:—

"It was reported that the communion table was purchased of Mr. Horsenail for 16 guineas, including the iron-work, polishing, and fixing.

Apl. 4, 1739.—90 pairs of pew hinges were ordered to be made, at 2s. 3d., and screws 3s., a gross."

And, on the same day was made relative to the wood-carving, the following interesting minute:—

"Mr. Boson, the carver, also attended with his proposal for performing the carved work of the church, and produced a specimen of a cherub's head, &c.; which proposal being read over, it was ordered that the said Mr. Boson perform the said work for 50*l*., according to his proposal, and that the same be entered in the book of the contracts."

#### FREEMASONS OF THE CHURCH.

18TH (ST. PHILIP'S) CHAPTER.

MAY 14.—The Rev. S. Pocock, LL.B., in the chair.

The report of the deputation appointed to consider the subject-matter relating to Mr. Hopton's letter was received, and is to the following effect, viz.:—

"That it is inexpedient to make any new order or law, either to admit or to exclude from membership with the college any builder; but that in case any applicant for admission to become a lay-fellow of the college be a builder, whether he shall be admitted or not shall be left, in the ordinary manner, to the discretion of the members, who shall, in such case, ballot."

Specimens were received of Martin's cement, in the forms of mouldings and flat work.

The Rev. Thomas Fallow and the Rev. Henry Fybbe were elected chaplains.

On the same evening, Mr. J. A. Stothard was directed to engrave the common seal, which consists of a hand, or margin, in the form of the Vescica Piscis, bearing as a legend, the college motto, which is taken from the *Te Deum*, and is as follows:—"Ex per orbem terrarum sancta conficitur ecclesia." Within this a Cathedral front, with three spires, each thrice banded, the letters *W* appearing on the field at the sides of its principal spire; below the building, the Christian emblem of a Cross-Calvary, indicative of a cathedral-plan, and surrounded by the three triple symbols of the rose, thistle, and shamrock,—the style of the design and inscription being of the early decorated character of the time of Edward the First, when Pointed-architecture was more elegant and scientific than at any other period. It was announced that the seal would be finished within a month, when it will be affixed to the illuminated election-diplomas, which are otherwise ready for distribution.

Among the exhibitions were a beautiful and delicately-pierced carving of a net, fishes, primroses, &c., by Mr. W. Gibbs Rogers; and a cross, with the symbols of the Evangelists in its four arms, and the sacred monogram in its centre, the work of Mr. Walter Chamberlaine, of Worcester, a member, being the result of the first attempt to produce the effect of the enamel of the middle-ages.

Mr. Alfred Bartholomew presented a tracing from the architect's original longitudinal section of St. Olave's Church, Tooley-street, and he also read an authentic memoir of Henry Flitcroft, the architect of the fabric, drawn up by George Corner, Esq., F.S.A., vestry-clerk of the parish, principally from particulars furnished to him by the solicitor of the deceased architect's family.

#### ORNAMENTAL IRON-WORK, No. I.

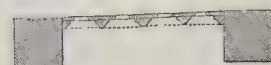
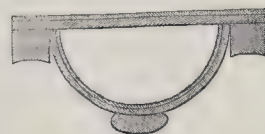
Having already noticed the great want of good design in articles of iron-work, and having already intimated our intention, this week give, of the full size of the original, an exact elevation and two plans of the extraordinary specimen of iron-work found at Norwich, and mentioned in page 224, No. 65. The work, which now bears some marks of being battered by time, has a continental appearance, and is formed of double plating, with a delicacy of workmanship, the imitation of which would puzzle a modern maker of

chimney-bars or horse-shoes. Now the operating of all this is very simple, and we doubt not its performance occasioned its artist very little trouble, and consumed comparatively little of his time. It is design which is required; and to the extent which our modern machinery and tools, whether for large or small work, are superior to any in use when this subject was fabricating just to such an extent ought workmanship to be better made in modern times.

The fine old gates, replete with leaf, scroll, and cote-amory, remaining at the fine old half-deserted mansion of Enfield and other places, and the magnificent internal gates of St. Paul's cathedral (of which more hereafter), shew what hammer, punch, and file can do with iron, all which articles we have now in improved forms; while the superior durability of cast-iron peculiarly fits it for the facile process of moulding, in which, we are sure, that with proper encouragement and direction, our workmen are more able than ever.

The needed thing in the varied departments of the iron manufacture is the employment of superior taste, so that vulgarity may be expunged, and usefulness and beauty fostered. Men of fortune might so obtain a large increase of wealth, with the satisfaction of being patriotically beneficial.

ANCIENT IRON-WORK FOUND AT NORWICH.





ELEMENTARY ESSAY ON MORTAR  
AND CEMENTS.BY JAMES WYLLSON, HON. SEC. B.A.A.D.  
(Continued from p. 239.)

44. **POZZOLANA** is a porous, nearly non-calcareous, substance, which gives to mortar made of common white lime the property of hardening to an extraordinary degree and of setting in water; also of not settling, it is said, while hardening. It was discovered by the Romans, whether fortuitously or by experiment is unknown, in the vicinity of Puteoli, a town in the Bay of Baïæ, not far from Mount Vesuvius, and is considered a volcanic lava. It was used by that people in making their aquatic cements, not only for their villas in that town, some of which stood in the water, but wherever water-cement was necessary; and the essential requisites for which they found it to possess in the highest degree. Vitruvius terms it *pulvis puteolanus*; but Puteoli is now called Pozzuoli, and hence, by an easy transition, the material itself has acquired the name of pozzolana; it is a concretion, cellular and slightly cohesive in texture, and of a rusty colour. An analysis produced 56 per cent. of silica, 20 of iron, 19 of alumina, and 5 of lime. The only process required, preparatory to mixing it with the mortar, is pounding and sifting. There is a Roman pozzolana which is superior to the Neapolitan, as it will make into a proper cement with lime alone; while with the other a proportion of sand is necessary. The Neapolitan effervesces slightly with acid, which the Roman does not; and therefore it probably contains more lime, to the exclusion of a corresponding quantity of some other ingredient more virtual in a water cement. Pozzolana was long extensively used in this country in composing hydraulic mortars; but the necessity was completely obviated by the discovery of our Roman cement.

45. **TARRAS** is a bluish basalt much resembling pozzolana in its structure, and is equal to it in its hydraulic properties. It is quarried at Andernach, in the neighbourhood of Cologne, on the Rhine, for the purpose of making mill-stones; and the fragments which accumulate in forming these are sent to Holland, where they are ground to powder, and used on a vast scale in composing the cements for the dykes and other water-buildings. The Dutch are said to have been the first who used it in this way; and they must have found it a most valuable acquisition. Large quantities were imported here and employed for similar purposes, until the discovery of the Roman cement happily rendered foreign aid in this important particular no longer indispensable. The Dutch and Germans call it *trass*; in this country it is commonly styled Dutch *tarras*. It has been stated to be inferior to the pozzolana, in regard that cements made with it do not set so firmly when exposed to the action of the air as they do under water; also that they are liable to decay, either so circumstanced or alternately wet and dry—being excellent only if always under water. But there is reason to suppose the specimens used in the instances upon which this opinion was founded, must have been impure, or in some other respect imperfect; for in Germany and the north of France, as well as in Holland, it is considered to be equal to the best Italian pozzolana, whether in a wet, damp, dry, or inclement situation; and the Dutch at least must, from their extensive experience, be well qualified to judge. Still, as there is, unavoidably, much opportunity for adulterating a commodity of this nature in the course of transmission, it is not improbable that in general, by the time it came to market in this country, it might hardly be fit to support the high reputation it obtained on the Continent. Another disadvantage attributed to it, is a troublesome growth from the joints, produced by a chemical action among the ingredients, and which sometimes projects so as to require being cut away.

46. **Tarras** may be mixed either with common or water limes, but the proportions that are adopted in the two cases are different. When common white lime is employed, equal parts of it and the *tarras* compose the mixture; the former being in the state of quick-lime ground. These should first be thoroughly mixed, then, with a very small quantity of water, beaten to the consistency of paste. When a hydraulic lime is used, two parts slaked in powder, one

part *tarras*, and three parts sand, are the ingredients and their proportions: the latter is considerably the cheaper of the two, and is little if at all inferior to the other as a water cement.

47. **ROWLEY RAG**, a non-calcareous stone, the essential ingredients of which seem to be oxide of iron and burnt clay, is very similar and little if any thing inferior to *tarras* in the power of giving to mortar made of white lime the property of setting under water.

48. **ARENE** is the name given to a fossil sand accidentally discovered by the proprietors of some mills situated on the river Isle, in the department of the Gironde, which gives to mortar made with common white lime not only great durability, but the quality of setting under water: it requires no preparation, but is only used instead of ordinary sand.

49. **M. Vicat**, a good authority on the subject of calcareous cements, especially on that part which relates to artificial hydraulic limes, and who established a manufactory at Paris for making the latter on a large scale, chiefly from lime and clay, states the proportions of clay to be added to one part of lime as varying so widely as from about  $\frac{1}{10}$ th to  $\frac{3}{10}$ ths; the lesser quantity being given to such as are naturally hydraulic in the greater degree, and therefore already possessing a certain portion of clay. The due allowance to the best carbonate, however, he states at  $\frac{1}{10}$ th: when the larger proportion is incorporated with the lime, it does not slake, but still pulverizes easily and hardens readily under water. It has to be remembered, on this head, that all clays are not identical, and that the finest and softest are the most suitable.

50. There are several methods employed at the manufactory mentioned: one, the superior but more expensive, is formed by burning together slaked lime of a rich quality with its due proportion of clay. In another, which is also of a satisfactory character, chalk, or some other calcareous substance which can be bruised down with facility, is reduced to a paste with water, and being amalgamated with the clay as intimately as it is susceptible of, is then subjected to the calcination. By this mode an important saving is effected in the burning alone, although the hydraulic lime which it affords is in quality rather inferior; but the course usually adopted is to burn together four parts of very rich slaked lime, or seven parts of carbonate, with one of dry clay; the lime being, when this formula is followed, free in itself from the latter ingredient.

51. Artificial pozzolana is also manufactured in various ways at the establishment referred to: the best is composed by strewing pulverized clay, psammite, or *arène*, in a layer of (as deduced from the French measure) rather better than one-third of an inch in thickness upon an iron plate, at a heat somewhat under forging temperature, and continually stirring it thereon with an iron rod, until the calcination is uniform throughout, which takes from five to twenty-five minutes, according to the material. The stiff brown clays, which do not contain lime, and which calcine to a brick red, are rather better than the white or pipe clays in which silica prevails, and that change to a light pink. The pozzolana obtained from the former, when mixed with an equal quantity of lime, sets hard in about three hours; a similar combination with the latter takes double the time to set and does not become so enduring. Those clays which are fine and soft to the touch, consisting chiefly of silica and alumina, and that contain the least carbonate of lime, but are more or less ferruginous, afford by the above method pozzolanas of excellent quality, which acquire in water the hardness of brick.

52. There is an artificial pozzolana, or rather water-lime, made by burning one part slaked lime with three parts clay for some hours at a red heat, and then covering it over in the kiln with sand or earth, and leaving it there to cool; after which it is kept in close casks till wanted.

53. **FROST'S ARTIFICIAL POZZOLANA** (patented 3rd April, 1823) is carbonate of lime, calcined at a heat not higher than the temperature at which cast-iron softens, and cooled without the access of atmospheric air or moisture: this has the property of setting under water.

54. It is considered, and probably with good reason, that a very good and quick-setting

water-lime may be made of five parts chalk and two parts common clay. Most clays contain a metallic oxide, which will give the hydraulic property to common limes. It is stated that a good hydraulic lime may be composed of pure limestone and one-sixth of clay, by the process specified in article 18, in reference to oyster-lime.

55. The ash mortar, celebrated under the name of **CENDRÉE DE TOURNAY** in France, so highly esteemed as a water-cement and extensively used in the Low Countries, is procured from the kilns in the Scheldt district, the lime from which contains a considerable portion of ferruginous clay, and is burnt with pit-coal of a slaty description, abounding in argillaceous schist impregnated with iron. When the main part of the burnt lime has been withdrawn from the kiln, the ashes of the fuel are found to be mingled with a remnant of lime-dust, averaging in its proportion 25 per cent. This mixture, when equalized, is taken about a bushel at a time, and water thrown on it just enough to slake the lime: when the whole has been treated thus it is thrown for several weeks into a pit and is covered with moist earth; then on being removed, it is put into a wooden vat, or trough, and beaten with an iron pestle until it becomes of a pasty consistency; after which it is spread out for a day or two in the shade, and is then again beaten up. These modes of treatment are continued alternately until the mortar acquires a degree of stiffness just proper for use. It adheres firmly with either masonry or brickwork, quickly forming a very compact mass, and in the course of 24 hours indurates like stone: it may be subjected to water almost instantly, and will endure the action of the most turbulent streams.

56. In London there is a blue mortar made of Dorking lime and cinders, which it is thought might be rendered, in quality, nearly equal to the *Cendrée de Tournay*, by bestowing on it similar careful preparation: it is used about work much exposed to weather. A mortar, composed of two parts of newly-slaked lime and three of wood-ashes, is said to be, for withstanding the effects of alternate dryness and moisture, superior to *tarras* mortar, although under water very inferior to it: it is best when kept for some time, and frequently well-beaten before used. There is an African maltha, or stucco, of some celebrity, which is composed by mixing three parts sifted lime-powder, two parts wood-ashes, and one part sand, with a little water; and after beating it up, adding a little oil and again beating the composition: this is repeated alternately for three or four days, until the composition is of the consistency proper for use: it is applied in the usual way, and shortly acquires the hardness of stone.

57. **Forge-scales** and common lime, in equal quantities, make a water-cement that is very good for small works; the former should be pounded, and the latter, in a state of hydrate, in fine powder. Forge-ashes, also, with lime, make a very useful cement for securing the joints of buildings against the weather, and for similar purposes, although not capable of resisting the continual action of water. Mortar composed of iron scales two parts, argillaceous lime two parts, and sand one part, or an equal portion of each, if pure carbonate of lime be used, is said to be quite equal to *tarras* mortar; 34 lbs. of sulphate of iron, incorporated with mortar, composed of one bushel of lime, and half a bushel of fine gravel sand, is said to render it equal to Roman cement. Plaster of Paris, mixed with iron-rust in the proportion of one-tenth, affords a water cement which immediately sets very hard; plaster and iron-filings also make a good cement. Oxide of iron, in almost any form, especially when not completely oxidized, not only enhances the peculiar property of mortars made with the brown and yellow limes, but gives tenacity and the property of hardening under water to those made of the common white kinds. Grey oxidized forge-scales are said to be, when pulverized and sifted, equal to pozzolana.

58. Common mortar, composed of lime and sand, and mortar in which there is burnt clay, are said to be much enhanced by the addition of boiled potatoes. The incorporating of vegetable matter certainly seems opposed to the orthodoxy of mortar-making; but it must be admitted that this objection is met, in a measure,



by the approved formula for compounding the pargetting for chimney-flues.

59. The inferior water-cements are very serviceable for bedding brick—or flag—paving in damp situations.

60. An excellent cement for outside plastering is formed by slaking 100 parts of quicklime in water just sufficient for that purpose, then reducing it to the substance of cream; also diluting five parts of either white or coloured clay to a like consistency, and, after a while, mixing it carefully with the other. After remaining in the tub for twenty-four hours, during which it is frequently stirred, it is coloured by an addition of two parts of yellow ochre: this is a very tenacious coating, and one that resists to a high degree the action of wind and rain. Another facing for houses is composed of limestone and road-dust, or sand, reduced to powder and heated in an oven, and one-fourth part of tar, pitch, or rosin, added while the other ingredients are hot.

61. BAILEY'S CEMENT, for stuccoing, consists of three parts Dorking lime, and one part clean, fine, river sand, and is kept mixed dry, in air-tight casks, till used, when it is made into mortar, and applied and finished in the usual manner, the walls being prepared for it by a thick wash of the same material.

62. ROUGH-CAST is a cheap substitute for outside stuccoing, in which the smoothing operation, called floating, as well as the ash-laring, or lining, to imitate masonry, are dispensed with.\* It is executed by first giving the works a coat of hair-mortar, sufficiently rough on its face to receive when dry another coat of the same. The second is laid on tolerably evenly, and is immediately covered with the third coat, or rough-cast, which is composed of clean, fine gravel, the largest stones scarcely so big as a pea, mixed in a trough with lime and water to a semi-fluid consistency, and with a tool similar to a dust-shovel dashed upon the work, so as to adhere firmly to the second coat, while still soft; when dry, it is generally tinted with a stone-coloured wash, which gives it an uniform and finished appearance.†

63. ATKINSON'S CEMENT is, in quality, similar to Roman cement, but of better colour. It is often preferred for ornamental work in dry situations; but being more absorbent, is inferior for construction: it does not set so quickly as the Roman cement.

(To be continued in our next.)

## PETRALOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 242.)

### Siliceous Rocks.

QUARTZOSE ROCKS,—consisting of silica only, or uniting in their semi-crystalline structure small quantities of other earths and mineral aggregates, as plates of mica, felspar, metalline bodies, &c.

HORNBLÉNDE ROCKS, consisting chiefly of silica, iron, magnesia, and lime; the union of quartz and hornblende produces varieties, the introduction of schorl, garnet, and mica is productive of other varieties; these rocks are generally laminated.

FELSPATHIC ROCKS: quartz, embracing potash and alumina, and sometimes lime and metalline earths; they are of innumerable varieties.

GRANITE,—said to be a corruption of *geranites*, a term applied by Pliny to a stone of the colour of a stork's neck, and originating with Italian antiquaries.

Of the varieties of rocks distinguished from each other by the peculiarity of their composition and character, none lay higher claims to our admiration than this very extensive class, or are more really deserving of notice: the hardest and most ponderable rocks we

are acquainted with, they are at the same time capable of receiving the highest and most exquisite polish, and are therefore equally desirable for the exterior of buildings, for casing canals, for bridges, lighthouses, temples, palaces, and prisons, and for the wear and tear of machinery, as they are for the ornamental interior of public and even private edifices of magnitude. In their natural state granites constitute the bases, and very often the chief material of many elevated portions of the earth, being the most common matrix of the metals, and of some of the precious stones. In its simple primary state it is chiefly quartzose uniting with iron, magnesia, and lime, and consisting of parts variably disposed, without any determinate order, silica forming the common bases of the whole aggregate mass,—the earths of which it is composed, and from which it is produced, being exclusively oceanic. In the changes produced by local influences, we observe the fossil bed consisting of the oceanic animal and vegetable reliques, or the earths produced by their decomposition gradually assuming its determinate form, the shelly coverings of the mollusca silicify—veins of quartz intersect the calcareous mass—by degrees the whole becomes cemented together, the common flinty bodies assume the crystalline form, the cementing material is embraced in the crystalline or granular structure, and the ultimate result is granite. In all these changes, we observe that the several aggregate bodies pass through slow and progressive stages of change, the act of silicifying, or, as it is universally but most erroneously termed, petrifying, being gradual, and depending on the conditions to which it is exposed, and the final act of crystallization being produced by the gradual displacement of calcareous and other earthy matters. All siliceous bodies, such as flints and other common stones, gradually assume the crystalline form, under certain conditions of atmospheric heat and moisture, unless prevented from doing so by being united with some earthy compound inimical to further change; and so far from lateral pressure being necessary to produce crystalline bodies, as is generally affirmed by geologists, and weakly demonstrated by the experiments of Sir John Hall, it is absolutely necessary for the right development of the regular crystalline structure, that there be a perfect freedom from lateral pressure which is palpably manifest in the act of crystallization of rocks, for invariably, in the first instance, the matter is simply cemented together, and in this state it is enabled to resist the pressure of surrounding bodies, the earth or earths being held in union by the one common basis. When we examine a mass of matter thus agglutinated together, it conveys no idea of any further change, but all bodies, organic and inorganic, are the subjects of unintermitting change in the disposition of their quantities and qualities, and although there is an apparent *vis inertia*, or state of absolute rest, in rocks and stones, and consolidated beds of the earth, all of them in reality are the subjects of incessant change; thus the simply agglutinated mass goes on changing, some of its elementary constituents being abstracted, and the vacancy thus produced being filled up as it takes place by the expanding body, which, divested of its impure mixtures, assumes another form.

The largest aggregate masses of the earth are governed in their combinations and changes by the same laws that govern the disposition of the smallest particles of matter, and every atom, being a component part of a large consolidated body, must have room to change its place and disposition, to act and to be acted upon; otherwise, like sandstone, it continues a mere heterogeneous mass of particles mechanically united and readily separated from each other. The crystalline texture of granite depends upon these conditions, and the more room the siliceous aggregates have to expand, the larger is the crystal, and consequently the coarser the granite. The same law is observable in crystalline carbonates of lime; they generally form (or, as is palpably manifest by their disposition and qualities, they have been formed in preceding epochs) upon or near the surface of the earth, and previous to assuming the crystalline state were permeable to all fluid bodies, and becoming the recipients of particular fluids, crystallized by expansion of their atomic particles.

Geologists inform us that granite is primary rock, formed of matter once in a state of

fusion; and this unphilosophical notion is made the basis of modern systems of geology; but the very confused and uncertain nature and disposition of the material is of itself sufficient to compel us to negative this supposition, independently of facts derived from travel and observation in various parts of the earth. It passes by transition into all kinds of rock and under all circumstances its elementary constituents are identified with the varied beds of the earth, from which, by cohesion and subsequent crystallization, it is even now being produced. The substances of which the strata are principally composed are siliceous, calcareous, and argillaceous earths, the two first being chiefly produced within the ocean, being the resolution of oceanic animal and vegetable bodies; the latter is produced by the resolution of animals and vegetables of *terra firma* united in variable proportions of each; all these several beds exhibit more or less organic remains of species allied or analogous to those now existing, and by their union with each other produce the varied phenomena; the agglutination of calcareous matters causing them to pass into limestone, of clay into slate, and of siliceous matters in sandstones; the further change or crystallization producing peculiar results, as marbles, jaspers, granites, &c. The organic remains entombed at various depths, and very often disposed in groups and families, demonstrate that the strata were deposited over each other at distant intervals of time, and that each stratum in which they occur and under which they were formed was once the uppermost stratum of the globe, there being a manifest period of time in which species have uninterruptedly lived and propagated their kind; the materials of such strata could not therefore have been suddenly brought together. Again, they everywhere manifest conversion of calcareous animals into simple carbonate of lime, the conversion of vegetable bodies into vegetable earths and their transition into clays and shales, demonstrates that organic matter ever ultimately assumes form in which all traces of its original bodies are for ever obliterated. The absence of organic remains in granite cannot therefore be adduced as evidence of its primary nature, any more than limestone or slate recently formed and still forming from calc and clays.

Simple granite, according to geologists, consists of felspar and quartz, the component parts varying in their predominance; but, the presence of the former, which is a combination of silica, potash, and alumina, and sometimes lime, demonstrates, that it is a secondary product, the alumina and potash being derived from *terra firma*; whereas hornblende, which often replaces the felspar, is strictly oceanic, and therefore, as regards precedence of origin, is assuredly a primary product.

True granite consists of quartz, felspar, and mica, the latter being composed of the like ingredients of felspar, together with oxides of iron and manganese, and very indeterminate in its mixtures. Besides these ingredients true granite is sometimes mixed with other minerals as shorl, hornblende, crystals of garnet, steatite, and alumine: the felspar is often flesh-coloured, the quartz generally white, and rarely greenish; it is found in innumerable varieties of hardness, proportion, distribution, and colour of parts. It takes a very high polish, and for this reason has always been employed in architecture and other economical uses. Of these compounds quartz is invariably the first to assume the crystalline texture, and in doing so occasion the changes in the enveloped ingredients. Granite, in fact, is no other than conglomerate masses of earth which, united in the first instance by simple cohesion of parts, are more durably united by time and the accident of change, the particles and aggregates of which they are composed undergoing a simultaneous and progressive change from their petrefactive state to the crystalline structure, and their crystalline nature and composition depending upon the nature and composition of the primary beds. All granites are produced by sedimentary or mechanical deposition, the material of which they are composed being derived from organic depositions locally accumulating within the ocean. A deposition of pure sands, when no longer disturbed by the tidal action, and preserved from further change of position as a portion of *terra firma* becomes of necessity, in its whole aggregate mass, the subject of change when acted

\* [Some old specimens of rough-cast are to be found, rusticated by smooth channelings, so as to resemble rustic masonry, some examples of which are to be seen at Highgate.—Ed.]

† [Rough-cast, having projecting surfaces, which retain wet, is the least estimable kind of stucco, though if made with hydraulic lime, and afterwards trowelled smooth, it would perhaps, from its stony nature, be one of the best.—Ed.]



upon by the atmosphere, or by chemical ingredients held in solution by the waters which it may contain, and the nature of the action determines the result, thus in some instances it remains in its granular state, but assumes a milky whiteness; in others it puts forth crystals from dark granular masses; in others it assumes entirely the crystalline structure. Sometimes these granular bodies are simple, united by the force of cohesion with some common basis or cement, and the whole body is then denominated *sandstone*; at other times, it assumes in aggregate the crystalline structure, and is then known as *quartzose rock*. Much of the ancient strata exhibits this purity of composition, being wholly composed of pure siliceous bodies, as sands, sandstone, or quartzose rocks, and aggregate masses, and all these several beds owe their origin to the one common mechanical action of sedimentary deposition, their homogeneous nature obliterating all traces, if they ever had any, of stratification. The ejected material of volcanoes has never been known to assume the quartzose structure, nor can we rationally attribute the origin of this material to volcanic causes, for although bodies in cooling down very often assume the crystalline structure, it is not in the nature of silica so to do unless acted upon by those chemical agents which have the power to direct its movements. Thus in metalline beds siliceous bodies are converted into quartz by the same chemical agents, which, by their action, generate the metals, although these agents do not, of themselves, unite with the body. Again, as a bed of clay contracts and opens into fissures, by the gradual loss of its moisture, so silica separating from the clay, assumes the quartzose form, its crystals increasing in size by constant depositions of silicic acid, in the same manner as stalactites increase in cavernous apertures of the earth. Again, flints, as we behold them, are solid bodies, but all of them contain earths in variable proportions, and therefore when these flints become exposed to long continuous tropical heat, united with moisture, chemical action is produced within the stone, gradually extending from the exterior to the circumference, the earths or metalline bodies are abstracted, or the latter, chemically acting with the silica, causes it to assume the quartzose form; these, and innumerable other means, may be adduced whereby nature forms quartz, which is the chief ingredient of almost all the crystalline rocks.

(To be continued.)

#### METROPOLITAN IMPROVEMENTS.

(Continued from p. 242.)

To the inquiries of the commission as to the best mode of improving the navigation of the river, with reference to the trade of the locality, and assuming proximate uniformity of width to be desirable for such improvements, Mr. Hartley observes, "I am of opinion, that approximate uniformity of width is desirable for the purpose mentioned, and I conceive this may be obtained without injury to the trade of the locality, by leaving open the spaces between the embankment and the shore for the use of those now occupying the margin of the river." Mr. Gordon—that "as in order to regulate the river, it should be brought to approximate uniformity of width, the best mode of accomplishing this, with reference to the convenience of trade, would be the principle of the plan B, whereby the present river fronts remain intact, and, all things considered, the craft would have better and safer accommodation than at present." Mr. Rendel—that "the local trade would be best consulted by leaving the space between the wharf and the embankment open to the tidal flow and ebb." And Mr. Macneil—that "the best mode of accomplishing the object, having reference to the trade of the same localities, will be to construct a wharf wall sufficiently wide to form a thoroughfare upon it, and at such a distance from the shore as to allow barges and other craft to ply to the different wharfs, as at present upon the principle of plan B." In Mr. Cubitt's judgment, on the other hand, "the better mode would be to construct the shores of the river with strong walls, and to form floating docks between such walls and the present shores, and wharfs for the accommodation of the trade." The opinions of Captain Beaufort, Mr. Rennie, and Mr.

Giles are not directly expressed on the point, and are consequently not available.

To a subsequent question, whether the principle of plan B would be better carried out by the substitution of locks and floating basins for tidal docks or side channels, as originally proposed, the replies of Mr. Cubitt, Mr. Rendel, Mr. Rennie, and Mr. Giles, were in the affirmative; of Mr. Hartley, Mr. Gordon, and Mr. Macneil, in the negative. In the series of questions submitted to the Hydrographer to the Admiralty this question was inadvertently admitted.

We think it right, in reference to this point of our inquiries, to advert to the distinct and practical testimony of Captain Maughan. "Side channels," he observes, "admitting the rise and fall of the tide, would, in my opinion, be preferable to docks. The former appear to possess advantages over the latter plan, viz. access for the barges at all times of the tide (at least as long as there is water inside the terraces), the saving of a very considerable expense in constructing locks, double lock gates, &c., as also the usual cost of maintenance, and of the establishments for working them. Locks would also very much encroach upon the side channels, and, if many of them should be required for the admission of barges, the annual cost would be very heavy indeed."

He adds, "If the side channels were converted into floating basins, the abstraction of tidal water would of course be equal to the cubic contents of these docks; and so far as the navigation is concerned, this modification of Mr. Page's plan would be as injurious as a solid embankment."

The next in the series of considerations connected with Mr. Page's plan are the alleged difficulties of entrance to these side channels from the river. The number, position, and dimensions of these, it is obvious, might be modified at almost any period previously to the commencement of the works, and we confined ourselves, therefore, to points less susceptible of modification. Mr. Hay, a lighterman, observes, "I think Mr. Page's plan is the best I have seen, and if a project of that kind is to be executed, I have never seen any plan equal to it; but if the river is narrowed, the tide will go up with greater velocity. We have great difficulty, now, in bringing up with our craft. Now we can bring up to the wharfs, and bring up in a recess, and get out of the way; but I doubt whether we can ever bring up at all when the tide is running so hard as it would. Still Mr. Page's plan is a very excellent one; I have seen nothing equal to it, if these difficulties of getting in at the openings can be done away with." On being further questioned whether his objections would equally apply to open entrances, he replied, "If there is a plan intended to be carried into effect on the river, there cannot be a better; but I fear when we come to the openings the tide will carry us by." Mr. Lucey, also a lighterman apprehended no difficulty whatever; referring to the entrances of London and St. Katherine's Docks, he depended upon the eddy to assist him, and gave his reasons for that dependence. Mr. Tayler thought there would be no difficulty "unless the speed of the tide were very much increased. In the flow of the tide it would then require some very experienced bargemen to bring up, and ring-bolts or piles must be resorted to for the purpose." Assuming an increase of 15 per cent. upon a velocity of three miles an hour, he anticipated no difficulty whatever. Mr. Harvey had conversed with intelligent lightermen, and inferred, from the same causes, that admission would be more difficult. Mr. Pocock adverted to the increase of existing difficulties since the removal of Old London Bridge, and was also of that opinion, attaching little importance to the drift or eddy anticipated by Mr. Lucey; and Mr. Peache, referring to the fact that a great portion of the craft were worked by only one man, considered that there would be difficulty, in such cases, in getting in without further assistance.

On this point it is observed by Captain Beaufort, "the entrance to the docks in plan B would be often difficult when the tide might be strong; and, if these entrances were converted into locks, great inconvenience would probably arise from several barges arriving at the same time. At the docks which are used by large vessels, specific times of the tide are selected for letting vessels in, and they are

then attended by a sufficient number of men to overcome all difficulties; whereas a barge is moved about the river by a single man, who would be quite incapable of conducting her into a narrow gate or lock."

Looking to this question as one having rather a practical than scientific bearing, the opinions of the engineers consulted were, perhaps, not unexpectedly discordant. Mr. Hartley and Mr. Cubitt disapproving of the particular entrances shown in plan B, were nevertheless of opinion that there would be no difficulty in designing entrances such as should afford entire protection against strong currents and high winds; the first, however, saw no necessity for locks, the second admitted locks in deep recesses. Mr. Gordon also was of opinion that there would be no difficulty, thought the gates in the plan "judiciously placed," and recommended the addition of others. Mr. Rennie, observing that "all the entrances to the various docks at present on the river are occasionally affected by currents and high winds," assumed that "a careful observation of the prevailing winds would determine their position;" Mr. Giles, that "they would be affected by the same causes, but that these would not impose greater difficulties than exist at the entrances of the various docks on the river, and which might, by the means resorted to in these cases, be overcome."—On the other hand, Mr. Macneil was of opinion, that "these entrances would impose difficulties and obstructions such as do not now exist at the entrances to the various docks or wharfs on the river; and Mr. Rendel, "that they would be difficult, if not dangerous, except for an hour and a half, at most, before and after high and low water."

The experience of Captain Maughan may here be again of service in elucidating a practical question. To questions whether the entrances should be at right angles with the stream, he replied "As regards facility of entrance, I think that is of very little importance. The craft will have to stop outside first of all, and, if there is no tide, which I apprehend there will not be, close to the embankment wall, they will go in as they like; I do not think the stream will run rapidly close to the terrace, so as to prevent the easy ingress of barges." He apprehended no difficulty in getting in, no pressure of the tide upon the vessels at the entrances. In his letter he observes, "The difficulties which have been raised about entrances at right angles I confess I cannot understand; they appear to me very much exaggerated. With a floating platform or dumb-lighter, and piles driven down at proper distances to check the barges, any lighterman could pass in his craft, even should the stream run up rapidly outside, but which I very much doubt its doing, as stated in my evidence."

The discussion of these entrances, without reference to the principle involved in the one or other of the modes of appropriation already suggested, involved a further consideration of some difficulty. The sufficiency of their width was generally admitted, but their height above high-water mark, assuming moveable bridges to be dispensed with, afforded subject for much difference of opinion. Mr. Tayler and Mr. Pocock considered, as coal-merchants, that from six to eight feet headway would be sufficient for their purposes; but for straw barges, and other descriptions of craft engaged in similar traffic, and, in short, for general uses, Mr. Hay regarded 10; Mr. Lucey, 11; Mr. Peache, 12; Mr. Tayler, 14 or 15; and Mr. Harvey, 30 feet, as the smallest allowable reservation. The diversity of opinion upon such a point, between parties whose interests and daily habits should make them conversant with these details, is sufficient, we think, to justify a doubt as to the reasonableness of some of these requisitions.

As the object of any measure for the improvement of the river should be obviously to get rid of the mud at present accumulated upon its shores, the attention both of Mr. Walker and Mr. Page had, of course, been directed to these points: Mr. Walker trusted chiefly to the inclination of his recesses towards the river, and to the tide in cleansing them; Mr. Page, to an inclination to be artificially given in the first instance, and to the subsequent operation of culverts and sluices.

The relative advantages of, and objections to, Mr. Walker's recesses in regard to this



question have been already stated in referring to his plan. The tendency to such an accumulation in the side channels of Mr. Page, and the efficacy of the means devised for its prevention or removal, gave occasion to much diversity of opinion, and incidentally involved the discussion of a point already adverted to, viz. the relative merits of open docks and floating basins. Upon the former of these points, it is observed by Mr. Cubitt, "I think the docks proposed by plan B, with single pairs of gates only at their entrances, and subject to be filled up and emptied at every tide, for the purposes either of navigation or scouring, would be very subject to silt up with mud."—Mr. Gordon's opinion was to the same effect, though qualified; Mr. Macneil's, that they would have a greater tendency to silt than the recesses of Plan A; Captain Beaufort's, that the tendency would be at least as great; Mr. Hartley's and Mr. Rendel's, that it would be less. Captain Beaufort and Mr. Cubitt were of opinion that, by the conversion of these docks into floating basins, the evil would be diminished; and all concurred in stating that either by the means immediately recommended, or other artificial resources, they might be rendered practically unobjectionable.

The necessity of resorting to these means, however, even upon the simplified basis of side channels, as originally proposed, implied at the same time a necessity for supervision, and this supervision an expense, to which any modification of the plan in the shape of floating basins with lock entrances, would of course involve some addition. Assuming, therefore, the plan B to give to the wharfingers in common the use of large reservoirs of water, and to require the supervision of officers whose duty it would be to regulate the scour, and the ingress and egress of craft at particular states of the tide, we submitted to the professional gentlemen consulted, whether this supervision, if restricted within proper limits, would entail any serious expense, or offer any obstruction to the trade, or injuriously affect the interests, or trench upon the convenience of the owners or occupiers of the adjoining property. We submitted, at the same time, a second question, viz., whether it would give them any advantages which they do not possess at present?

In reply to the first of these inquiries, Mr. Rennie answered simply, and generally, in the affirmative; Mr. Giles, "that it would become an objectionable restriction upon the freedom of the navigation of the river;" and Mr. Rendel, "that the interests and views of the numerous owners and occupiers of wharfs would make the supervision and police of such docks difficult and expensive; that supposing the entrances to be made sufficiently commodious and numerous, and the docks kept clear of mud, the owners of the wharfs would have no reasonable ground of complaint." Captain Beaufort, Mr. Hartley, Mr. Cubitt, Mr. Giles, and Mr. Macneil, were of opinion that the supervision need entail upon the parties affected no injury, serious trouble, or expense, or none, at least, for which its advantages would not afford ample compensation; and concurred with Mr. Rendel, that the conversion of the side channels into floating basins, notwithstanding its attendant increase of expense, would give them a positive accession of advantages.

The remaining considerations connected with the plans before the Commission involve a discussion of their relative claims to adoption. With the plans of Mr. Walker and Mr. Page a terrace and public thoroughfare are undoubtedly consistent. In both plans the sewage is treated upon the same principle—viz. by extending the sewers to the outer line of the embankment, and connecting it with the river under low-water mark.

**PUBLIC WALKS, BIRMINGHAM.**—At the meeting of the Town Council, Alderman Cutler gave notice of a motion for the next meeting, that a communication be opened with the Commissioners of Woods and Forests, with a view to obtain from them a grant of money, for providing public walks for the inhabitants of the borough.

**LEAMINGTON.**—The opening of the new Proprietary College is expected to take place immediately on the termination of the ensuing Midsummer vacation.

## CHURCH-BUILDING INTELLIGENCE, &amp;c.

**St. Stephen's Church, Bristol.**—*Interesting Discovery.*—The interior of this edifice, agreeably to modern fashion, is being remodelled, and the high mahogany pews, which were built in 1733, are to be succeeded by more spacious and airy sittings. On removing the mahogany wainscoting on the north side of the church, lately, the workmen discovered a beautiful ancient monument in high preservation. It is a raised tabular cenotaph, faced with shields, and interspersed with effigies of different characters. On the table are two cumbent figures of exquisite workmanship; the male is clad in short or three-quarter tunic, fitting close to the body, and reaching half down the thighs; the legs are bare and feet unshod; the tunic is buttoned in front and secured by a studded belt or baldric, to which is attached a sheath for a small sword or dirk; there is no helmet or covering to the head, but the hair is cushioned up like a small wig; a slight moustache passes from the upper to the lower lip, and what in modern parlance is styled a *favort*, is on the chin; the countenance is impressive, and the age may be supposed under fifty. The female is a very elegant figure with beautiful and regular features, the costume is decidedly that of a person of distinction; the head is enveloped in deep fillets, which form three sides of a square, and such as were in fashion in the fourteenth century; a long flowing robe or manteau is beneath the figure which is clothed in a long close-fitting dress, the hands, which are quite perfect, are raised over the breast in the attitude of prayer; the hands of the male figure are gone, but their position must have been the same. The head of each figure rests upon a cushion, and the feet are supported by some animal emblematical of affection and faithfulness: the whole is surmounted by a Gothic canopy or festoon. The rumour of the discovery soon spread, and numbers visited the shrine, and conjecture, of course, became busy in naming to whom the monument belonged. Several suggested that it might be that of John Shipward, who erected the tower in 1470, and whose effigy and that of his wife were cut in painted glass in the great west window, now destroyed. No doubt the right owner will be discovered by the researches of antiquaries, and, whoever may be proved to have a title to the distinction, we trust that it will never again be condemned to obscurity to suit the convenience or economy of churchwardens and vestrymen.—*Bristol Gazette.*

**New Church of St. Alkmund.**—On Monday week last, the ceremony of laying the foundation or corner stone of the intended new Church of St. Alkmund, Derby, took place.

## RAILWAY INTELLIGENCE.

**Eastern Counties' Railway Extensions.**—The *Railway Times*, in noticing the extensions of the Eastern Counties' Railway, says—"The original line to Colchester, of 51 miles, has cost the proprietors 2,850,000. Look at all their extensions and leases as purchases, and observe only how much cheaper than this they have acquired valuable new lines and branches. The above gives a rate of about 56,000*l.* per mile. In acquiring the Northern and Eastern Railway of 37 miles, at a rent of 5 per cent. on 970,000*l.*, the rate of purchase does not exceed 26,200*l.* per mile; the Harwich on lease, 18 miles at 4 per cent. on 210,000*l.*, gives a rate of about 11,660*l.* per mile; the extension to Peterborough and Brandon, 73 miles, at 5 per cent., on 850,600*l.*, gives a rate of 11,643*l.* per mile. Add the capital of the whole of these three new lines together, 2,030,000*l.*, and divide them by the aggregate mileage, 128 miles, and the result is 15,870*l.* per mile. If the Eastern Counties' Company could make half-a-dozen more such bargains, their proprietors ought to rejoice."

**Railways in Denmark.**—In the island of Seeland, a railway is to be laid down from Copenhagen to Elsinore, a distance of thirteen leagues. Another line, crossing the island at its widest part, will run from Copenhagen to Corsoer, on the Grand Belt, passing by Rothchild, Ringsted, and Slagelse, a distance of about thirty-one leagues. By means of this line, all the letters between the capital and the rest of the kingdom will be despatched, as well

as the correspondence between Denmark and the continent of Europe, during the season when the steam-navigation of the Baltic is suspended. It is in contemplation to lay down six lines of railway in the Duchy of Holstein, branching from the great line between Kiel and Altona. By this means, a complete communication will be effected between all the principal cities of Holstein, and between the North Sea and the Baltic.

## Correspondence.

## THE PROPOSED NEW BUILDING-ACT.

SIR,—Can you or any of your readers inform me what is doing with regard to the proposed New Building-Act, and whether it is likely to pass the Legislature this session?

I am, Sir, your humble servant,  
Blackheath, May 13. A LANDLORD.

SIR,—I have been looking for these two weeks past for the appearance of the very excellent report by the Builders' Society relative to the above bill, and respectfully beg to inquire why it is that such a document should not already have found its way into the very instructive pages of your journal.

A CONSTANT READER.

[We have not received a copy of this report.—Ed.]

## EGYPTIAN HALL, MANSION-HOUSE.

SIR,—I have been much edited by the description copied from a morning paper of the "improvements" just made at the Egyptian Hall, in the city, by means of erasing the former marbled-work, and by repainting that great and magnificent apartment just as any common painter would have painted any common room. Surely the architectural world must be delighted to hear of the patronage of a "design" for rendering lean the flutings of interior Corinthian columns, by re-working them, and of the merit of superseding, in the smoke-dried heart of the city, sienna by French-white and delicate fawn-colour. No doubt the economists who have been terrified by City jobbing and extravagance will hear with great satisfaction that a room in the "Mansion-house" has been whitened without extra charge; but joking apart, I think it due to the public that public journalists should not occupy their readers' time by such twaddle; and I hope your own reception of such into your columns was rather intended as a quiz than with a *con amore* desire to waste money by wishy-washyising our public buildings. Perhaps, however, I may be myself mistaken, and may not see that this seemingly frivolous affair is intended as a serious City quiz upon the national idea of ornamenting the Houses of Parliament in a very different manner, and I may therefore be altogether wrong in being exceedingly disgusted at finding that while this vulgar whitening and buffing has been transacted, a more substantial extravagance has been fallen into, by adding the enrichment of an "egg-and-tongue" around the coffered-work of that vaulted ceiling which before, in its happy medium of decoration, combined great richness and elegant simplicity, so as to render it one of the very finest and noblest in Europe, and the admiration of the world, and requiring nothing but the withholding from it of all audacious hands.

I suggest that a penny subscription be raised in the city for making this ceiling again just as it was, and that the citizens in future employ themselves in *repairing* and increasing their fine buildings, instead of adding to them that which they do not require, or in diminishing their number.

I am, Sir, your humble servant,

VANDYCK BROWN.

Painter-Stainers' Hall, May 13.

SIR,—You will greatly oblige me if you will inform me where I can obtain a work on statues, with the different monastic dresses, and with figures and dresses of different saints and apostles. Also, armour figures, and, if possible, the prices.—I am, Sir, &c.,

A CONSTANT SUBSCRIBER.

[We have not time at present to give any list, as it would entail upon us some considerable trouble; perhaps our correspondents will lighten that charge.—Ed.]



## Miscellaneous.

**WESTMINSTER-BRIDGE.**—From some returns relating to the money expended, and to be expended on Westminster-bridge, and the probable cost for the completion of the repairs thereof, &c., recently moved for by Sir R. H. Inglis, Bart., M.P., it appears that the gross total amount of the sums expended on the bridge for repairs, alterations, professional and other services, from the 5th of April, 1810, to the 5th of April, 1838, a period of 28 years, is 83,097*l.* 6*s.* 9*d.*, of which 31,944*l.* was for repairs and alterations in the structure and foundation of the bridge, and 26,014*l.* for lighting, watching, watering, and maintaining the roadway on the same. Law expenses, &c. consumed a sum of 1,923*l.* 18*s.* 6*d.*, whilst salaries and allowances swept away 12,787*l.* 12*s.* 7*d.* The total amount of the costs for the repairs and alterations of this bridge (including the sums already expended, or now due), since the 5th of April, 1838, is 82,661*l.*, which is about as great a sum as the amount of money disbursed during the 28 preceding years. Of this large sum, 58,321*l.* was for the costs of erecting cofferdams, securing foundations, and restoring piers and arch-stones; 12,100*l.* for the costs of elongating the piers, in order to receive a widened superstructure; and 5,232*l.* for the costs of the works lately executed in lightening the superstructure in consequence of the recent sinking. The total amount which will be required to defray the probable cost of the further works and services is stated at 52,879*l.*—of which 23,579*l.* is for the repairs of foundations and arches, 5,900*l.* for the elongation of the piers, 20,100*l.* for repairs and alterations of the superstructure, and 3,300*l.* for miscellaneous services. The total income of the Commissioners of Westminster-bridge, arising from property belonging to the commission, amounts to the sum of 7,464*l.* 11*s.* 8*d.* It appears that, in order to widen the superstructure or roadway of the bridge 12 feet, making the whole width of the carriage-way and footpaths 53 feet 6 in. (the same as London-bridge), an extra sum of 40,000*l.* would be required, in addition to the 20,100*l.* above mentioned.

A self-acting ventilator for theatres and other places of public resort, intended to admit precisely such a quantity of external air as will purify the internal atmosphere, and bring it down to a determined point, was submitted to his Royal Highness Prince Albert by Mr. Thomas Wroughton, at Gwydyr House, on Friday, the 10th inst.

The Cathedral of Durham is now open to visitors seven hours a day, without any fee being required. Those who wish to see our cathedrals (if not our parish churches) constantly open, will be glad to hear of this commencement.

**EFFECTUAL METHOD OF PRESERVING IRON FROM RUST.**—Heat the iron to redness, just perceptible in the dark, then cool it in tallow.

The exterior of that magnificent building, Castle Highclere, the princely domain of the Right Hon. the Earl of Carnarvon, is now quite completed, the lofty tower of which is seen from almost all points.

The buildings formerly occupied as a nunnery at Cosside, Plymouth, are about to be converted into a soap manufactory.

## TO OUR CORRESPONDENTS.

We have received and put in hand the details, &c. of Rockhampton Church, but should be obliged by the addition of correct sections, &c. of one quarter of the quatre-foil ornament on the head of the font, also sections of the mouldings of the pinnace and door.

The Seal has duly come to hand, and will be returned when engraved.

Having been told several letters sent to us on the subject of the proposed Building Act have neither been published nor acknowledged, we have looked carefully over our correspondence, and found none such have been received, with the exception of one, intimating that, as the district-surveyors are handsomely paid for seeing every brick laid, they ought, if they desire any work to be opened for inspection, to pay the expense thereof themselves, since such could only be requisite through their neglect. This letter was suppressed, as we imagined it could only be sent out of jealousy. But if any bona fide letters on this important subject are sent to us, we shall take care that they are inserted.

## [ADVERTISEMENT.]

## AN ADDRESS TO THE CARPENTERS OF LONDON.

The Committee, encouraged by the strong assurances of support they have received, and animated by the hope that the patronage they have already secured is only the prelude to the sanction of the whole trade, again venture to call the attention of the journeymen carpenters of London to the importance of providing an asylum for those who, by age or infirmity, are unable to maintain themselves by labour.

The numerous institutions of this description which have arisen, and are rising up on every side, afford a strong proof of the estimation in which such establishments are held by the higher as well as the humbler classes of society, since both are united in their promotion; and it is not too much to expect that when the working classes perceive that those whom fortune or superior abilities have placed above them are anxious for their welfare, and willingly co-operate with them in acts of charity, sentiments of respect and gratitude will arise, and that good-feeling prevail, which should ever exist amongst the various classes of a civilized community. The object of the institution, for which the support of the master and journeymen carpenters is respectfully solicited, is to provide for the humble but honest workman a peaceful home and a slender maintenance in his declining years. Is there a heart not wholly dead to the sacred calls of charity, to whom the appeal for assistance can be made in vain? Is there a working-man who can behold his companions around him sinking into age and indigence, and yet refuse to contribute a trifle, (and no more than a trifle is required), to promote their comfort? It is believed that few will refuse to respond to this call among the journeymen carpenters of London.

But time hastens away, and those who desire to take a part in this good work should at once come forward; for where is there a man, however elevated his station in trade, or however bright his prospects, that may not by adverse circumstances hereafter be glad the institution will afford? And those who never need such assistance will never know enjoyment higher and purer than flows from the recollection of acts of mercy, benevolence, and charity.

## Current Prices of Metals.

May 14, 1844.

	£.	s.	d.	£.	s.	d.
SPELTER.—Foreign ton ..	0	0	0	23	0	0
" For delivery ..	0	0	0	22	0	0
ZINC.—English sheet ....	0	0	0	30	0	0
QUICKSILVER .....	per lb.	0	4	6		
IRON.—English bar, &c. per ton 5	0	0	6	10	0	
" Nail rods .....	0	0	0	7	0	0
" Hoops .....	8	0	0	8	10	0
" Sheets .....	9	5	0	9	10	0
" Cargo in Wales ..	0	0	0	5	15	0
" Pig, No. 1, Wales 4	0	0	0	4	5	0
" No. 1, Clyde 3	7	0	0	3	10	0
" For, Swedish ....	0	0	0	10	10	0
" Russian, c&c. ....	16	0	0	10	0	
STEEL.—Swedish keg, p. ton 0	0	0	0	18	10	0
" Faggot .....	0	0	0	19	0	0
COPPER.—English sheathing, per lb. 0	0	0	0	9	½	
" Old .....	ditto.	0	0	8	½	
" Cake p. ton .....	0	0	0	83	0	0
" Tile .....	0	0	0	82	0	0
" S. American ..	75	0	0	76	0	0
TIN.—English, blocks, &c. cwt. ....	3	15	0			
" bars ....	0	0	0	3	16	0
" Foreign, Banca ..	0	0	0	3	7	0
" Straits .....	0	0	0	3	4	0
" Peruvian .....	0	0	0	3	0	0
Tin plates, No. 10, p. box 1	8	0	0	1	12	0
" No. 1X .....	1	14	0	1	18	0
" wasters 3s. p. box less						
LEAD.—Sheet milled .....	per ton	17	15	0		
" Shot, patent ....	0	0	0	19	15	0
" Red .....	21	10	0			
" White .....	23	10	0			
PIG-LEAD.—English ....	0	0	0	17	0	0
" Spanish ....	0	0	0	16	10	0
" American ....	0	0	0	16	5	0

SHORT and MAHONY, Brokers,

1, Newman's-court, Cornhill.

## Tenders.

TENDERS delivered for building House, Warehouse, and Vaulting for Mr. John Bellingham, Haggerstone-bridge. May 9.

Kebbell (Dalston) .....	£1,968
W. H. Little (Kingland) .....	1,791
Thos. Burtenshaw .....	1,725
Norris (Hackney) .....	1,697
Dean .....	1,695
Jas. & Thos. Ward .....	1,677
Drewitt (Mile-end) .....	1,667
Cooper and Davis .....	1,660
Plaskell and Shelton .....	1,632
Pegram (Dalston) .....	1,590
John Wood (Finsbury) .....	1,558
Crook (Hackney) .....	1,543
Kempster (Borough) .....	1,429

Mr. Wood's Tender was accepted.

TENDERS delivered for painting, &c., the Workhouse of St. Martin's in the Fields. May 13, 1844.

S. Roper (Wardour-street) .....	£856 0 <i>s.</i>
Simmons (St. Martin's-lane) .....	805 0
Jones and Richardson (Salisbury-wharf) .....	800 10
Clements (Villiers-street) .....	661 0
Laing (ditto) .....	639 0

## NOTICES OF CONTRACTS.

For re-building the Western Pier of the Hamber Dock Basin, and the removal of the present Pier included, or to be provided for in a separate tender, as may be most convenient.—Secretary to the Dock Company at Kingston-upon-Hull. Plans, &c., at Mr. Michael Lane's, Engineer, Castle-street, Hull. May 20.

For making a plan and taking levels of all the drains in the town of Kingston-upon-Hull, and the Lordship of Myton.—Further particulars of Mr. R. Witty, Surveyor, 11, Sykes-street, Hull. May 22.

For erecting a bridge over the Waveney, between Diss and Stoston.—Plans, &c., from 1st to 8th inst., at Mr. Farrow's, Diss; from 8th to 15th at Suffolk Hotel, Ipswich; and from 15th to 22nd at Royal Hotel, Norwich; Clare Algar, Secretary, Auctioneer and Land Surveyor, Diss. May 23.

For the erection of an Iron Bridge of one arch, of one hundred and ten feet span, intended to be built over the river Aron, at Bath.—P. George, Esq., Town Clerk, Bath.—Drawings, &c., at G. P. Manners, Esq., Architect, No. 1, Oxford-row, Bath. May 31.

For enlarging, straightening, and improving the course of the rivers Devon and Smite, and the Cardyke, in the parishes of Hawton, Farnodon, &c. &c., in the counties of Nottingham and Leicester, and for the erection of, building, enlarging, &c., the several bridges connected with the above works.—Specifications, &c., Mr. Talents, Newark. June 1.

For the execution of certain works for the improvement of Aberdeen Harbour.—Plans, &c., Mr. Abernethy, 69, Waterloo-quay, Aberdeen. June 20.

## PREMIUM.

£50 for the selected plan, elevation, and estimate for the erection of two Chapels and an entrance-lodge, with gateway, on the eastern side of Southampton Cemetery.—Plan and section of ground Mr. Doswell, Albion-place, Southampton; C. E. Deacon, Secretary. May 22.

## MEETINGS OF SCIENTIFIC BODIES,

To-day and during the ensuing week.

MONDAY, 20.—Statistical, 11, Regent-street, 8 P.M.; British Architects, 16, Lower Grosvenor-street, 8 P.M.; United Service Institution, Middle Scotland-yard, 9 P.M.; Chemical, Society of Arts, Adelphi, 8 P.M.; Medical, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 21.—Civil Engineers, 25, Great George-street, 8 P.M.; Pharmaceutical, 17, Bloomsbury-square, 9 P.M. (anniversary.)

WEDNESDAY, 22.—Society of Arts, Adelphi, 8 P.M.; Pharmaceutical, 17, Bloomsbury-square, 9 P.M.; Ethnological, 8 P.M.

THURSDAY, 23.—Royal, Somerset House, 8½ P.M.; Antiquaries, Somerset House, 8 P.M.; Royal Society of Literature, 4, St. Martin's-place, 4 P.M.; Medico-Botanical, 32, Sackville-street, 8 P.M.; Numismatic, 41, Tavistock-street, 7 P.M.; Philological, 49, Pall Mall, 8 P.M. (anniversary.)

FRIDAY, 24.—Royal Institution, Albemarle-street, 8½ P.M.; Philological, 49, Pall Mall, 8 P.M.; Linnean, Soho-square, 8 P.M. (anniversary.)

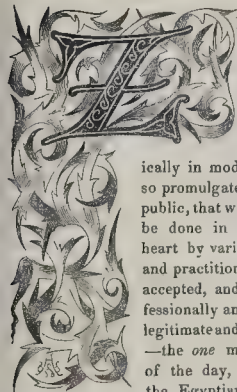
SATURDAY, 25.—Royal Botanic, Regent's-park, 4 P.M.



# The Builder.

NO. LXVIII.

SATURDAY, MAY 25, 1844.



ZEALOUSLY  
were it to be  
wished that in  
architecture  
some stand-  
ard of taste  
could period-

ically in modern times be so promulgated among the public, that whatever should be done in innocence of heart by various designers and practitioners should be accepted, and become professionally and historically legitimate and commendable—the one method or style of the day, as heretofore the Egyptian in the best days of Egypt, the Grecian when Pericles flourished, the Roman in the Augustan age or shortly afterwards, and the Gothic or Pointed in the mean time of the three Edwards.

What an end would then be put, what a quietus to the incessant babbling which is at present held upon architectural taste! How much abstinence from nonsense! What a surceasing from tongue-active idleness! But devoutly as all this were to be wished, it is at present hopeless.

In viewing the works of art sent in for the decoration of the Houses of Parliament, we think most have arrived at very nearly the same general conclusions. Those usually accounted of the greatest wisdom and of the most delicate taste in such matters, are so nearly agreed as to the propriety of finishing the new Westminster Palace all in one style, that it becomes almost idle to propose any other. Viewing this as a settled point, a grand sweep is made of nearly two-thirds of the specimens now exhibiting.

We ourselves, amid all the turmoil—all the discussion—all the fury—all the gall—all the milk, and all the milk-and-water, which have been so plentifully poured out upon the subject, viewing the building as a magnificent structure, one of the largest in the world, and, from its nature and purpose, likely to become one of the most celebrated which was ever erected, deem that not the slightest innovation whatever should be made or even broached in its carving, glass-work, paving, or painting—homogeneous in its walls, homogeneous would we have it in all the rest; and we have a very low idea of the taste of all who should attempt to make in it the slightest innovation. Hence, we should finish the structure (and we imagine such a resolution must be already come to), and should carve, glaze, pave, paint, and gild, all in one style.

How few then, indeed, of the exhibited specimens are suitable for the work.

Perhaps we might express some regret that the particular period of the style of Pointed Architecture chosen for the Houses of Parliament, is not that of the latter part of the reign of Edward the First, when capitals, crockets, finials, and other carvings were freer, more

fanciful, and more original; mouldings were richer, more curious, and more elegant in design; arches were loftier, tracery was more geometrical and varied, and construction more daring, yet more scientific.

We think that if there ever really were any project to call for *Designs* for the doors and other works, no idea more ridiculous could have been entertained; all this is the architect's business, and his alone. The carver's office is to execute with curious and delicate exactness the architect's inventions; or if he give any of his own, they must be directed congruously by the master-eye and the master-hand of the designer of the whole fabric.

We therefore think the chief information to be found by the exhibition of these specimens is, *who is INDEED a carver; who can stain glass; who can make tesserae, or encaustic tiles, or parquettes; who can paint, who can gild—in such manner, under the architect's direction, that the building can be finished PROPERLY.*

As we hinted formerly, we think, in glass-work, the perspective of buildings should be but sparingly used; representations of pavements in false perspective, placed many feet above the eye, and which could not in reality be seen, unless tilted forward, so as for the persons and objects represented upon them to fall off, should be totally avoided; and, perspective be confined to the relative sizes of figures and detached objects, of curved forms, in which perspective anomalies cannot be detected.

Parts of the windows, and some of them wholly, we should have to consist of scroll-work, flowers, or armoury; many of the windows we should have speakingly resplendent with scenes from the History and Church of England, avoiding as much as possible the injury to effect, which the mullions and transoms unskillfully managed would produce.

We see no reason why portraits of the sovereigns and other eminent national persons should not be admitted as far as possible; nor do we think any important historical matter of the realm should be omitted; as in the masonic sculptures the same taste will pervade, so do we think in the glass-staining, carving, and painting, the like subjects may be continued.

In the scroll-work or other wall-decorations, we have no doubt that the good taste of Mr. Barry will “*give the right about*” to all anomalous Byzantine or other inferior or impure works, though such may be seen in such-and-such buildings or in such-and-such manuscripts, and that they will be with him of no avail, his own natural taste being the sure guide; a better cultivation of taste in the decorative painting of Gothic edifices ought to be encouraged, if such mode of embellishment be intended to be carried forward generally.

With regard to floorings, we imagine plain oak, parquettes of different kinds, encaustic tiles, marble, stone of various colours, and tesserae of various sorts, will be used. For all these, among the specimens are good examples, though, as we have before said, all should in the matter in question be submitted to the architect's control.

We have gone already into greater length than we intended, and yet have much to say, and, moreover, having received numerous letters upon the subject, which we have not time to go into this week, we must defer till next number the closing of our remarks upon this matter, so very important to architecture.

## BRITISH ARCHÆOLOGICAL ASSOCIATION.

The Central Committee of this Association have issued their first Quarterly Journal, from which we learn the following particulars of the principal matters of antiquarian interest which have hitherto been laid before it:—

A letter from the Rev. W. L. Girardot, curate of Godshill, in the Isle of Wight, respecting some paintings recently found on the walls of the church of Godshill. The subject is that of the Saviour on the cross, which, Mr. Girardot imagines, is placed against a shrub or tree.

A letter from the Rev. W. Dyke, curate of Cradley, Herefordshire, concerning the site of St. Michael's chapel, Great Malvern. Some small remains of this chapel, which was probably the oratory of St. Werstan, who first made the settlement on the Malvern Hills, adjoining the position subsequently occupied by the priory, still exist within a walled garden in the upper part of the village.

A letter from the Rev. John L. Petit, on some peculiarities of Church Architecture in Wiltshire and Gloucestershire.

Mr. W. H. Rolfe, of Sandwich, forwarded for inspection some minute pieces of worked gold, found on the sea-shore, under the cliff opposite the Infirmary at Margate. The fragments appear to be portions of coins and ornaments. One is evidently part of a half-noble of one of the Edwards or Henrys, another resembles the loops attached to Roman and early French gold coins, for the purpose of wearing them as decorations of the person.

Mr. C. Roach Smith informed the Committee that Mr. Joseph Clarke, of Saffron Walden, had recently visited Wootton, in Northamptonshire, for the purpose of obtaining authentic information respecting a discovery of coins, reported to have been made at that village about a year since. Mr. Clarke's visit proved successful, and although many of the coins had been dispersed since the discovery took place, he succeeded in obtaining the remainder (615) for examination. They were deposited in an urn; the mouth protruded from the side of a bank in which it had been buried, and had been noticed for years by labourers going to and from their work. The coins, all of small brass, are as follows:—

	Reverses.	Total.
Gallienus .....	29 .....	66
Salonia .....	8 .....	16
Posthumus .....	16 .....	25
Victorinus .....	12 .....	212
Marius .....	2 .....	3
Tetricus Pater .....	9 .....	117
Tetricus Filius .....	5 .....	46
Claudius II. ....	24 .....	63
Quintillus .....	4 .....	6
Aurelianus .....	10 .....	15
Tacitus .....	9 .....	18
Probus .....	16 .....	28
Numerianus .....	1 .....	1
		615

Among these coins not a single new variety occurs, and but very few rare reverses. They afford, however, another example to those noted in many similar discoveries, of the usual occurrence of this and other series of coins in conformity with their accepted degrees of rarity.

A note from the Ven. Archdeacon Hill, giving an account of the discovery at Bunchurch, Isle of Wight, of some urns containing burnt bones and ashes. These remains were found by the Rev. James White, during excavations for building a cottage, at a distance of about 600 yards from the sea.

Mr. Thomas Charles, of Maidstone, communicated a notice of researches now under prosecution by himself and Mr. C. T. Smythe, which he hopes will be of interest to the antiquary, as they may furnish particulars respecting the discovery of a Roman building on the banks of the Medway, close to Maidstone. The excavations, as far as they have yet proceeded, have disclosed walls, pavements, of a coarse kind, fresco paintings, &c.

Mr. Fitch, of Ipswich, forwarded for exhibition an aureus of Vespasian, found at Helmingham, county of Suffolk. The reverse exhibits the Emperor, crowned by Victory; in the exergue, COS. VIII.

Mr. C. R. Smith exhibited drawings, executed by Mr. Kennett Martin, of Ramsgate, shewing the positions of two human skeletons,



and also of some urns, which, a few years since, were discovered during the excavations for the foundations of a house on the Western Cliff, near Ramsgate. The skeletons were deposited in a horizontal position, at a considerable distance from each other, in a basin-shaped grave, dug out of the solid chalk, and filled in with chalk rubble. This grave appears to have been of more extensive dimensions than would have been absolutely necessary for two corpses. In a recent discovery of skeletons at Stowting, in the same county, it was noticed that in a grave scooped out of the chalk soil, which was capacious enough for seven or eight bodies, only one skeleton was discovered. The urns were found arranged in groups on either side of, and a few feet from the grave. Some of them contained burnt bones, and with them was found a bronze fibula and a patera of the well-known red Roman pottery, with the ivy-leaf pattern on the rim. These sepulchral interments, although so contiguous to each other, would appear to belong to different times. The urns are unquestionably Roman, and their contents warrant their being referred to the Romano-British epoch, but the skeletons would appear to indicate a burial of a later period.

Mr. Martin also contributed a sketch of the excavations which uncovered part of the remains of the ancient pier of Ramsgate, with the depth in feet, the nature of the soil, the specimens of coins, and other objects found. At the depth of from seven to eight feet, coins of the Henrys and Edwards were met with; three or four feet lower, large flints and bricks (presumed to be Roman); at the depth of from sixteen to twenty feet, piles of wood sunk in the solid chalk were discovered, and among them Roman coins in small brass, of the Constantine family.

Mr. C. R. Smith informed the Committee that in consequence of a communication from Mr. W. Bland, of Hartlip, in Kent, he (Mr. S.) had visited the village of Stowting, in the same county, and inspected some ancient remains recently discovered in cutting a new road up the hill leading towards the common. They consist of long swords, spears, and javelin-heads, knives, and bosses of shields, of iron; circular gilt brooches, set with coloured glass and vitrified pastes; buckles of bronze, silvered; beads of glass, amber, and coloured clay; a thin copper basin, and three coins of Pius, Plautilla, and Valens. These objects were found deposited by the sides of about thirty skeletons, at from two to four feet deep, in the chalk of which the hill is composed. The graves in which the skeletons were found were filled in with mould. One of the bosses, like a specimen noticed in Douglas's *Nenia Britannica*, is ornamented on the top with a thin plate of silver, and the tops of the nails or rivets, which fastened the boss to the shield, are also silvered. Since Mr. Smith's visit, an urn has been found and some other objects, of the whole of which careful drawings will be made by the Rev. Frederick Wrench, who has promised to forward them, as soon as the excavations are completed, for the inspection of the Committee.

The village of Stowting is situated in a secluded nook in the chalk-hills called the Back-Bone of Kent, about two miles from Lyminge, and seven from Folkstone. In a field below the hill where the antiquities before mentioned were discovered, two skeletons were dug up, many years since, together with iron weapons; and in a field called Tenacre Field some hundreds of large brass Roman coins were ploughed up. Five of these, now in the possession of Mr. Andrews, the proprietor of the field, are of Hadrianus, Aurelius, Faustina Junior, Commodus, and Severus. Coins are often found in the adjacent fields, and in the village. Two small brass coins of Carausius and Licinius, picked up in a locality termed the Market-place, are in the possession of the Rev. F. Wrench. On the hills are barrows, some of which seem to have been partially excavated.

Mr. John G. Waller made three communications. The first related to the state of the monument of Brian Roloff, in Cowthorpe Church, twelve miles distant from York, which records the founder and builder of the church, *fundator et constructor hujus ecclesie*

*totius operis usque ad consummationem*. He is represented with his lady holding a model of the church between them; over their heads are canopies and heraldic decorations. "I found this interesting memorial in a most disgraceful state of neglect; the canopies much mutilated, many fragments with escutcheons of arms, and the whole of the inscription, in the parish chest, liable to constant spoliation: added to this, a large stone was placed upon the figures. Surely a monument like this, a record of a benefaction and an event (for so we may call the erection of the church), deserves to be rescued from a lot but too common to such remains. The history of Brian Roloff is found in the very interesting volume published by the Camden Society, 'The Plumpton Correspondence.'"

The second communication of Mr. Waller was a notice respecting some effigies of wood, at Little Horkesley, in Essex, which when Mr. Waller visited the church about six years ago were placed near the porch. They represent two knights and a lady, apparently of the early part of the fourteenth century. Mr. Waller states that he was informed they had been recently displaced from their proper position in the church, and were then, with unbecoming neglect, put out of sight in a corner near the porch.

The third communication described not the destruction of a monument only, but that of a church and its monuments. Mr. Waller states: "About five years ago I visited the ruins of Quarendon chapel, in the immediate neighbourhood of Aylesbury, county of Bucks: I found the walls in good condition as far as regards stability, and only suffering from neglect and wanton injury. The interior presented all the pillars and arches supporting them in good condition, save the injury caused by the visitors cutting their names thereon, and every thing shewing how little share time had had in the work of demolition." This matter has, however, been long since made known (See the "Gentleman's Magazine," for Dec. 1817, where exterior and interior views of the chapel were given.)

Mr. Way reported that the monumental brass of Sir John Felbrigg, the founder of Playford Church, Suffolk, had been torn up, and, at the time when he visited the church, not many years since, was in the church chest. By a subsequent communication from Mr. D. E. Davy, of Ufford, it appears that this interesting memorial has been affixed to a stone in the chancel, but many portions are now defective.

Dr. J. Jacob, of Uxbridge, announced that he proposes to publish a new series of the monumental brasses of England.

Mr. William Sidney Gibson, of Newcastle, communicated to the committee, that the corporation of that city propose to demolish an interesting example of ecclesiastical architecture, the ancient church of the Hospital of the Blessed Virgin, on the wreck of which a grammar-school was founded by Queen Elizabeth. Mr. Gibson promises a detailed description of this curious structure, the preservation of which for the purposes of public worship in a populous city, where increased church accommodation must be highly desirable, could not fail, at a period when much attention has been given in Newcastle to architectural decoration, to benefit and gratify the public. It also appears that this venerable monument interferes with no local convenience, and that persons who take an interest in its preservation would gladly contribute.

The Archaeological Journal, in addition to the preceding report, contains brief articles on Numismatics, by Mr. C. R. Smith; on Painted Glass, by C. Winston, Esq.; on Anglo-Saxon Architecture, with numerous wood-cuts, by T. Wright, Esq.; on Bell Turrets, with engravings, by the Rev. J. L. Pettit; on the Medieval Antiquities of Anglesey, by the Rev. H. L. Jones; on the horn-shaped head-dress in the reign of Edward I., by T. Wright, Esq.; on the Cross-legged Effigies commonly attributed to Templars, by Watson S. Walford, Esq.; a Catalogue of the Emblems of Saints, by the Rev. C. Hart; Early English Receipts for Painting, Gilding, &c., communicated by Mr. Wright; a Review, with wood-cuts, of M. Didron's *Iconographie Chrétienne*, &c.

The members of the association now amount to about 660, including ten bishops and ten deans. We are enabled to announce that the general meeting is definitively fixed to take

place at Canterbury (with the sanction of the dean and chapter) about the middle of July, and that it is proposed to proceed at that time with the excavations commenced last year, by private parties, at the Roman town, or fortress, of Richborough.

#### OXFORD ARCHITECTURAL SOCIETY.

MAY 15.—The Rev. the Rector of Exeter College in the chair.

The following new members were admitted:—Rev. J. S. Smith, Great Wilbraham, Newmarket; R. Oldham, Esq., Wadham College; Rev. John Griffiths, Ch. Ch.; C. S. P. Hunter, Esq., St. John's; E. Palmer, Esq., Balliol.

The following presents were received:—Transactions of the Exeter Diocesan Architectural Society, part II. by the society; Design for a Wooden Cross of Gothic character at the head of a grave, by J. E. Millard, Esq., Magdalene College; Tracing of a head in stained-glass from Dorchester Church, Oxfordshire, by the Rev. W. Grey, Magdalene Hall; and a Rubbing of a Brass of Sir Roger de Northwold (a cross-legged knight) and Boon, his wife, from Minster Church, in the Isle of Sheppey, by G. S. Master, Esq., Brasenose College.

A paper was read by the Rev. W. Grey, of Magdalene Hall, on Garsington Church, Oxfordshire, illustrated by a number of drawings. The tower of this church is of transition Norman character, with more of the Early English features than Norman; the pillars and arches on the north side of the nave are of the same period, though perhaps more decidedly Early English. The rest of the church is decorated, late in the style, but very plain, without even cusps to the chancel windows; the side windows of the aisles are square-headed, with good segmental heads inside; the east window of the south aisle is good. Decorated, with flowing tracery. The south porch is open timber-work of the Perpendicular style. The clerestory windows are small foliated circles, with four-centred arches inside; the roofs are of later character, having been rebuilt in the time of Charles II., when several buttresses were also added. On both sides of the chancel, under the westernmost windows, are low side-openings, which retain the old iron-work, and have evidently been glazed, though long blocked up within to accommodate modern pews. The circumstance of these openings being found on both sides of the chancel, and having been originally glazed, contradicts most of the theories that have been stated respecting the use of them. None of those mentioned at a recent meeting of the society seem to agree with these examples, still less will the name of Lychoscope apply to them.

A set of Drawings of St. Bartholomew's Chapel on Cowley Marsh, with an accurate calculation of the cost of building a fac-simile of it, was laid on the table. Also a design by Mr. Cranston for a wooden Church, according to the suggestion of the Bishop of Newfoundland.

MIDDLE LEVEL DRAINAGE AND NAVIGATION.—The parliamentary estimates of the promoters of this Bill amount to 226,473l. A report and estimates have lately been made by Sir John Rennie, Mr. Cubitt, Mr. Rendall, and Mr. Giles, of the same works, on behalf of the opponents to the measure, which amount to the enormous sum of 492,897l. When this scheme was first projected, its authors guaranteed that the entire cost of the new works should not exceed 173,000l. The sum of 492,897l. is independent of any works which may be considered necessary for the regulation of the supply of fresh water at Stanground Sluice, the preservation of the navigation between Peterborough, Wisbeach, Lynn, the Wisbeach canal, the towns of Upwell and Outwell, and the security of Marshland and the adjoining district.

An ancient fresco painting has been discovered in Rotherham Church, Yorkshire. Over the point of an arch is a half-length figure of the Saviour, surrounded by a great number of figures, with their hands clasped in a devotional attitude. From this description we think the subject is most probably the Last Judgment. The figures were about four feet in height, and each is distinctly marked by a broad black outline.



# ARCHITECTURAL EXHIBITION AT THE ROYAL ACADEMY OF ARTS, TRAFALGAR-SQUARE, WESTMINSTER.

The seventy-sixth exhibition of the Royal Academy contains in its architectural room only two hundred and eighteen works of art; of these sixty-three are as obviously disconnected from architecture as any subjects of art could be; and if an examination more rigid still were gone into, it could be shown that the room contains scarcely more than a hundred subjects strictly architectural. With such a limitation in quantity does not follow a like limitation in quality; and though for some years past many of the most eminent architects have almost abstained from exhibiting here, still, upon the present occasion, if there be fewer absolutely good subjects than usual, there are fewer which are common-place or of reprehensible design.

Artists, architects, and the public generally, have for some time past had their eyes gradually opening to the truth that good architecture, and drawing good for a Royal Academy Architectural Exhibition, are very different things; and it is now pretty generally admitted, that the dashing elices of colour, which are not sufficient to outvie a neighbouring picture, and the fitness, and the patient mathematical, notanical, and sculptural perfections, which characterize good architectural design, are very different things.

In the present exhibition are fewer Norman subjects and projects for buildings of an impure or anomalous character; there are fewer that contain those piece-meal blemishes of various kinds, which for some years past have not only pervaded private and ordinary buildings, but glaringly have become fashionable even in buildings of a public character. We observe among the designs comparatively few with incongruous one-sided masses, which, because many ancient buildings which have grown up bit-by-bit have been so successfully managed by the artists who had to alter and enlarge them, and have been, as it were, so set about with beauties as though the hand of "wisdom" were laid upon them behind and before, that such anomalies are scarcely noticed, and such buildings appear beautiful, in spite of that which would otherwise have appeared intolerable, there not being a single example of any great building throughout the world, whether Indian, Egyptian, Grecian, Roman, Moors, Gothic, which was designed to be irregular; such an idea being against nature, who de-lights in regularity; animals deformed, being so alone through some accidental circumstances, and the planets returning habitually to the same points in their paths in revolutions of time exactly the same to a moment.

We shall defer till next week going into the separate merits of these architectural drawings.

## ELEMENTARY ESSAY ON MORTAR AND CEMENTS.

BY JAMES WYLSON, HON. SEC. B.A.A.D.

(Continued from p. 255.)

64. BEAVAN'S MORTAR, or Building Cement, is composed of marble, flint, chalk, and lime, in equal portions; the first two being pulverized. All except the lime are mixed together and sifted very fine; then the latter, which has been slaked for three months, added, with just water enough to form the mixture into a thin paste. This, when used for stuccoing, is spread as thinly as possible and made smooth over a rough preparatory ground; and it is susceptible of a high polish by means of Venetian talc.

65. HAMELIN'S PATENT MASTIC, for coating and ornamenting buildings, is said to consist of Portland stone, pounded and mixed with oil; the latter is used instead of water: it is susceptible of an arris and smoothness equal to marble. A method of using it, extensively practised about town, is first to work the surfaces, projections, mouldings, &c., roughly in Roman cement, and then finish them with the mastic, about  $\frac{1}{4}$ th of an inch thick. Great nicety and experience are necessary to lay it properly and make it attach firmly, but the thinner the coating is the better, and it should never exceed  $\frac{1}{4}$ th of an inch; the more extravagantly thick it is laid on, the more certain it is to fall off. The

front of the Union Club-house in Trafalgar Square was stuccoed with it.\*

66. DR. HIGGINS'S CEMENT consists of 1 lb. pure stone lime, or a very little more chalk lime, 1 lb. bone-ash, 4 lbs. sand  $\frac{1}{4}$ th, and 3 lbs. ditto  $\frac{1}{4}$ th, of an inch in size: the sand is mixed and spread out flat, about six inches deep, on a hard wooden bench, and wetted with lime-water: the lime is then added in successive portions, mixing and beating them well together; after which the bone-ash, which gives tenacity and prevents cracks in drying, is added in like manner. The inventor says this cement is, when dry, as hard as Portland stone; it dries quickly, and must therefore be used with expedition; it is intended for building, plastering, stuccoing, &c., and is applicable besides for forming artificial stones in moulds, with flints, hard stones, brick, &c. It is unfortunate that the above proportions have been stated by weight, as both lime and sand are variable in that respect, and their relative properties necessarily contingent on the same.

67. The cement for the Eddystone Light-house was composed of equal measures of slaked Welsh lime and pozzolana, both in fine powder; it was heated until it possessed its greatest degree of tenacity and toughness, and was used stiff for the horizontal thorough joints, as well as for the facings of the vertical ones, and in grout for the internal parts of the latter.

68. The cement used for the piers of the new London Bridge was made of one part Welsh lime, two parts Neapolitan pozzolana, and two parts Thames sand.

69. The cement in the London Docks was for the depth of one and a half or two bricks composed of four parts lime, one of pozzolana, one of calcined iron-stone, and six of river sand.

70. In reference to the building of ovens, &c., it has already been stated that Roman cement does not at all endure fire, and hardly even a moderate heat; also that oyster-lime, as well as mortar made with road-drift, are considered suitable for such purposes: but, perhaps, there is nothing better than the WINDSOR LOAM whereof fire-bricks are made, and which is very generally used for building those parts of furnaces and other similar works that are exposed to flame or to intense heat; it is reduced to a proper consistency with water, and laid extending about 2 inches into the joints, the remaining portion of the work being constructed with good ordinary mortar.

71. PARGET, or PAROETTING, is the name given to a composition for plastering the interior of brick or stone flues; and consists of mortar mixed with horse or cow dung, the latter being preferred and most usually adopted; and is very suitable for that purpose, as it stands the heat well. It is usual to include in building contracts the "coring out" of the flues when the building is completed; which signifies removing the mortar and rubbish, which fall into and adhere in them, out of reach, while the brickwork is being carried up. This was, previous to the passing of the new prohibitory Act, generally done by a climbing-boy. Common mortar, mixed with bullock's hair, and called hair-mortar, is sometimes used for the above purpose, but cannot be so sound or good, as the soundness of the mortar must be impaired by the heat, and it may be considered as chiefly laid together by the hair with which it is mixed.

72. GROUT, is mortar or cement in a liquid state, frequently used to insure the complete filling up of the internal joints of brick or rubble walls, the outside joints on both faces being in carrying up the work stopped with stiff mortar. It is sometimes considered advisable to grout every course, but in ordinary cases

\* [We believe this mode of working mastic insures its most rapid falling off, from the dampness of the under-coating disagreeing with the oil of the mastic; and the thirstiness of Parker's cement and lime which we have instantly found destroy the cohesiveness of mastic; in many buildings in and about London the mastic cement in two or three years has fallen into a frightful state of decomposition. At the Pavilion at Brighton, the under part of the mastic was found most destroyed. External bleaching, and the parching away of its oil underneath, in a very short time prove mastic to be of all stuccos the least enduring; for these reasons we have long since ceased from using it, except for repairing internal plastering which is intended to be immediately painted with oil colour.—Ed.]

about every fifth course of brickwork is sufficient: its effect is obviously to form the work into a solid mass, by filling up all those interstices which unavoidably occur in constructing the masonry with stiff mortar. It is often merely mortar or cement diluted; but greater economy may be observed without detriment to the work, from five to seven parts of sand being generally considered admissible. When made of mortar, however, it should be made of such as has been kept for a considerable time and well beaten, and then it will set perfectly in a few days; for if composed of mortar that has been newly made, it will take a long time to harden, and perhaps will never thoroughly set. The approved method is to mix the materials dry, dilute and incorporate them well on the spot, and pour the grout immediately into the work. What is termed *hot-lime grout* consists of slaked lime and water only. It need scarcely be remarked that the practice of grouting is beneficial to an important degree; indeed, its omission in any building of consequence would be highly reprehensible, since the walls cannot be perfectly solid without it. Where cement is used instead of mortar, the same material is used in a liquid state as grout.

73. "CONCRETE" (Fr. Beton) is a kind of artificial rock, composed of large gravel, sand, and lime, a substratum of which is formed preparatory to receiving the footings of buildings, where the ground is of an unsound and treacherous nature: it is a most valuable expedient, and is fast superseding the use of piles and planking, and, indeed, all old methods of obtaining a foundation by factitious means. The concrete about London is usually composed of Thames ballast, limited in coarseness to the bulk of a hen's egg, the larger stones being reduced to that standard; but large flinty gravel, in admixture with clean, sharp sand, frequently occurs in natural strata, in proportions adapted for immediate use. The broken granite which is used for macadamizing roads has also been used with advantage.

74. Its most approved component proportions are, fresh well-burnt lime and sand, in the relative quantities that are allowed in making good mortar, with stone in quantity equal to twice that of the sand; that is to say, one of lime to six of the other materials when chalk-lime is used, and one to nine for stone-lime: the latter ought always to be used in ordinary cases; and blue lime stone-lime, in the proportion of one to six, is the best for works subject to the action of water. It must be observed, however, that with regard to concrete, a remark applies similar to that which was made in article 24, in reference to the composition of mortar, viz., that the more incompressible material abounds in the mass, if properly cemented together, the greater stability will be produced, and the less costly will it be.

75. The usual mode of concreting is to grind the lime to powder, without slaking; mix it well with the stones and sand, dry, beside the spot where the concrete is to be formed; add just sufficient water to give to the mixture the semi-fluid consistency of mortar; precipitate it immediately into the trenches from a height of about ten feet; puddle it quickly to a level, and then leave it totally undisturbed until hard, and ready to receive the footings of the superstructure. To disturb it after it had begun to set (which it does speedily), would be to materially impair its solidity; and it should be borne in mind, that when a great depth of it is required, it will be incomparably better if the whole mass can be made at one operation, than if done in successive strata, as the union of these can never be perfect. There is a diminution of bulk, averaging about a tenth, in wetting the materials, and there is an expansion in setting and hardening, perhaps sufficient to restore that loss.

76. The name of PEBBLE MORTAR is sometimes given to a mixture similar to concrete, which is occasionally used for filling-in, at intervals, the heart of thick stone or brick walls, or large masses of masonry. It may consist of four parts sand, fine and coarse in equal quantities, eight parts small clean pebbles, four parts slaked lime, and one part pozzolana, or tarras: it is very excellent for the purpose, and, with proper hydraulic materials, is well adapted for sea breast-works, &c., being done with a casing, after the fashion practised by the Romans: it may be considered analogous to grout, and identical with concrete.



77. Lime is extensively employed for other purposes connected with buildings, besides those which have been here treated of—interior, plain, and ornamental stuccoing, and white-washing, for example; but as the intention of the present paper is only to illustrate its use in construction, and its application in fortifying the exterior of work against the weather, it is deemed unnecessary to extend it to those particulars.

78. The practical knowledge of the properties of calcareous substances, and necessarily that of lime-burning, is unquestionably of very high antiquity; for although they appear to have been unknown to the Egyptians and early Greeks, we have, besides the testimony in the sacred writings, the evidence afforded by those remains popularly believed to be the ruins of the Tower of Babel, as well as by parts of those of Babylon and Nineveh, to refer us to much earlier times; and the specimens handed down to us may be judged of by their apparently imperishable stability. But it is to the magnificent works of the ancient Romans we must turn, to see fully the capabilities they afford; for not only in the buildings of that people, but in their great military roads and ways, their lime-mortar still manifests an eminent and scarcely imitable skill. It is from them that we have inherited this important branch of knowledge; for, until the Roman subjugation, it was unknown to the primitive inhabitants of our island, even on those shores where the near vicinage of the European continent, and their consequent superior civilization, might have induced an acquaintance with it. It was they who opened the still unexplored lime-quarries of Tadcaster, in Yorkshire, the *calcaria*, as they called them; and some ancient works in this country still exist to testify, together, excellence in British materials and Roman workmanship—where the mortar has exceeded even the bricks in hardness, and remains, to all appearance, proof against the ravages of Time. It is to them, also, that we are indebted for the invaluable ingredient called pozzolana, which was so indispensable in the composition of our aquatic mortars prior to the discovery of the Anglo-Roman Cement, it being in some way similar to that in which, within the last half century, Mr. Parker, by reflective sagacity and experiment, first revealed the latent powers of the latter estimable material, that they discovered the highly hydraulic properties of the former. Fortunately, we have the writings of scientific men who flourished coevally with those skilful practitioners, to indicate the course of our own endeavours. On the subject of mortar, Vitruvius informs us, that one part of lime to three of sand was considered the best proportion; which corresponds with the approved practice about London at the present day, in regard to stone-lime. Their water-cement consisted of one part lime and two parts pozzolana. According to Pliny, there were failures in some of the buildings of his time, in consequence of a deficiency of lime in their mortar: it appears by him that the mixture of tile-dust in the latter was practised in those days, as is now sometimes the case; he states that the addition of one-third of that ingredient greatly improved its quality. We also learn from him that there was a Roman law regarding mortar, which enjoined, that after mixing the ingredients with a small quantity of water, they should, before being put to use, be kept in a covered pit for three years. The custom was then, just before using, to beat it for a length of time, until of a thoroughly uniform consistency; the efficacy of which is satisfactorily proved by modern practice. Pliny distinctly states that while the above-mentioned law was in force, the buildings were not liable to crack. The Romans practised a method of building corresponding in materials with our concrete: it consisted in packing pebbles and fragments of stone, not bigger than a man's closed hand, into a casing of wood, and running the interstices full with hot lime grout. For stucco-work or plastering, the Greek and Roman architects had certain calcareous compositions denominated *Maltha* (*Malθα*); that of the former is said to have consisted of lime, sand, and milk. The Roman, we are informed by Pliny, was fresh-burnt lime, slaked with wine, and beaten in a mortar with hog's lard and figs; a tenacious compound, acquiring a hardness like marble. Another was composed of fine slaked lime, bullock's blood, and powdered forge-scales: before

plastering, the surface of the parts was moistened with oil to assist the adhesion of the stucco. Although so much has been attained, architecturally, about London, since the discovery of Roman cement, the practice of stuccoing externally is by no means one of modern introduction, and not only thus far is the Temple of Jupiter Olympius at Agrigentum a proof, but on comparison we find that the ancients possess a palpable advantage in the three grand essentials of appearance, hardness, and durability. In the instance quoted, the coating is like a fine white marble. Ancient Alexandrian as well as Roman remains also afford examples of this practice, and almost impenetrable in their hardness. Of the condition of the building art in our own country, in the early portion of last century, we may approach a conclusion when we read in Batty Langley on Bricklaying, that *equal parts of lime and sand were used for inside and 2 to 1 for outside work.*

#### RAILWAY INTELLIGENCE.

**Tavistock Railway.**—The intended line of this railway, as laid down in the prospectus issued by the company, is from Tavistock on the high ground above Abbey-bridge, passing just above Ash, in the parish of Whitchurch, crossing the Old Plymouth-road and the New-road, with the valley of the Walkham, about midway between the two-mile stone and Bedford-bridge, across the Old Wheel Franco mine, in front of the Roborough Inn, and crossing Harrowbeer and the Dartmoor-road, approaching near to the Plymouth and Dartmoor line, which it leaves a little to the left, and continues its course to Crabtree, where it meets the South Devon line about two miles from Plymouth, on the London-road. It is to be a subject of future consideration whether the company shall proceed on the South Devon line to Eldad, or cross it at Crabtree, and have a distinct terminus of their own in Plymouth. The receipts on the usual principle of calculation that the facilities of the railway will double the traffic between Tavistock and Plymouth, are expected to realize 260*l.* a week, which, allowing 104*l.* per week as the expense for working the road, will be sufficient for a dividend of 5*l.* per cent. on the contemplated outlay of 150,000*l.* The length of the road will not exceed fifteen miles, even should it be decided to make the terminus in Plymouth, and not more than thirteen, if the line terminates at Crabtree. The Duke of Bedford has offered land for the Tavistock terminus and its approaches, together with so much of his property as the line will pass over; and in addition to this, a donation of 1,000*l.*; and Sir R. Lopes and other landowners are stated to have pledged themselves to afford every facility to the work.

**Railway from Oxford to Banbury and Rugby.**—A meeting took place at the Angel Hotel, Banbury, on Tuesday week last, for the purpose of hearing the statements of Mr. Barlow, director, Mr. Brunel, engineer, and Mr. Saunders, secretary, to the Great Western Railroad relative to the proposed line from Oxford to Rugby through Banbury. The chair was taken by Dr. Marsham, warden of Merton College. After hearing and questioning the gentlemen connected with the Great Western, the meeting being perfectly satisfied with their statements, it was agreed that the proposed line to Rugby via Banbury, was the most eligible one for the city of Oxford.

**Cambridge and York Railway.**—The promoters of a line of railway from Cambridge to York, through Lincoln, have given up that project, in consequence of the indisposition of the Northern and Eastern Railway Company to act with them, and the same parties are now proposing a line of railway direct from London to York, passing nearly along the line of the great north road, by Biggleswade, Stamford, Grantham, &c., but not by Lincoln.

**Railway Communication.**—It is in contemplation to construct a railway to connect the towns of Poole, Blandford, Ilchester, Langport, and Bridgewater, to be called the English and Bristol Channels Junction Railway.

**Atmospheric Railways in Ireland.**—A company, called the Grand Canal Atmospheric Railway Company, has been formed for laying down a line of atmospheric railway from Dublin to Sallins, in the first instance; and for its general introduction afterwards to the south and west of Ireland. They have concluded their arrangements with the directors of the Grand Canal Company, as to the terms on which they are to be permitted to avail themselves of the facilities which the canal affords. The arrangement is not merely from Dublin to Sallins, but embraces any further portions of the banks which may be found desirable for future extensions. It is said that the terms are one-tenth of the gross receipts of the railway, for such portions of it as may be constructed along the canal, and an annual sum of 250*l.* as an acknowledgment of the canal company's rights. There is also a separate arrangement made for the transfer of the canal company's establishment at Portobello to the railway company, for their station, for which it would be admirably adapted, there being an excellent spacious hotel and extensive offices at Portobello. The prospectus is expected to appear in a few days. A deputation has been appointed to proceed to London forthwith, to enter into communication with the Board of Trade upon the subject.—*Herald.*

**Great Western Railway.**—The competition between the Great Western and South-Western companies is likely to increase very materially the facilities of railway travelling. A very important branch, connecting the two lines, is now projected by the Great Western Company; and at a meeting, held at Devizes last Saturday, the details were explained. The line is to commence between Chippenham and Corsham, at a place called Thingley, pass through Melksham (with a diverging line to Devizes), Staverton, Trowbridge, by Warminster, Westbury Leigh, and along the vale of Willey to Salisbury, where a south-western branch is to terminate. The distance is 52 miles, the estimated cost about 10,000*l.* a mile, and the Great Western Company offer to take a quarter, a half, or the whole of the shares, or any other part, after local parties have subscribed, and to guarantee 3*l.* per cent. to the shareholders.

**Railway over the Menai Straits.**—We noticed the project of carrying the Chester and Holyhead Railway over the Menai bridge; but we now learn that the landed proprietors in the vicinity oppose the railway, and it is therefore probable the passage across the straits will have to be made at the Britannia rock, and will involve, at least, two arches of 350 feet span. This will be the most gigantic railway work ever undertaken.—*Birmingham Journal.*

A local committee has been formed, and vigorous steps have been taken, with a view to obtain an Act in the next session of Parliament, for the formation of a branch railway from the Great Western line, at or near Bath, to Salisbury. There will then be two important termini, one from the South-Western, and the other from the Great Western Railways.

**Leeds and Thirsk Railway.**—The prospectus for this projected line has been issued, but we cannot believe that it is seriously intended to carry out the formation of the line.—*Yorkshire Gazette.*

**The Lincoln Railways.**—The understanding between the Manchester and Leeds Railway Company and the Eastern Counties Company, to co-operate, and to make their lines meet in Lincolnshire, has been broken off.

The capital of British railways now exceeds sixty millions sterling, and yields a revenue of six millions per annum.

The Cheltenham and Great Western Railway Bill has received the Royal assent.

Hamburg is fast rising up from the ashes of 1842. Notwithstanding the vast number of buildings that have been erected, great activity is still prevailing in various parts of the city, and houses are rearing their heads where, but a few days before, nothing was to be seen but the remnants of former habitations.



## ST. OLAVE'S CHURCH, SOUTHWARK.

(Continued from p. 253.)

The plan of the body of this church is a parallelogram, divided into nave and aisles; the columns, which separate from each other these three compartments, are fluted, of the Ionic order, in each range four in number, and, with their square wainscoted pedestals, are all of Portland stone, and have diagonally-voluted capitals, bearing in each curved recess of their abaci a beautiful rose, carved after nature, instead of conventionally; against the eastern and western walls of the body of the church are also four pilasters, fluted, diagonally-voluted, and otherwise corresponding with the columns themselves. The column-capitals, which were much damaged by the late fire, have been renewed; the western pilasters as yet remain in a very mutilated state, and their capitals are entirely destroyed. Behind each of the Ionic columns is a small pilaster, attached to its shaft, and reaching only up to the underside of the gallery.

The nave is prolonged eastwardly by a very beautiful apsis, containing the altar-compartment, which is a semi-circular tribune.

At the west end of the nave lies the tower of the church, north and south of which adjoin the great staircases ascending to the church-galleries.

Behind, or on the north side of the church, lies the parish cemetery, and there was, till lately, another cemetery, granted to the parish in the reign of Henry VIII., which has, however, been taken, under several acts of Parliament, for the site of the railroad-station.

At the north side of the altar is a small robing-room.

Over the Ionic columns ranges an enriched entablature, consisting of architrave, frieze, and cornice; the architrave in three faces, its lower face surmounted by a small pater-noster, its middle one by a small enriched ogee, and the whole architrave crowned by a much larger enriched ogee, filleted above. The soffit of the architrave is in each inter-column ornamented with a central circular coffer, flowered with a patera, the remainder of the soffit filled up on each side by a leafy pilloved panel, conforming edwise to the circular coffer. The frieze is plain, unbroken, and without the winged cherub over each column shewn in the original design; the cornice consists of a plain cavetto, surmounted by an enriched ogee and dentils, its corona bearing an enriched ogee, filleted above, supporting a plain cyma-recta.

The entablature continues all round the interior of the fabric, including the altar apsis; but, except the west end of the body of the church, where only a string-course, enriched with a Vitruvian scroll, ranges with the Ionic cornice.

The nave of the church is continued upwardly from the stone Ionic columns by carpentry, its outside perpendicular part being covered with lead, and the clere-story roof itself, as well as the roofs over the galleries and staircases, are slated.

Over the whole nave of the church extends a most beautiful groined ceiling of five divisions, very highly finished.

More than half the light within the church is admitted through ten clere-storied windows, one in the perpendicular side of each compartment of the groining.

The five groined compartments of the ceiling over the nave are separated from each other by archivolt, rising from enriched consoles (which are not in the original design), with an acanthus-leaf in front, and surmounted by an enriched impost, which is continued along the sides and west end of the clere-story. These archivolt have their soffits enriched by double scroll-work foliage and husks, the summit of each archivolt being distinguished by a patera; the groin-points are enriched by a bead divided by long rolls and three husks alternating, and the centre of each groin, where the beaded groin-points cross each other, is marked by a very large flower.

Each of the four compartments of each groin is divided into two panels by a curious raised bolection roll-moulding, enriched by a volved riband, alternating with peculiar oblique-shaped lozenge-flowers.

In the restoration of the church, some distance within each of these bolections has been formed a sunk panel, bearing close to its margin a Grecian enriched bead.

Though we have a rooted dislike to improvements, by other hands, upon architects' original designs, we are obliged to confess this paneling has a good effect.

Before the fire, the west end of the clere-story was ornamented in stucco, with a relief of the angelic choir, below which was a decorative relief, containing musical instruments and other work: this should have been restored.

Over each gallery answering to the five inter-columns, the ceiling is divided into five compartments by bands or beams which spring from and agree with the corona; the corona-soffit, on the four sides surrounding each gallery-ceiling is beautifully and very boldly and effectively enriched with the simplest form of the fret-ornament, but the soffit of the four beams on each side, separating the ceiling into compartments, is enriched with this fret-ornament twice repeated side by side.

The great Ionic entablature is continued all round the four sides of each gallery-ceiling, but round the other sides of the five compartments themselves, only the corona and crown-mouldings are continued.

Within each of the ten compartments of the ceilings over the galleries, a sunk panel, surrounded by an enriched Grecian bead, has been added in the restoration, as in the compartments of the groined ceiling over the nave of the church.

The plastering, which was very choice, and a late instance of the fine ornamental stucco-work done by hand, was performed by Mr. Batson, who signed a contract (which still exists among the parish documents) for the sum of £295. Other tenders for the work had been received, viz. from—

Mr. Fairbrother, for .....	£200	0	0
— Yoade .....	340	2	5
— Warrall .....	348	0	0
— Wilton .....	354	0	0
— Weston .....	359	0	0
— Farley .....	374	0	0

but after some inquiry and consideration, the lowest tender was declined.

The galleries have very beautiful fronts, appearing to be supported upon plain architraves, beaded below, and divided by an ogee into two faces, crowned by a plain cornice, which is supported by an ovolo between two fillets, crowned by a dripped and scaped corona, surmounted by a cyma-recta; in Flitcroft's original design, these gallery-fronts are shewn with each inter-columnar length divided into six panels, with five cherubim between them; but in the execution of the work, this arrangement was improved upon in simplicity and boldness by dividing each compartment into only four panels, separated by a peculiar kind of terminal attic pilasters, three in number, with trinitarian allusion to the Three that bear record in heaven, each carved with the figure of a cherub, with wings folded in front, something like those over the stalls in St. Paul's Cathedral, though inferior in design and delicacy of workmanship. At the feet of these pilasters ranges all round the gallery-fronts a peculiar torus-moulding, wrought in the fashion of primrose-flowers within small circular compartments; and under each cherub is a carved tail-piece of foliage, in the form of a rich husk.

The gallery-fronts are finished upwardly by an impost mitred over the cherubim, coronaed and surmounted by a small egg-and-tongue moulding, filleted, and in the bed-moulding of which is an enriched ogee, also filleted above.

Where the pew-divisions in the galleries rise above the gallery-fronts, that which would otherwise have been a deformity is rendered an elegance, by these pew-divisions being terminated towards the nave by beautiful scroll brackets carved with primroses and other ornaments. The pews in the galleries were principally deal, but all finished with broad wainscot cappings.

The western gallery, which is being restored, had a centre part somewhat advanced, supported by two wainscot fluted Doric columns. Instead of being paneled, this centre compartment of the gallery-front was decorated by turned balusters, in the centre of which was placed a dial surrounded by some carved-work. Over each Doric column was an attic pilaster, paneled and carved with a shell and pendent husks.

The wings of the western gallery-front were only divided each into three panels, by two ter-

minial attic pilasters bearing angels, as the others. The pulpit was a very elegant piece of design, very beautifully executed in very beautiful materials, and was, like most of the pulpits in the city of London, replete with symbolical carving and marquetry.

The altar-apsis is separated from the nave by two fluted Ionic pilasters on each side, from which spring two archivolt, enriched like the others; and at the back of the apsis are two other fluted Ionic pilasters, surmounted by another enriched archivolt of less compass, which cuts geometrically into the domed ceiling: between these pilasters are the Decalogue and altar-window.

The ceiling of the altar-apsis, which was apparently not much damaged, however, has required to be restored; it was a semi-dome, forming a rich piece of gilt coffered-work: three ranges of octagonal panels, eleven each, with small diagonal lozenge-panels between them, and half-lozenge-panels next the inclosing borders of the work, each coffer containing a roset, formed the decorations of the Domed work.

The altar is very beautifully finished, and we hope hereafter to give some of its details, as well as the gallery-cherubim and other decorations.

The two tables of the Decalogue are set within one beautifully-designed and richly-carved frame, surmounted by a gilt stellar crown, with gilt palm-branch wandings, and carved and gilt scroll foliage in the spandrels between the arched heads of the tables and their inclosing frame. At the sides of the decalogue are the Dominical Prayer and the Creed in oval frames, enriched with eggs-and-tongues, and mantled nearly all round by palm-branches ascending from below.

Above these are statues of Moses and Aaron, in circular niches, within square architraves scrolled at top, between the turns of which, over each niche, is a cherub and a pendent garland.

Around the altar-tribune, at the level of the gallery-imposts, is carried a string or impost, with its ovolo enriched with shells instead of eggs, and beneath this, immediately under each niche, are two enriched and gilt consoles, between which are pendent garlands consisting of the sacramental emblems of corn, vine-leaves, and grapes.

The whole of the exterior of the tower and of the southern and western fronts of the church are of fine Portland stone.

The back or north side of the church next the cemetery nearly resembles the southern front, but between the window-architraves, cornice, parapet-coping, and projecting quoins, the wall is faced with fine red brick, which being restored and pointed with very dark blue mortar, instead of white mortar, has a very good effect, though little seen by the public.

The tower was substantially constructed with vaultings under the ringing-loft and over the bell-chamber, so as to be capable of bearing the spire, as originally designed by the architect, and we hope to see money raised for the completion of the fabric, the more especially as since the raising of the new structure of London-bridge and the hemming in of lofty warehouses, this beautiful church has been, as it were, trampled down into a hole, and, moreover, as much difficulty does not seem to have been created in the raising of money for an enlarged organ and for a stained altar-window—little, indeed, to be commended.

It would seem that, besides the one design for the steeple, something cheaper must have been projected by Flitcroft, for in a Minute, June 4th, 1740, relating to paying the architect his account, appears the following:—

"For Designing and Estimating the new church, with proposals for the several artificers, and assisting the Trustees to make their Contracts; making all the necessary drawings and Conducting the Works, with measuring the extra works, and Examining their accounts; for making models of the Roof and Ceiling, and the Alter End of the Church, patterns of moulding for the plastering, Designs for the Steeple, Consisting of Elevations, Plans and Sections, with the Estimate of the Charges of each, one of about £1050, the other £650, as the scaffolds were then up."

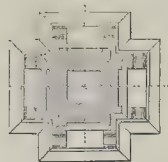
We think every church requires, as a beacon, to be made the loftiest, as well as the best, house in the parish.

In the accounts for building the church will be found considerable expense gone to

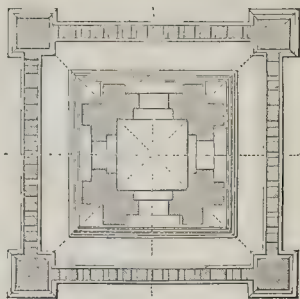




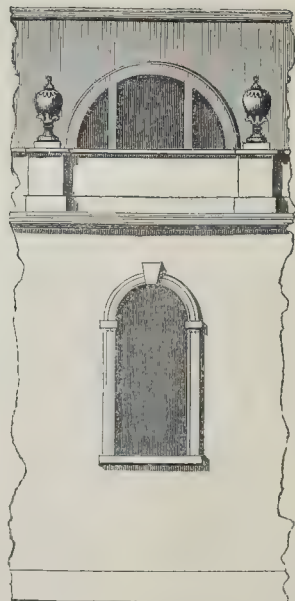
*Elevation of the Tower and Spire from the Belfry upwards.*



*Plan of the Upper Stage of the Spire.*



*Plan of the Gallery and Lower Stage of the Spire.*



*Elevation of one compartment of the South Flank of the Church.*





for removing a high chimney-stack, which interfered with the view of the new tower.

Now other buildings so completely interfere with the view of the church, its steeple should be raised proudly above them; this the occasion demand.

In the original design, as already noticed, the architect proposed only one tier of flank-windows, and all the attic pedestals, as well as the apex of the pediment over the western entrance, were designed to be crowned by vases: a compartment of this we give to show Flitcroft's first intention.

The restoration of the church under the superintendence of George Allen, Esq., architect, of Tooley-street, has been contracted for by Messrs. Rider and Son, of Union-street, Southwark, for the sum of 4,618*l.*; beyond which are to be some extra charges, sanctioned by the committee having the direction of the work; by agreement, the church is to be completed by Midsummer next, but is not expected to be opened till two months after that time.

A stained-glass window will be inserted in the altar, which Mr. Collins, of the Strand, has contracted to execute for the sum of 160*l.*

Under the direction and superintendence of Dr. Gauntlett, the organist, a new organ is being built by Mr. Henry Lincoln, who has contracted to supply it for the sum of 495*l.*; it is to contain upwards of two thousand pipes, and is to consist of a grand-organ, a pedal-organ, and a swell-organ.

A vestry has lately been erected at the south side of the church; for this we are sorry, as it hides the east end, which, with its window rustications and other work, was picturesque, and gave the church a loftier appearance, hemmed in as it is by warehouses.

(To be continued.)

#### ARCHITECTURAL ABUSES.

##### No. I.—NORMAN ARCHITECTURE.

FOR many years past has the architectural world flowed with precept and criticism, which, had such precept and criticism been all sound and tending to the right end, they should most certainly have banished every abuse, have produced a code of just architectural canons, and have raised a modern school of English architecture which should have been honourable in our time, enduring in fame, and would have gradually wrought throughout the world a beneficial change, to be remembered as the truthful Anglo mode of architecture of the nineteenth century.

But after deluge upon deluge of precept, canon, denunciation, strait-lacing, loquacious upon taste, discourses upon decoration, long-headed searchings into constructive principles, every thing of this kind seems thrown overboard; the vessel of Architecture may pilot itself; as for an architectural compass to steer by, who ever heard of such a thing, except in the hands of plodding fools? in fact, architectural lawfulness now consists in the lawlessness of every man doing that which is right in his own eyes—whatsoever his soul lusteth after, without restraint of architectural Decalogue or other statute. Is there a mean and corrupt emanation of good old architecture? Adopt it. Was there in any age of building a certain style universally condemned for containing abuses? Regardless of future fame, and of the busy hands of the next who have to do with the same edifice, who, under the plea of correction, will pull the work all in tatters, copy it without a sin omitted, but with many added. Is there a mode of roofing over edifices at which the prudent shake their heads? Leap into the gulf of imprudence, and batter your walls with those timbers which ought to hold them together. In fine, is there any thing which a foolish man not a builder would be laughed at for doing? Do it,—do it with a good heart!

We have addressed ourselves so far to that class of persons upon whom good advice is lost, or who, if any thing of doubtful policy chance to come from a wise instructor, out of perverseness avoid it, for fear it should be good, though the like coming from a fool would be admired and adopted as the profundity of excellence.

Knowing that the enemies of orthodox architecture are legion, and that an ignoble army of martyrs is warring against, and annihilating the funds of the church and public,

while we, if not single-handed, cannot wield so many weapons, we shall endeavour to imitate that noble conqueror, the Duke of Wellington, at the battle of Waterloo, who, attacked by a larger army, contented himself with beating off and destroying the assailants singly, till, long persevering, he at length saw the advantage. So we, attacking singly the abuses of architecture, as they chance to assail, shall be content to annihilate them one by one, and when we have reduced them, and have the residue ready for striking on the hip, we shall bring out our reserves, and, like Wellington, exclaim, "Up guards, and at 'em!"

The first abuse which we have the courage to attack is the re-introduction of NORMAN ARCHITECTURE.

Perhaps the whole history of architecture does not contain any thing else so scandalous and silly as the re-introduction of this species of Romanesque building.

In the twelfth century, a mighty stride was made in the construction of architecture; this was the almost simultaneous use all over Europe, of the pointed arch. We do not, on the present occasion, mean to hazard any opinion as to who invented the pointed arch, and where it was first used, or to enlarge upon its taste, but merely to speak as to its introduction, which was a mighty stride in architecture, and changed the whole face of it.

Certain it is, that after the pointed arch came into use, it was universally adopted; few years were required for the entire explosion of the use of semicircular Norman or Romanesque arches—and when once pointed arches came into use, no return was ever made to the employment of Romanesque arches during the whole time that Pointed architecture flourished; nor could any such return have taken place without a violation of that common sense, which, along with refined intellect, shews itself to the philosophical inquirer, amid all the seeming wildness of the inventions of Pointed Architecture. After the discovery of the properties of the pointed arch, in which are omitted the crown-work of Roman and Romanesque arches, which, hanging in jeopardy, made constant war upon the abutments, endeavouring to overthrow them, no return to the former immature style of building could possibly take place till the foundation of the advanced art of architecture was sapped; and this was actually the case.

It is the duty of an architect, as it is of every wise man, to effect the most with the least means: he, therefore, who returns to

the use of the Norman style is extremely blameworthy, for he wastes a vast quantity of material in the larger and heavier abutments which his arches require. His work is far less safe, and is calculated to be far less durable. At first, when the Freemasons came to adopt the pointed arch, they were so delighted with its economy, its comparative safety, and the wonderful loftiness which it enabled an edifice to assume with a given outlay, that the charm occasioned them to be over-daring. Edifices of a wonderful thinness, and often of a nature wonderfully aspiring, were piled aloft; but experience proved that sometimes they were over-confident in an art which as yet required the practiced experience to be obtained alone by the actual fabrication of many exemplars. Hence, in many of the very early specimens of Pointed Architecture, the abutments, being scarcely a tithe of that which they were in Norman Architecture, the slender sustaining masses were thrust out of perpendicular, and during the very progress of the work remedies had to be applied for preventing further settlement and derangement of the masses of the buildings then rising.

In the vaulted Temple-church, London, which is an early, very immature specimen of Pointed Architecture, with the Freemasonic magical system of vaulting and abutment but little developed, the vaulting over the central avenue being wider than those over the aisles, and springing immediately from the slender, detached columns, has obtained the mastery, and, expanding, has thrust over the supporting columns; while the vaults over the north and south aisles of the fabric have, by the pressure, collapsed from their summits, and become narrower at their feet, being unable to move the ponderous buttressed flank-walls of the church.

Those who have praised this Temple-church, and have recommended it as a model proper for modern imitation, are ignorant of architectural construction; their advice is pernicious, and, if followed, would lead to squandering and similar failure.

In the fully-developed Pointed Church architecture, the central avenue was lightly carried up as the clere-story, and instead of the energy of the central vaulting being discharged against the vaultings of the aisles, so as to make them collapse, the pressure of the central vaulting was carried above the aisles, and continued, without mischief, down to the solid work of the wall-piers and buttresses, the pinnacles rising above the impinging-places of the pressure, diverging it within the heart of this solid abutment.



CHANCEL OF BARFRETON CHURCH, KENT.



The example which we exhibit with this article is from Barfreston Church, Kent, copied from a drawing by Wm. Twopenny, Esq., and is introduced for the purpose of shewing the ultimate condition into which Norman architecture must fall. However strongly built, and with whatever expense of abutment, time is sure to bring all Norman edifices into the same falling, settled, and decrepit state in which Pointed Architecture, which is erected with flimsy and insufficient abutment surely comes.

In this specimen will be seen where the abutments have given way, how they have been forced over by the injurious arch-crowns pendent in jeopardy; and in addition will be observed where occur the cracks in the arches. Now these are precisely at the places where the Freemasons, after they had acquired a right knowledge of the use of pointed arches, would have left off carrying up an arch any further, for the portions of these Romanesque semicircular arches which remain below the fractured arch-crowns comparatively sound, are just such portions of the arch-work as would, if brought so as to meet together, form pointed arches; the decrepitude of age which had fallen upon innumerable buildings at the time no doubt taught the Freemasons, as soon as pointed arches came into use, how much lighter, cheaper, sounder, and more durable than semicircular arches they were; and what a culpable folly it would have been to return to the use of Romanesque arches at the expense of soundness, wisdom, and cost vastly increased.

Lately, a semicircular vault of a church fell, and slew the clergyman; now, if the vaulting over that building had been a Freemasonic vault of Pointed Architecture, aspiring loftily,—though thin,—broad, yet scarcely leaving its bed,—with scarcely any part of it so tilted as to slide from its seat under the shock of an earthquake,—and restrained with the economical refinement of abutment which in the glorious days of Pointed Architecture was perfected,—no such accident could have occurred.

There is at present afloat a most irrational and false idea that Norman architecture is cheap. Norman architecture is not cheap, but dear; it is considered to be cheap, because it may be made plain, coarse, and rude; but the ancients made it not plain, nor in their idea either coarse or rude, but adorned it with all the curious entail (much of it deduced from Grecian and Byzantine architecture) of which they were capable.

A small compliment is it to the builders of the so-called Norman architecture to copy from them the by-gone science of which they would never again themselves have made use after the discovery and development of Pointed Architecture, retaining that which they would not have retained, unless it be possible to imagine they would have become fools, and stripped it of the zig-zag, fillet, chevron, flower-work, hatching, scroll, and other decorations, of which even the Pointed architects continued to make use for some time after that discovery with which they became so much enraptured.

We can feel as keenly as any one the sublimity of effect produced by the contrasting of its broad and massive piers and other parts, with rich carvings of a primitive aspect; but legitimate architecture requires something more; it must be built with the most advanced science of the time, or it becomes an affair of the profligate spendthrift, and is the only thing of the day of stark folly.

The Cambridge Camden Society, in fostering the Norman style of architecture, has given a blow to its reputation, which, if it had not sinned too deeply in other respects, it could never survive. Cambridge, celebrated for its mathematical knowledge, has received an unedifying and unflattering blow, from the pupils of its University, so long famed for science, by promulgating such a Cimmerian darkness of ignorance in this as well as so many other subjects of architecture, a circumstance totally unparalleled in the history of architecture, and academic daring.

Intoxicated by the shallowness of knowledge, evinced in the publications of this frivolous society, in the most culpable ignorance, have these semi-skin-deep triflers sent Norman designs to New Zealand, while at home, in their very Cambridge, verily in their little pet the Round Church, the walls were thrust over by the

weight of the crowns of the Romanesque arches operating against them; and though, too, over their very heads, some of the arch-stones were loose and falling out, a thing never seen in true-pointed arches, which generally remain up and tight, and very often halves of them so remain when the other part of the work has been wrenched away.

Very long the Government Church Commissioners refused to admit or to sanction any design for a church in the Norman style; but, first, the Incorporated Society for the Promotion of the Building and Enlarging of Churches and Chapels gave way, under evil advice, that society having never been half so prudent as the Government Commissioners; and at length the Commission itself relaxed into the same imprudence.

This abuse, which is disgraceful to the nineteenth century, must, with many other subjects of complaint, be remedied.

Those who erect modern Norman churches, waste one-third of the outlay, make them sensitive to the slightest settlement, renege their duration one-half, and render them rude, bald, shabby, and unworthy of the refinement and philosophy of the age.

#### PETROLOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 256.)

In those regions of the waters which are undisturbed by tidal action, and in the absence of the requisite degree of heat, are favourable to the accumulation of sands, these pure and unmixed beds are forming in the present day; but the conditions under which they were primarily formed only exist now in a modified form, for we can hardly conceive any portion of the ocean wholly free from lime, magnesia, and other compounds, which, uniting with the sands, form so extensive and indefinable a class of rocks and mineral beds as is known to us in the present day. Many of the ancient beds of sand, sandstone, and quartzose rocks, were therefore produced from causes differing from those existing in the present day, the waters were then pure, being in parts and primarily entirely free from other earths except silica, and this notion is further strengthened by the appearance of the lower beds of the earth, as well as some of the quartzose rocks, all of them so far as our discoveries have extended, being of homogeneous qualities, all traces of organic remains having disappeared.

From these primary bodies formed and still forming within the waters, and changing in form and combination within and upon the earth, we turn to the next stage of combination and the results produced by the introduction of other matters. In those aqueous regions which, like the Red Sea, the Persian Gulf, and parts of the Great Pacific and Southern Oceans, are still unaffected by the tidal action of rivers, and the consequent deposition of vegetable earths and animal matters from these rivers, the sands and larger aggregate bodies covering the plains of the deep or forming hill and mountain masses are united in variable proportions with marine earths only, such as lime and magnesia, iron and animal matters, the sands vary in their form and qualities, being coarse or fine, free of larger aggregates, or uniting in their composition the fragments and bodies of mollusca, crustacea, and other species of the deep. In the progress of time the waters in localities disappear, and this oceanic soil becomes the subject of other influences; and as in the former instance of sands and the consequent changes produced by unity of parts, so it is with calcareous matters: the vast sedimentary depositions cohere at first as a mere mass of conglomerate, but as the body in all its parts becomes affected by atmospheric and chemical action, so its parts undergo a physical change, the larger aggregates, having definite proportions of particular earths in their composition, produce in change certain determinable results which constitute the varieties of *hornblende* and *hornblende* rocks, and another distinguishing characteristic of many species of granite.

Again, turn to another region of the waters,

in which some great river discharges its contents abstracted from the fertile soil over which it flows: here we have mixtures of soils, of the land and of the ocean, in some places continuously blending together, in others, periodically deposited; the first forming beds of uniform composition, the latter continuous successions of layers of earths; each intermediate layer having composition and character peculiar to the aqueous region in which it is proposed, and to the animal and vegetable species from which it is produced. In its second stage we see it standing above the waters as a constituent part of the dry land. Does it continue in this its primary condition? Most assuredly it does not—its aggregate masses cohere, are affected by atmospheric influences or chemical action, and these masses, or aggregates, pass by transition into felspar or felspathic rock, or such other forms and combinations as local affections may determine. Thus, where there is an excess of land vegetable and animal matters, micaceous bodies are produced.

In all these changes and vicissitudes which inorganic bodies undergo, we have the incontrovertible evidence of a beginning of things, the gradual development and increase of organic matters; the gradual appearance and increase of the beds of the earth spread over one another, uniformly and continuing to increase, so long as the causes which produced them continue to exist; and gradually or suddenly ceasing and giving place to varieties, or to objects and things of another form and composition. In the after changes we see no violence done to nature, other than that effected by atmospheric or chemical action; the bodies agglutinated become one perfect result, but still, in this intimate union passing through further changes peculiar to themselves.

Sir Richard Phillips truly observes, that "it is the proper object of philosophy to investigate the mechanism of causes, or to determine those proximate means or secondary causes by which natural phenomena are produced." To know the nature and origin of bodies and the conditions under which they exist, or by which they are enabled to assume other forms and properties, and to enter into other combinations, is the proud aim of all our inquiries, and the means by which we are enabled to assert our superiority over all created forms, and to render nature subservient to our uses. All the elemental works on geology teach you that granite is an igneous product, and here all further inquiry is supposed to cease; but passing by these narrow notions as incompatible with the present age of inquiry, my endeavour is to give a more correct, a more rational explanation of phenomena, tracing in the steps of nature from the beginning to the ultimate result; for, inasmuch as in a particular species of bird we can form no true conception of the egg from whence it was produced, or on viewing the egg, we can form no true conception of the bird, other than by observation, so it is in petrology; to know and understand the nature and origin of rock, we must by observation observe it in all phases, from the beginning to the ultimate result.

Although granite is one of the hardest and most durable of all rocks, and in dry climates may be said to be indestructible, it is nevertheless subject to disintegration in this and many other countries, the extent of its durability depending upon its crystalline structure, and the nature of its material. Exposed to the action of waters, it rapidly decomposes, its exterior surface peeling away, and the rents and fissures continually widening, it is apt to separate in large masses, and to assume most extraordinary forms of large artificial structures. At Huelgonet in Lower Brittany, and also in the Vosges, enormous masses are seen piled on one another, forming very singular groups; the granites being here divided into masses by fissures, which are filled up with granite possessing less solidity; this latter is sooner acted upon by atmospheric agency, and by its disintegration the masses become partly detached, and adopt various positions. This singular appearance is often observable in the East, in the now dried-up beds of lakes.

Sowerby makes mention of a curious kind of granite found in the Island of Corsica, termed orbicular granite, it has a basis of ordinary grey granite which, however, in most parts exhibits a considerable portion of hornblende. Its particular characteristic is a



number of balls from one to two inches in diameter, each composed of several concentric and perfectly parallel layers, the outermost of which, generally white, opaque, and two or three times thick, is composed of quartz and felspar blended in various proportions, and exhibiting a radiated appearance, rather converging towards the centre of the ball. The second layer, which is a greenish black colour and about one line thick, is composed of fine laminar hornblende, and this is surrounded by a white generally translucent quartz layer of about four or five lines in thickness, inclusive of two or three very fine layers of hornblende, that are generally seen within the substance of this third principal layer. Each of these layers is generally of equal thickness in the whole of its circumference, these three parts may be considered as the coating; the interior of the ball is less defined than the surrounding layers; it consists of a blackish and a whitish substance, the former surrounded by and passing into the latter, the centre of which is usually a dark grey spot.

The use of granite for architectural and economical purposes was well known to the ancient Egyptians, their most splendid monuments, and many articles of domestic use and ornament, being of this material, and the fine polish still remaining on many of these colossal remains attests a degree of skill not to be surpassed by sculptors and lapidaries of the present day. In Europe it is now absolutely necessary for many of the economical purposes of life, and would be very extensively used for building and ornamental purposes were it not for the very great expense attending its cutting and polishing. Its use is more amply displayed in Petersburg than perhaps any other capital in the world; not only are the imperial and other palaces built of this material, but many of the ordinary dwellings have their lower parts lined with slabs of it. The left bank of the great river Neva, from the foundry to the Gulf of Cronstadt, and both banks of the Foobanka and of the Catharine Canal, are lined with high walls constructed of such slabs, as are many bridges over the Neva, their balustrades, &c., being also composed of the like material. The pillars, stairs, balconies, &c., in the palace of Cronstadt are almost all of the finest kinds of granite. Those employed for ornamental purposes are cut and polished by lapidaries, but others are worked by the peasantry, and are left in their rough state. The gigantic rock-pedestal, on which the equestrian statue of Peter the Great stands, is one solid mass of granite.

In this country, from being a costly material, it is less extensively employed in ornamental works, still we have many splendid specimens of British granites, as monuments, bridges, and internal decorations; of these Waterloo-bridge stands the most prominent. Quarried in the rough, it is most extensively used in street paving and macadamizing, the latter plan being the most ready way conceivable of converting it into mud, the granite being first broken into small pieces, mixed with sand and water, and then ground down to powder by the iron-bound wheels of vehicles of every description. This theoretic fallacy is giving way to the new fashion of wooden pavements, which threatens to banish granite altogether from the streets, or to confine it to their curbs and crossings alone.

**THE METROPOLITAN IMPROVEMENTS.**—The Commissioners of Woods and Forests have, by their auctioneer, just disposed of some houses in High-street and Essex-street, Whitechapel, which are upon the line of the new street to be formed from Shoreditch Church to the London and St. Katherine's Docks. Upon their removal, with the old buildings at the back of them, there will then be a direct opening to Spitalfields Church. Considerable progress has been made, during the last few weeks, with the improvements in this neighbourhood.

**CITY OF LONDON SCHOOL.**—The statue of John Carpenter, founder of the City of London School, which has been executed by Mr. S. Nixon, is now fixed under the north window of the staircase: this took place in the presence of the Lord Mayor, members of the Common Council, and the School Committee.

# A BILL FOR THE BETTER PREVENTION OF DAMAGE BY FIRE IN THE METROPOLIS AND ITS NEIGHBOURHOOD.

[Note.—The words printed in *Italics* in the body of the clauses are proposed to be inserted in the committee.]

**Preamble.**—WHEREAS by the several provisions of an Act specified in the schedule (A.) to this Act annexed, provision was made for the prevention of damage by fire in the metropolis and the neighbourhood thereof;

But forasmuch as many of such provisions are now inapplicable or defective, it is expedient to amend the same.

**GENERAL PROVISIONS.**—1. *Operation of Act.*—*Certain Provisions repealed of Building Act, 14 Geo. 3, c. 78 (1774).*—Now for that purpose, and especially with relation to the service of water, the supply of engines, and other necessary implements, and to the rewards to be given to engineers and other persons for the prompt service of engines; be it enacted, by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, with regard to this Act generally, so far as relates to the operation thereof in reference to time, that it shall come into operation from and after the first day of January, one thousand eight hundred and forty-five; and that thereupon the several provisions set forth in the said schedule (A.) hereto annexed, shall be and are hereby repealed.

2. *Construction of Words.*—And be it declared with regard to this Act generally, so far as relates to the construction of certain terms and expressions used herein, that the following terms and expressions are intended to have the meanings hereby assigned to them respectively, so far as such meanings are not excluded by the context or by the nature of the subject matter; that is to say:—

**Building.**—The word "Building" to include all buildings of what nature and kind soever, not excepting royal palaces and buildings in the possession of her Majesty, her heirs and successors, or employed for her Majesty's use or service.

**Parish.**—The word "Parish" to include all parochial districts and extra-parochial places in which separate churchwardens, overseers, or constables are appointed; and also where two or more parishes have been united for ecclesiastical purposes, the word "Parish" is to include such united parishes.

**Churchwarden.**—The words "Churchwarden and Overseers" to apply to the overseers of the poor in every precinct or place not having a churchwarden; and in every extra-parochial place not having either a churchwarden or an overseer, to apply to the constable, if any, or in default of the constable, to any officer performing the duties usually performed by churchwardens, or overseers, or constables.

The word "Month" to mean calendar month.

**Official Referees.**—The term "Official Referees" to mean the persons appointed to be official referees of metropolitan buildings in pursuance of an Act passed in the present session of Parliament, and commonly called "the Metropolitan Buildings Act."

**Justice of the Peace.**—The term "Justice of the Peace" to mean a justice of the peace for the county or city within which shall arise any subject-matter of which a justice of the peace is made cognizant by this Act; unless it arise within the city of London, or the liberties thereof, in reference to which any matter or thing elsewhere required or authorized to be done by two justices of the peace may be done by the Lord Mayor of the city of London, or by any two justices of the peace for the said city.

**Local Officers.**—And, generally, whensoever the name of an officer having local jurisdiction in respect of his office is referred to, without mention of the locality to which the jurisdiction extends, such reference is to be understood to indicate the officer having jurisdiction in that place within which the subject-matter to which such reference applies doth arise or is situate.

**Singular and Plural numbers.**—*Masculine and Feminine genders.*—*Individuals and Corporations.*—And, subject as aforesaid to the context, and to the nature of the subject-

matter, words importing the singular number are to be understood to apply also to a plurality of persons or things; and words importing the masculine gender are to be understood to apply also to persons of the feminine gender; and words importing an individual are to be understood to apply also to a corporation or company, or other body or association of persons.

3. *Limits of Act.*—And be it enacted, with regard to this Act generally, so far as relates to the operation thereof, in reference to localities, that the operation of this Act shall extend to all places within the following limits; that is to say,—

To all such places lying on the north or left bank of the river Thames as are within the exterior boundaries of the parishes of Fulham, Kensington, Paddington, Hampstead, Hornsey, Tottenham, Saint Pancras, Islington, Stoke Newington, Hackney, Stratford, Bromley, Poplar, and Shadwell:

And to such part of the parish of Chelsea as lies to the north of the said parish of Kensington:

And to all such parts and places lying on the south or right bank of the said river as are within the exterior boundaries of the parishes of Woolwich, Charlton, Greenwich, Lee, Lewisham, Camberwell, Lambeth, Streatham, Tooting, and Wandsworth:

And to all places lying within two hundred yards from the exterior boundaries of the district hereby defined.

4. *Power to extend the limits of Act.*—*Application of Act.*—And be it enacted, with regard to this Act generally, so far as relates to the application thereof to other parts and places in the neighbourhood of the districts appointed by this Act, whether such districts immediately adjoin such parts or places or not, that if, from the growing increase of the population or otherwise, it shall appear to her Majesty in Council to be expedient that the provisions of this Act should be extended to any place within twelve miles of Charing-cross, in the city of Westminster, then it shall be lawful for her Majesty in Council to direct, by order in Council, that at or from a time to be named in such order, the provisions of this Act are to apply to such places; and that at or from such time all such provisions, of whatever nature, whether penal or otherwise, so far as they shall be capable of application to such places, shall and are hereby declared to apply thereto, as if such places were expressly named herein.

**SERVICE OF WATER.**—5. *Providing and fixing of fire-plugs, &c.*—*Order by official referees.*—*Owners of water-works to fix plugs, &c.*—*Refixing of plugs on the removal of pipes.*—*Expense of plugs and boxes.*—*Reference of disputes to official referees.*—*Award of official referees thereon.*—*Penalty for not providing fire-plugs.*—And now, for the purpose of making provision for the service of water for the extinction of fire: be it enacted, with regard to the fire-plugs, fire-cocks, and other apparatus for such service, so far as relates to the providing and fixing thereof, that if any office for insurance against loss by fire, or the commissioners of the metropolitan police, or the churchwardens or overseers or constable of any parish or place, or any inhabitant, apply to the official referees of metropolitan buildings to direct such apparatus to be fixed at any one point or place, or more, then it shall be the duty of the official referees, and they are hereby required, to inquire into the matter, and to order and award that the owners of water-works, the mains of which lie within the limits of this Act, do fix such apparatus at any such points or places as to the said official referees shall appear proper, having regard to the proximity of buildings to the mains of any such water-works, and to the opening of streets, and to any other circumstances which render a supply of water necessary or expedient, or which will render the service thereof more easy and efficient for the purpose; but not so as to require that such fire-plugs, or other such apparatus, shall be fixed with any less interval than fifty yards; and that upon such order and award being made, it shall be the duty of the owners of such waterworks, and they are hereby required, to provide and to fix such apparatus, and to protect the same by proper iron boxes, and from time to time to repair



such apparatus and boxes; and that if the mains or pipes be removed, or changed or altered, then it shall be the duty of such owners of waterworks, and they are hereby required, to replace and fix like apparatus, in the same or like situations, and at the same distances, or as near as conveniently may be; and that the expense of any such apparatus and boxes (except when the same shall have been occasioned by the removal of the mains and pipes, or other act of owners of waterworks) shall be borne by the parishes and places within which they may be situated, out of the funds by this Act provided for the purposes thereof; and that if at any time there arise any dispute or question as to such works, or as to the manner in which such works shall be executed, or as to the expense thereof, then such dispute or question shall be referred to the official referees; and that thereupon, for such purpose, as well as for the purpose of the first inquiry as aforesaid, it shall be lawful for them, and they are hereby required, to make such order and award in respect of the matter in question, and in respect of the costs of the reference to them, as to them shall seem fit; and for that purpose to authorize such survey of the works or place in question, and to examine witnesses on oath or otherwise, and to require the production of papers, as they shall think necessary, for determining the matter in question; and their award, duly signed and sealed, according to the provisions in that behalf of a certain Act passed, or to be passed, in the present session of parliament for regulating the construction and use of buildings in the metropolis and its neighbourhood, shall be final; and that if the owners of such waterworks fail to comply with the provisions of this Act in this behalf, or with such order and award, either as regards the providing, the fixing, the protecting or the repairing, replacing and fixing such apparatus and protection boxes as aforesaid, then they shall forfeit for every fire-plug and fire-cock so wilfully omitted to be provided, placed or fixed, or replaced and fixed, the penalty of ten pounds.

6. *Service of Mains for extinction of Fires.—Penalty.*—And be it enacted, with regard to the several waterworks, so far as relates to the service of the mains with water for the extinction of fires, that at all times it shall be the duty of the owners of the several waterworks, the mains of which lie within the limits of this Act, and they are hereby required, to keep such mains duly charged with water; and that if such owners fail so to duly charge such mains, then, on conviction thereof, they shall forfeit for every wilful default in that behalf a sum not exceeding ten pounds.

7. *Access to Waterworks.—Penalty.*—And be it enacted, with regard to such several waterworks, so far as relates to access thereto, that it shall be the duty of the owners of the several waterworks, the mains of which lie within the limits of this Act, and they are hereby required, to cause duplicate keys of all the branch mains within every parish to be deposited at the engine-house for such parish, and at the nearest police station; and that if such owners fail so to do, then, on conviction thereof, they shall forfeit for every wilful default in that behalf a sum not exceeding ten pounds.

FIRE-ENGINES.—8. *Supply of Fire-engines, &c. by Parishes.—Retention of old Engines.—Report thereon by Churchwardens.—No Rewards for Engines not so kept.—Sale of old Engines.—Application of Proceeds.*—And be it enacted, with regard to fire-engines and implements, so far as relates to the supply thereof, that at all times hereafter it shall be the duty of the churchwardens and overseers of every parish within the limits aforesaid, and they are hereby required, to have, and to keep in good order and repair, and in some known and public place within such parish, at least one large engine and one set of scaling-ladders, and such other implements and things as are required and specified in the Schedule (B.) hereunto annexed; in the proportion of one engine, one set of scaling-ladders, one set of the requisite implements, in respect of every one hundred and fifty thousand pounds of the rental assessed to the poor-rate of such parish; and that it shall be lawful for such churchwardens and overseers, and they are hereby authorized, to retain and keep in repair, or purchase or otherwise obtain, any other engine-ladders, implements, or things whatsoever not conformable to the directions of this Act; and that within two months after Easter in each year,

and from time to time, it shall be the duty of the churchwardens and overseers, and they are hereby required, to report to the petty sessions of the division within which such parish shall be situated, the state of the said engines, ladders, and other implements and things; and that no reward shall be payable under the provisions hereinafter contained, in respect of any engine which shall not be of the dimensions and so provided as by this Act directed: provided always, with regard to such engines, ladders, implements, and things whatsoever, so far as relates to the disposal of such of them as shall not be conformable to the requisitions of this Act, or such of them as shall exceed the number hereby required, that from time to time it shall be lawful for the churchwardens and overseers of every parish within the limits of this Act, and they are hereby authorized, subject to the consent of the majority of the parishioners in vestry assembled,—or if there be a select vestry, then subject to the consent duly given of such select vestry,—to make sale and dispose of such engines, ladders, implements, and things in any way which may be deemed proper; and with regard to the proceeds thereof, when so sold and disposed of, so far as relates to the application of such proceeds, that it shall be the duty of such churchwardens and overseers to apply the same in the same manner as any rate levied for the relief of the poor, or as any other fund by or by means of which the costs of such engines and other implements shall have been originally defrayed.

9. *Preservation of Engines.—Repair of Engine, Hose, Ladders, &c.—Penalty.*—And be it enacted, with regard to parish-engines and implements, so far as relates to the preservation thereof, that it shall be the duty of the churchwardens and overseers of every parish within the limits aforesaid, and they are hereby required, to provide one engine-house or more, sufficient to contain as well every such large engine as the scaling-ladders and other implements hereinbefore required to be kept by every such parish; and that if any churchwarden or overseer of any parish neglect to have and keep in good repair every such large engine, hose, ladders, and other implements or any of them, or to make reports thereof as aforesaid, then he shall forfeit for every such default a sum not exceeding ten pounds.

10. *Access to Engines.—Duplicate Keys.*—And be it enacted, with regard to parish-engines, so far as relates to access thereto, that at all times it shall be the duty of the engine-keeper in every parish, and he is hereby required, to live within two hundred yards of the engine-house, and to keep a key of such engine-house; and that it shall be the duty of the churchwardens and overseers, and they are hereby required, to deposit duplicate keys of the engine-house at the nearest police-station, and also with every one of the four men whose duty it shall be to work the respective engines.

11. *Quarterly working of Engines, &c.—Residence of Engine-workers.—Quarterly Fees to Workers of Engines, and to others working at Fires.*—And be it enacted, with regard to parish-engines, so far as relates to the trial and proving thereof, that it shall be the duty of the churchwardens to employ at least four able men to work every engine and try the ladders and implements hereinbefore required to be provided by the respective parishes within the limits of this Act, once in every three months; and that it shall be the duty of such men, and they are hereby required, to reside in the immediate neighbourhood of the respective engine-houses, and to work and to assist in working such engines and implements on all occasions of fire within their respective parishes; and that such persons shall be paid by the churchwardens and overseers of their respective parishes a quarterly fee, as specified in the table of fees and rewards in Schedule (C.) hereunto annexed; and that it shall also be the duty of the churchwardens, in every parish in which any fire may originate, and they are hereby required, to pay unto as many persons as may be required to work such engines such compensation as shall be usually paid in similar cases by the several companies for insurance against loss by fire.

12. *Rewards.*—And be it enacted, with regard to rewards, so far as relates to the amount thereof, that the turncocks, firemen, and other

persons respectively mentioned in the Schedule (C.) hereunto annexed, shall be paid by the churchwardens and overseers the rewards specified in the said schedule.

13. *Distribution and payment of Rewards.—Consent of Justices.*—And be it enacted, with regard to such rewards, so far as relates to the distribution and payment thereof, that if a fire happen in any parish, then, on its being proved by the testimony of two or more credible witnesses to a justice of the peace that some part of the building in which the fire happened, or any fixtures therein, shall have been scorched by such fire, it shall be the duty of such justice, and he is hereby required, to issue an order, under his hand and seal, to the churchwardens and overseers, directing them to pay such rewards as such justice shall find to be due under the provisions of this Act; and that, thereupon, it shall be the duty of the churchwardens and overseers of such parish, and they are hereby required, to pay such rewards.

14. *Repayment of Rewards by Parties causing Fires.—Proceedings of Justices.—Non-appearance of Party offending.—Distress.*—And be it enacted, with regard to such rewards, so far as relates to the repayment thereof, that if any fire occur in a chimney only, or be occasioned by the taking fire of any chimney only, then the occupier of any room or apartment to which any such chimney belongs, being a lodger or inmate to or with any tenant, renter or holder of any building, of which such room or apartment is part, or, if such chimney belong not to any such lodger or inmate, then the tenant, renter or occupier of the building wherein any such fire as last mentioned first began, shall be liable to reimburse and pay to the churchwardens and overseers all rewards or other recompenses made pursuant to the directions of this Act, in respect of any such fire, or such part of such rewards, as any justice of the peace, upon the application and complaint of such churchwarden, and hearing the party complained against, shall, under his hand and seal, award and direct; and that, to the end that such justice may be better enabled to award and direct what may in any such case be just and reasonable, it shall be lawful for such justice, and he is hereby authorized, to summon before him the party complained against on the matter of any such complaint, and all persons able to give evidence touching the premises, of whom he shall have notice or information; and to examine them upon oath (which the said justice is hereby empowered and required to administer without fee or reward); and that if, on being so summoned, the party complained against fail to appear, then it shall be lawful for the said justice, and he is hereby authorized, to proceed to examine the matter of the complaint and such evidence as is produced; and thereupon to make such award and direction as shall be just and reasonable, and as if the party making such default of appearance had been present and had been heard in his defence; and that if, within fourteen days after demand of any sum of money so awarded and directed to be reimbursed or repaid to any such churchwarden and overseers, such sum be not so reimbursed or repaid, then, on application being made to such justice or any justice, it shall be his duty to grant a warrant, under his hand and seal, empowering such churchwarden and overseers to levy every sum awarded or other recompense so directed to be paid, or such part thereof as shall have been so awarded and directed, by distress and sale of the goods and chattels of the party making default of payment, or of any goods or chattels found in the room or apartment to which such chimney belongs, where such fire began, or in any other part of any house or building whereof such room or apartment is part.

15. *Fire-Engines, &c. to be paid for out of Poor Rates.—Levy and Recovery of Rates.—Accountability of Officers.*—And be it enacted, with regard to the funds requisite for the purposes of this Act, so far as relates to the raising thereof to defray the charges of providing and maintaining such fire-plugs and fire-cocks, and other apparatus for the service of water, and such fire-engines, and other implements and materials, and such ladders and such engine-houses, and the payment of engine-keepers and other persons employed to work the engines, and the payment of the rewards directed by this Act; that from time to time, as often as there shall be occasion, subject to the consent of the majority of such inhabitants as shall be



at any vestry or any other public meeting of such parish duly assembled, or subject to the consent, duly given, of any select vestry, it shall be lawful for the churchwardens and overseers of the poor of the several parishes within the limits of this Act, or the major part of them, and they are hereby authorized, to levy, raise, or apply any rates for the purposes of this Act; and out of the moneys to be received thereby, or out of the moneys to be raised or received by any poor-rate made or to be made for the relief of the poor of every such parish respectively, or by any special rate to be made for the purpose of this Act, to pay, apply, and dispose of such sum of money as may be requisite for the ends aforesaid, in like manner as by law may be done for the maintenance and relief of the poor; and that on every such special rate which shall be so made, being allowed and confirmed in like manner as the rates made for the relief of the poor are or ought to be allowed or confirmed, and subject to the like appeal as in cases of rates made for the relief of the poor, it shall be lawful to levy and recover such rate in the same manner as the rates made for the relief of the poor now may or ought to be levied and recovered; and that the said churchwardens and overseers shall be accountable for the same, and be liable to the like pains and commitments for not accounting for the same; and to the like distress and penalties for not paying the moneys by them collected, levied, or received, and remaining in their hands, in like manner as overseers are accountable and liable in respect of moneys collected by virtue of any rates for the relief of the poor.

**INSURANCES.**—16. *Application of Money insured on Houses burned.*—And be it enacted, with regard to buildings which may hereafter be burned down, destroyed, or damaged by fire, so far as relates to the application of money insured thereon, that if any person having an interest in or entitled unto any such building, request that such money be laid out in rebuilding or reinstating or repairing any such building, then on such request, it shall be lawful for the respective governors or directors of the several offices for insurance against loss by fire, where such buildings are insured, and they are hereby required, to cause the insurance money or such part thereof as may be requisite to be so laid out and expended; or if within sixty days after the claim shall be adjusted, the person claiming such insurance money do not give a sufficient security to the governors or directors of the insurance office where such buildings are insured, that such insurance money shall be laid out and expended as far as the same will go, towards rebuilding, reinstating or repairing such building; or if within the said period of sixty days the said insurance money be not settled and disposed of to and amongst all the persons interested, to the satisfaction and approbation of such governors or directors of such insurance office respectively, then it shall be lawful for the respective governors or directors of the several offices for insurance against loss by fire, where such buildings are insured, and they are hereby authorized, to cause the insurance money or such part thereof as may be requisite to be so laid out and expended.

**FIRES THROUGH NEGLIGENCE.**—17. *Punishment of Persons negligently causing fires in the Metropolis.*—Penalty.—Imprisonment of offender.—And be it enacted, with regard to fires caused by negligence, so far as relates to the punishment of persons in fault, that if any person through negligence shall fire or cause to be fired any building within the limits of this Act, then, on being thereof lawfully convicted by the oath of one or more credible witnesses made before any two or more of her Majesty's justices of the peace, such person shall forfeit a sum not exceeding ten pounds unto the churchwardens and overseers of such parish where such fire shall happen; and that if at any time after such conviction the said churchwardens demand such penalty, and on such demand such person fail to pay the amount thereof, then it shall be lawful for any two or more of her Majesty's justices of the peace, by warrant under their hands and seals respectively, to commit such person to the common gaol or house of correction, as the said justices shall think fit, for any time not exceeding three months.

**OFFENCES GENERALLY.**—18. *General Penalty.*—And be it enacted, with regard to

offences, so far as relates to the punishment of the offender in respect thereof, that if any person be guilty of any default in respect of the provisions of this Act, to which no penalty is hereinbefore affixed, then, on conviction thereof, the offending person shall be liable to forfeit for every such default a sum not exceeding twenty pounds.

19. *Recovery of Penalties.—Appropriation thereof.*—And be it enacted, with regard to every such penalty or forfeiture, so far as relates to recovery and the appropriation thereof, that at any time within three months after such penalty shall have been incurred, it shall be lawful for any party to proceed for the same; and that if such penalty be not otherwise specifically appropriated, then the person so proceeding shall be entitled to receive one-half of the amount thereof for his own benefit, and the other half shall go to the poor of the parish in which the subject-matter of the prosecution shall arise or be situated.

**LEGAL PROCEEDINGS.**—20. *Recovery of money under awards.—Distress.—Imprisonment.*—And be it enacted, with regard to every sum of money by this Act, or by any award or order directed to be paid in pursuance of this Act, so far as relates to the recovery of such sum of money, that it shall be lawful for the party claiming the same to proceed in a summary way before any two justices of the peace, or if the matter arise within the district of the metropolitan police, then before any police magistrate having jurisdiction within that district; and that, on proof of such sum of money being still due, it shall be lawful for such justices, or such police magistrate, and they respectively are hereby required, to issue a warrant under their hands and seals to levy the amount thereof, and also of the cost of the proceeding, to be levied by distress of the goods and chattels of the person in default; and that if such person have no goods and chattels whereon to distrain, or if such goods and chattels be insufficient for that purpose, then it shall be lawful for such justices or police magistrate, or for any other justice or police magistrate, to commit the person in default until the amount of such sum so due, and of such costs, shall have been fully paid.

21. *Prosecution of Offences.—Distress.—Imprisonment.*—And be it enacted, with regard to all offences against the provisions of this Act for which no other proceeding is provided, so far as relates to the prosecution thereof, that it shall be lawful to proceed by complaint before any one justice of the peace; and that it shall be lawful for such justice to summon the party against whom such complaint shall be made; and that on conviction of the offender before two justices, or before any police magistrate, it shall be the duty of such justices or magistrate, and they are hereby required, to issue a warrant under their hands and seals to cause the amount of the penalty hereby imposed in respect of such offence, and of the costs of any such proceeding in respect of such offence, to be levied by distress of the goods and chattels of the offender; and that if such offender have no goods and chattels whereon to distrain, or if they be insufficient for that purpose, then it shall be lawful for such justices or magistrate, or for any other justice or magistrate, and they are hereby empowered, either on failure of such distress, or in the first instance, to commit the offender to the common gaol or house of correction, with or without hard labour, for a period not exceeding three months, or until he shall have paid the full amount of such penalty and such costs.

22. *Appeal to Quarter Sessions.—Proceedings.*—And be it enacted, with regard to any conviction, order, or judgment of any justices of the peace made out of sessions by virtue of this Act, so far as relates to any appeal therefrom, that if any person be dissatisfied with the decision of such justices, and if, within two days after such decision, notice be given to the party appealed against, by or on behalf of such person, of the intention to appeal, and if he enter into a recognizance, with two sufficient securities, conditioned to try such appeal and to abide the order of the court, and pay to the party appealed against such costs (if any) as shall be awarded against him, then it shall be lawful for such party so dissatisfied to appeal against such conviction, order, or judgment to the justices of the peace at their general quarter sessions of the peace to be holden

within four months after such conviction, order, or judgment; and that if within such period of two days such appellant shall have entered into a recognizance as hereinbefore required, then it shall be lawful for such justices, and they are hereby empowered, to proceed to hear and determine the matter of such appeal, and to award such costs to be paid by either of the said parties as they think proper; and the determination of the said justices in their sessions shall be binding and conclusive upon all parties.

23. *Removal of Orders, &c. into Superior Courts; Certiorari.*—And be it enacted, with regard to every order which shall be made by virtue of or under this Act, and to any other proceeding to be had touching the conviction of any offender against this Act, that it shall not be lawful for any person to remove such order or other proceeding by certiorari (or suspension or advocacy in Scotland), or any other writ or process whatsoever, into any of her Majesty's superior Courts of Record; and every such order and other proceeding are hereby declared not to be so removable.

24. *Distress of Churchwardens and Overseers.*—And be it enacted, with regard to churchwardens and overseers, so far as relates to the levying by distress any penalty or other sum of money payable by them under this Act, that whenever any penalty, reward, or other payment is by this Act made recoverable from or against any churchwarden and overseers, the same shall be levied and recovered by distress and sale of the goods and chattels of such churchwarden and overseers, or any of them.

25. *Informalities in Distress.—Action for Damage.*—And be it enacted, with regard to any distress for any sum of money to be recovered by virtue of this Act, so far as relates to the remedying of any damage occasioned by any irregularity therein or in reference thereto, that notwithstanding there be any defect of form in the proceedings relative to any such distress, neither the distress itself shall be deemed unlawful, nor shall the party making the same be deemed a trespasser ab initio; but that if any irregularity be committed by any party, then, subject to the conditions in this Act prescribed with regard to actions brought for any thing done in pursuance thereof, it shall be lawful for the person aggrieved by such irregularity, and he is hereby entitled, to recover full satisfaction for the special damage only; and that by action on the case, and not by any other action whatsoever.

26. *Tender of Amends.—Payment of Compensation into Court.*—And be it enacted, with regard to any action for any irregularity or other proceeding, so far as relates to the tender of amends or payment of money into court in respect thereof, that if, before such action be brought, the party who committed or caused to be committed any such irregularity or wrongful proceeding, make or cause to be made tender of sufficient amends, then the plaintiff shall not be entitled to recover in such action; and that although such tender shall not have been made, yet if, at any time before issue joined, the court in which such action shall be depending, or a judge of any of the superior courts, grant leave, then it shall be lawful for the defendant to pay into the court any sum of money by way of compensation or amends, in such manner and under such regulations as to the payment of costs and the form of pleadings as is and are customary and in force in the said superior courts.

27. *Regulation of actions against Persons acting under this Act.—Limitation of Action.—As to Notice of Action.—Venue in London.—Venue in Middlesex.—Plea in Evidence.—Verdict.—Costs.*—And, for regulating proceedings against persons acting in pursuance of this Act; be it enacted, with regard to any action or suit against any person in respect of any act or thing done in pursuance of this Act, so far as relates to the limitation thereof, and to the notification thereof to the offending party, and to the venue thereof, and to the pleadings therein, and to the evidence of the matters thereof, and to the verdict therein, and to the judgment of the court thereon, and to the costs of such action, and to the recovery of such costs, that, after the expiration of six months next after the fact committed, it shall not be lawful to bring any such action or suit against any person in respect of any such act;



and that, if twenty-one days at the least before the commencement of the action or suit, notice in writing of an intention to bring such action or suit be not given to every person against whom such action or suit shall be brought, then it shall not be lawful for any person to bring any such action or suit against any persons in respect of any such act; and that if the cause or matter of any such action or suit shall arise within the said city of London or the liberties thereof, then such action or suit must be laid in the city of London, and not elsewhere; and that if the cause of any action or suit arise in any part of the limits aforesaid, out of the said city of London and liberties thereof, then it must be laid and tried in the county of Middlesex, and not elsewhere; and that in every such action or suit it shall be lawful for the defendant, and he is hereby entitled to plead the general issue, and at the trial to be had thereof, to give this Act and the special matter in evidence, and to prove that the matter or thing for which such action or suit is brought was done in pursuance and by the authority of this Act; and that if upon the trial of such action it appear that the said matter or thing has been so done in pursuance of this Act, or if it appear that such action or suit was brought before the expiration of twenty-one days after such notice given as aforesaid, or if it appear that sufficient satisfaction was made or tendered before such action was brought, or if, upon plea of payment of money into court, it shall appear that the plaintiff has not sustained damages to a greater amount than the sum paid into court, or if any such action or suit be not commenced within the time herein for that purpose limited, or be laid in any other county or place than as aforesaid, then it shall be the duty of the jury and they are hereby required to find for the defendant; and that if a verdict be found for the defendant, or if the plaintiff in any such action or suit become nonsuited, or discontinue or suffer a discontinuance of any such action or suit, or if judgment be given for the defendant therein, on demurrer or by default or otherwise, then the defendant shall be entitled to have judgment to recover his costs of suit, and to such remedy for recovering the same as any defendant shall have by law.

**ACCIDENTAL FIRES.**—28. *Legal proceedings relative thereto.—General Issue and Costs.—Savings Contracts.*—And be it enacted, with regard to such legal proceedings on account of accidental fires, so far as relates to the liability thereto, to the pleadings therein, to the evidence therein, and to the costs thereof, that if any fire accidentally begin, then no action, suit or process whatever in respect thereof shall be had or be maintained or prosecuted against any person in whose building or on whose estate such fire happened, nor shall any such person be compellable to make recompense for any damage suffered thereby, any law, usage or custom to the contrary notwithstanding; and that if any action be brought, then, in such case, it shall be lawful for the defendant and he is hereby entitled to plead the general issue, and at any trial to be had thereupon to give this Act and the special matter in evidence; and if the plaintiff become nonsuited or discontinue his action or suit, or if a verdict pass against him, then the defendant shall recover his costs: provided always, that no contract or agreement made between landlord and tenant shall be hereby defeated or made void.

**MISCELLANEOUS.**—29. *Exemption from Stamp Duty.*—And be it enacted, with regard to the following document, so far as relates to the payment of stamp-duty in respect thereof, that every award required to be made or signed by the official referees, shall be and is hereby exempted from stamp duty.

30. *Public Act.*—And be it enacted, that this Act shall be deemed to be a public Act, and shall be judicially taken notice of as such by all judges, justices, and other persons whomsoever.

31. *Amendment of Act.*—And be it enacted, that this Act may be amended or repealed by any Act to be passed in this present session of Parliament.

The foundation stone of the new Northern Hospital, Liverpool, was laid by the mayor, on Wednesday week last, on the vacant piece of land given by the corporation for that purpose at the eastern end of the borough gaol, in Great Howard-street.

#### CHURCH-BUILDING INTELLIGENCE, &c.

**Jerus' Synagogue.**—A synagogue, in a style of splendour surpassing any thing hitherto attempted in England, is about to be erected in the western part of the metropolis. Sir Moses Montefiore has contributed 5,000*l.* towards the building, on the understanding that the worship is to be according to the usages of the Spanish and Portuguese Jews. The site is not yet determined upon, but several have been offered upon liberal terms; the committee will, however, not decide hastily, as they are determined to possess one where so splendid a building may be an ornament to the neighbourhood.

**New Church and Parish at Woolwich.**—At the weekly meeting of the Board of Commissioners of the town of Woolwich, held on Tuesday evening last, in the New Hall, William-street, the Rev. W. Greenlaw, rector of the parish of St. Mary, Woolwich, stated that the ecclesiastical commissioners had determined, with his entire concurrence, to create another parish there, which it was proposed to call the parish of St. Thomas, and to build a church at the end of Brewer-street, to be named after the same saint. The proposed parish will embrace an extensive plot of building-ground on the western side of the existing parish, where building is proceeding with the utmost rapidity, and an increase of inhabitants taking place daily.

**St. Mary's Church, Bury.**—It is proposed by the architect to insert in the west window of St. Mary's, in accordance with precedents to be found in most of our cathedrals, a series of heraldic bearings of the nobility and gentry connected with the town and neighbourhood in painted glass, to be executed by Willement. The Queen's arms will occupy the centre compartment, and the corporation have consented to insert theirs. The Dukes of Grafton and Norfolk, Lady Cornwallis, Lord Bristol, Lord Calthorpe, Sir Thomas Cullum, Sir Henry Bunbury, H. Waddington, Esq., Rev. H. Hasted, and others, have consented to the insertion of theirs at their own expense.

**Queen's College, Birmingham.**—The ceremony of laying the foundation-stone of the chapel about to be erected at Queen's College took place on Friday week last.

A lady has left at the chambers of the Incorporated Society for Promoting the Enlargement and Building of Churches and Chapels, a Bank of England note for 1,000*l.*

#### Correspondence.

SIR,—I am happy to lighten your charge of replying to "A Constant Subscriber," by referring him to a little book published by Knight, 22, Ludgate-street, entitled "History of British Costume," containing no less than 136 wood-cuts. For monastic dresses he may look into the great work called "Dugdale's 'Monasticon,' or 'Tanner's Notitia Monastica,' or more conveniently, perhaps, 'Fosbroke's British Monachism;'" and for the emblems of Saints, the first number of the "Archæological Journal," to be had at Longman's, in Paternoster-row.

The works of Dugdale, Tanner, and Fosbroke are expensive, but may be consulted in the reading-room of the British Museum.

PLANTAGENET.

**SIR WALTER SCOTT'S MONUMENT.**—The London committee for completing this truly national work have been compelled to appeal to the public for assistance to finish it.

The monument consists of a Gothic shrine, from a design by the late Mr. Kemp, inclosing a marble statue by Mr. Steele, to the memory of Sir Walter Scott. The committee were guided in their adoption of the plan by the weight of public opinion in favour of that ultimately selected, and from which the monument is now in course of erection in Edinburgh, the city of Sir Walter's birth. The greater part of the building is already erected, but the funds originally subscribed are found inadequate for its completion, and although great exertions have been made to raise the whole amount in Edinburgh, about 1,000*l.* is still wanting.

**IMPROVEMENTS AT WINDSOR.**—The Commissioners of Woods and Forests have recently determined to dispose of, by public competition, the piece of ground, of nearly two acres, which was lately occupied by the Royal Lower Mews, for the purpose of erecting a double line of houses of a first-rate description, according to the plans of the commissioners.

#### TO OUR CORRESPONDENTS.

We have this week received an unusual quantity of correspondence, but the anxious labour in which we have been engaged in the preparations of our different articles, precludes us this week from giving any answers, the more especially as some questions put to us would require research and consideration.

#### NOTICES OF CONTRACTS.

For re-building the Western Pier of the Humber Dock Basin, and the removal of the present Pier included, or to be provided for in a separate tender, as may be most convenient.—Secretary to the Dock Company at Kingston-upon-Hull. Plans, &c., at Mr. Michael Lane's, Engineer, Castle-street, Hull. May 20.

For making a plan and taking levels of all the drains in the town of Kingston-upon-Hull, and the Lordship of Myton.—Further particulars of Mr. R. Witty, Surveyor, 11, Sykes-street, Hull. May 22.

For erecting a bridge over the Waveney, between Diss and Stoston.—Plans, &c., from 1st to 8th inst., at Mr. Farrow's, Diss; from 8th to 15th at Suffolk Hotel, Ipswich; and from 15th to 22nd at Royal Hotel, Norwich; Clare Algar, Secretary, Auctioneer and Land Surveyor, Diss. May 23.

For erecting New Schools at Wrotham.—Plans, &c., Messrs. Whichcord and Walker, Architects, Maidstone. May 30.

For erecting a Cottage and Range of Offices at Kintore.—Plan, &c., A. Abel, 54, Union-street, Aberdeen. May 31.

For the erection of an Iron Bridge of one arch, of one hundred and ten feet span, intended to be built over the river Avon, at Bath.—P. George, Esq., Town Clerk, Bath.—Drawings, &c., at G. P. Manners, Esq., Architect, No. 1, Oxford-row, Bath. May 31.

For enlarging, straightening, and improving the course of the rivers Devon and Smite, and the Car-dyke, in the parishes of Hawton, Farndon, &c., &c., in the counties of Nottingham and Leicester, and for the erection of, building, enlarging, &c., the several bridges connected with the above works.—Specifications, &c., Mr. Talents, Newark. June 1.

For the erection of Two Shed-Buildings, to adjoin the main building of the New Workhouse at Rye-hill, Sussex; also for the erection of extensive inclosure-fences of brick, stone, and iron palisade in front of the Workhouse, and other necessary works. The Guardians, Rye Union, Workhouse Tender. June 1.

For the executing of certain works for the improvement of Aberdeen Harbour.—Plans, &c., Mr. Abernethy, 69, Waterloo-quay, Aberdeen. June 20.

#### PREMIUM.

£50 for the selected plan, elevation, and estimate for the erection of two Chapels and an entrance-ledge, with gateway, on the eastern side of Southampton Cemetery.—Plan and section of ground Mr. Doswell, Albion-place, Southampton; C. E. Deacon, Secretary. May 22.

#### MEETINGS OF SCIENTIFIC BODIES, To-day and during the ensuing week.

**SATURDAY, MAY 25.**—Royal Botanic, Regent's-park, 4 P.M.

**MONDAY, 27.**—Geographical, 3, Waterloo-place, 8½ P.M. (anniversary); Medical, Bolt-court, Fleet-street, 8 P.M.

**TUESDAY, 28.**—Medical and Chirurgical, 53, BERNERS-STREET, 8½ P.M.; Zoological, 57, Pall Mall, 8½ P.M.

**WEDNESDAY, 29.**—Society of Arts, Adelphi, 8 P.M.; Geological, Somerset House, 8½ P.M.

**FRIDAY, 31.**—Royal Institution, Albemarle-street, 8½ P.M.

**SATURDAY, JUNE 1.**—Asiatic, 14, Grafton-street, 2 P.M.

**CIVIL ENGINEERS.**—Library open from 9 A.M. to 9 P.M.

**ENTOMOLOGICAL SOCIETY.**—Museum open every Tuesday from 1 till 7.

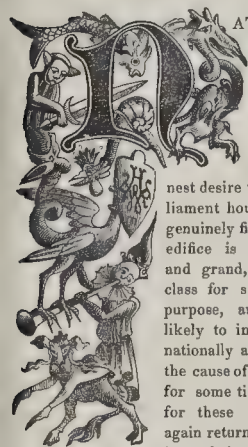
**SECRETARY OF ARTS.**—Open every week-day except Wednesday, between 10 and 2. Admission by members' tickets.



# The Builder.

NO. LXIX.

SATURDAY, JUNE 1, 1844.



## NATURALLY

prone to esteem things genuine of their several kinds, we again express our earnest desire that the Parliament houses shall be genuinely finished. The edifice is large, lofty, and grand, of the first class for situation and purpose, and therefore likely to influence both nationally and privately, the cause of architecture for some time to come; for these reasons we again return to the subject of the works of art

exhibited in St. James's-street, which we have so often visited, and have noticed so repeatedly.

With regard to carvings, which form a prominent feature in the collection, we must say those not prepared for the purpose bear the palm for execution, which, as we have already stated, we deem to be the fact sought to be elicited. The Gothic works exhibited by the two Thomases, those by Nash, and some of those by Pratt, have merit, and the artists who executed them may fairly be entrusted with the execution of parts of the work. The finest piece of carving in the collection is undoubtedly the frame exhibited by Rogers, which was executed by him for W. Beaumont, Esq., M.P.; and for which he received the sum of five hundred pounds; the grouping of the fruit, flowers and other objects, the delicate finish, the giving life to the dead tree, the quickening up the sapless wood, the swelling the dried ligneous fibres into the rich pulpy fruit, must cause every beholder at once to exclaim, this is excellent, without looking into a glossary to see if it be Byzantine, or Norman, or Elizabethan, or Venetian, or Flemish, or Louis-quatorzeine, to find whether it be lawful or respectable, or *a-la-mode*, to exhibit any emotion; whether boorishness or ignorance will be displayed by admiration of that which evidently cannot be admired without some antiquarian or other leader to direct.

With regard to glass-staining, if the quantity which will be required be any thing like that which we suppose it may be, twenty glass-stainers at least should be employed.

Wellment ought, for the arms, to be employed, though not an exhibitor.

Clutterbuck, Cobbett, Hoadley, Baillie, Ballantine, Higgins, Allan, Warrington, and Wilmsbush may be placed among those who should be entrusted with the execution of the ornamental work and pictorial and historical subjects.

Among the decorators we should include Messrs. Coulton and Elliot, who had the good taste and good sense to send in that quiet and appropriate green-grounded subject, No. 157.

The elaborate design for the pavements and floors, by Mr. Owen Jones, reflects very great credit upon him. His notion, that the representation of things estimable should not be trampled upon, is good, and may, to a certain extent be acted upon; however, by this notion what would become of monumental brasses? Part of the work we should compose of the materials which he proposes for use; but his acquaintance with Moresco patterns he has hardly been able to throw off, and we doubt whether any part of his elaborate design is altogether free from a Moresco appearance. We, therefore, have considerable doubt whether any part of it would be appropriate just as it is.

Of encaustic tiles, many of those by Chamberlaine and Co. are good in design, and are very proper for the work. We, however, wish the colours of some of them were changed for those of a richer and more *recherché* kind; the glazed brown patterns, for instance, have too much the effect of common pan-ware to be valued according to their cost and merits.

The Indian-red patterns, by Grimsley, are exceedingly beautiful and appropriate; and many of those by Copeland and Garrett, Minton, Singer, and Mayer, are worthy of being adopted.

With regard to the metal-works, there is a clever perforated casting in a right style, by Mapplebeck and Lowe.

We think all the stoves should be designed on purpose, as should the fenders, fire-irons, escutcheon-plates, hinges, locks, and other visible metal-work.

The embossed leather decorations, by Leake and Co., some plain, some coloured, and some gilt, may be used for various parts of the work. Some of the effects produced in this material, of reliefs, flowers, and arabesques, are wonderful; judging from the ancient specimens which still remain, they would be very durable; and we have little doubt that other spectators, as well as the artists of this material, will say, after viewing their handy-works, "nothing like leather." At any rate, if carried no further, these specimens shew how well they are adapted for going round the doors. This employment alone would occasion no trifling amount of work throughout this great national palace.

We have, in this review, endeavoured to be as impartial as possible, and that we have been so is attested by the numerous letters which we have received on the subject.

If we have chanced to know any of the parties who have exhibited, they have not been praised beyond their merits, and some such we have greatly dispraised. **b.**

## NEW BUILDING-ACT.

THE proposed new Building-Act, as amended in committee, has been printed; it is much improved in many respects: the rating is nominally reversed, so as to agree with the present Act, and all preconceived notions of first and last; but some objectionable parts still remain, and some new propositions are inserted. The most objectionable project to forbid chimneys to be turned away from their bases in any way which in practice may be found requisite (and which long and extensive experience proves may be soundly done), is still pertinaciously and ignorantly insisted upon, but which, if it became law, would, from its tyrannical nature, insure the repeal, in less than six months, of the whole Act, within this

free empire. When we have carefully looked over the whole Bill in its present form, we shall give a minute critique upon it.

On Wednesday last there were meetings at the Freemasons' Tavern, Great Queen-street, of the district surveyors and of the master-carpenters relative to the Bill: with what occurred at the former we are unacquainted; at the latter, Mr. Biers, the president, explained generally the nature of the emendations made in the Bill, which appeared to meet with approval, many oppressive proposals being expunged from it; the matter was referred back to the committee which drew up the report, (and which had interviews with Earl Lincoln upon the subject), in order to the effecting of a removal of the remaining objectionable parts of the Bill.

## BETHLEHEM HOSPITAL, ST. GEORGE'S FIELDS.

WE have just seen a sketch for a proposed alteration to this edifice in a manner of which we totally disapprove; the change contemplated to be effected is by the removal of the present cupola, and the raising above the centre of the building a loftier lantern-cupola, in the French style, with scroll consoles at the bases of its supporting piers or pilasters. Three or four years ago, the façade of this pile was injured exceedingly by the addition of wings, which have a very unsatisfactory and indeed unhappy effect. Now, to the summit of the edifice, which is in the very simplest style of Grecian Ionic architecture, this incongruous and ill-advised addition is proposed, and perhaps, before the damage can be stopped, things may have advanced too far for the prevention of this wasteful breach of propriety. So it is our English architecture suffers more from injudicious alterations by those whose duty it is to increase the splendour of our national works, than by all the direct attacks of acknowledged barbarians.

## THE SEVENTY-SIXTH EXHIBITION OF THE ROYAL ACADEMY.

### ARCHITECTURAL DRAWINGS.—SECOND NOTICE.

915. Interior.—West Hill House, Hastings, by John Hornby Maw, H.

This honorary amateur drawing is a glorious one; its whole effect—deep, rich, and brilliant—is wonderfully fine. The apartment which it represents is handsome, and is richly furnished in the style of the time of James the First. Its accessories are beautiful, the light and shade of the female figure sitting against the oriel window are perfect. Even the spaniel upon the Turkey carpet is represented as spaniels are not every day shewn by the pencil. Paper, in this superb work, totally disappears. Carving, furniture, embossed ceiling, Turkey carpet, light, shade, colour, and execution, all combine to make this a production which, architecturally considered, we should prefer to any other picture in the exhibition.

1055. St. Peter's Church, Islington, as recently executed from the designs and under the superintendence of Gough and Roumieu.

This is one of Charles Barry's inferior works altered. The church, as originally built, perhaps was the cheapest and most homely structure which its architect ever erected. The building has been enlarged, but little improved, and in many respects injured. The one-sided tower, surmounted by a spire, which has been built at its north-west corner, is a needless piece of irregularity added to a regular design, and ought to be removed; it is so mean, thin, and skewerlike, as to appear ready to fall upon the beholder. Many of the details of the new work are impure, and are applied in an un-Freemasonic manner.

1056. Design for the Water Temple, and Fountains for supplying the City of Pest, in Hungary, with Water, by W. T. Clark.

In an inferior style abounding with revived old



errors, which should be avoided. We think a man educated to the science of architecture should have strength of mind enough to avoid the trumpery which from time to time arises as fashion in architecture, as in many other things. Pilasters and columns far down from the entablature over them, arches intervening, a second series of trifling small pilasters upon the heads of the lower and larger angle-pilasters, may be found in some work or other, but that mere circumstance, though it afford a reason for avoidance, can give none for imitation.

1075. All Saints' Church, Thelwall, by J. M. Allen.

This design contains some good parts, but portions of it are injured by the vice of placing narrow windows in duplicate instead of large and noble windows divided into three days or lights.

1081. View of London, from the steeple of St. Bride's Church, Fleet-street, by T. Allen. A beautiful drawing, shewing as much of the vast city as possibly can be seen in one view, except from the summit of St. Paul's cathedral.

1083. North-west view of Shottesbrooke Church, Berkshire, by G. Buckler.

This church, surmounted by a tower over its central crossing, contains many genuine parts.

1106. Design for the altar window of Chichester Cathedral, by W. Warrington.

Of small work, and miniature pictures, a style which we hope soon will meet the *coup de grace*, and make way for the nobler style of art.

1119. Approved design of a new Church, to be built at Woolwich, by F. E. H. Fowler.

Of considerable beauty; the tower and spire over the great crossing. We should alter the transept, making, instead of the rose and six narrow lancets, only one grand window of five days; the convex triangular clerestorial windows, divided each into three trefoils, are good, but the aisle-windows, divided each by one mullion, are to be deprecated.

1120. Western elevation of a Church, with transepts, designed for a late competition, by H. T. Wright.

Partly copied from Wells and Salisbury cathedrals; at the crossing surmounted by a steeple, not in good taste, nor with a good outline.

1121. Design of the Holy Trinity Church, Hull, by W. Granville.

A church containing some noble parts; the surmounting of the great gable by a horizontal-topped screen-wall, however, very unnaturally injures the effects of the view.

1123. Design for the Bookbinders' Almshouses, by W. J. Short.

We disapprove of the timber-work of this design, as neither useful nor elegant.

1142. Holy Cross, New Church, now erecting at Leeds, by J. M. Derick.

Many parts of this design are to be commended: the tracery of the great five-light west window is too un-English to please. The clerestorial windows and the side windows of the west front are of three lights each, and have a better effect than windows of two lights.

The pinnacle-shaped roof over the turret-stairs by the porch is too much stunted. It may be a fault that the doors of the church are comparatively so small, but these, as at Wells Cathedral, cause the whole building to appear more vast.

The tower and spire, which rise from the great crossing of the church, are copied from St. Mary's, at Oxford. The angular masses serving, however, as restraining pinnacles, are not altogether to be approved of. The heavy pinnacles over the clerestory are against Freemasonry, and are to be altogether condemned as pernicious. The ponderous bell-turret, on the west gable, is far too heavy; good Freemasons would make this as light as possible.

1145. The Hall, near Barnstaple, as proposed to be rebuilt by Robert Chichester, Esq., by P. Hardwick, R.A.

A quiet Elizabethan design, with an Italian porch, surmounted by arabesque scroll-work, mullion-shafted windows, Gothic chimneys, and two turrets.

1149. New church, building at Surbiton, Surrey, by Stevens and Alexander.

We shall abstain at present from all remarks on this class of open roofs. We do not like the same three words repeated between eighty and ninety times over on the roof, but should desire an instructive variety; otherwise managed, the cost would be to no purpose.

1157. Design for Torquay Church, South Devon, by T. Allom.

A dashing drawing, but un-Freemasonic. The outline of the steeple is broken and inferior and unlike the ancient works; the lower series of flying buttresses rising against the octagonal lantern-stage of the tower would, by their energy, tend to drive in the window-jambs, against which they are pitched; instead of being of use they would add weight, and they are disagreeable in appearance. The upper tier of flying-buttresses are pitched against the piers of the upper lantern, which they would tend to cripple by driving them inwardly; while the thrust of the spire, where it saddles upon these piers, is left unrestrained, and would tend to drive their heads outwardly, instead of being restrained by these flying buttresses, which should be placed exactly where the active forces impinge. The altar three-sided apsis rises so high that the eastern gable, against which it is placed, would be considerably hidden. Each severity of the clerestory of the nave is divided inelegantly into four compartments instead of into three. Flying-buttresses are only applied in two places of each flank of the clerestory, and appear to be only for effect: these two impingements performing no good duty, and, indeed, acting injuriously if there is no internal moving force to be restrained. In some cases the windows are needlessly divided by central columns. This design, which is beautifully drawn by a most accomplished artist, requires in every part the chaste hand of good Freemasonry. In ancient Pointed architecture all is alive, all is active, nothing is dead.

1158. Design for a chancel and east end of a parish church, by F. E. H. Fowler.

This has some good parts, but the rough character of rude gothic is blended overmuch with rich decorated; the crosses on the gables are so thin as to require to be of metal. We think the expense of fringe-work up ridges is best dispensed with; it is of no use, and must occasion some part of the work to suffer.

1173. North-west view of Lee Church, Kent, erected from the designs and under the superintendence of J. Brown.

A good church, finished partly in stone, and partly in stucco; its duplicated windows to be objected to, but contains very good parts; the interior of this church has a pleasing effect.

1174. Design for the exterior of the new church at Torquay, by J. Brown.

A design of considerable merit; only a small part of the nave has duplicate windows; the tower at the crossing would with small additional study be beautiful.

1180. View of the intended choristers' school, St. Mary Magdalene College, Oxford, by J. C. and C. Buckler.

A good drawing.

1219. Design for an extension of the Banqueting-house, Whitehall, on the site of Gwydyr House, appropriate for government offices or a club establishment, by Wyatt and Brandon.

We disapprove entirely of this. The rustic cinctures on the pilaster-shafts are not of the character of Inigo's work, which is much purer. The rising of the five key-stones through architrave, frieze, and partly through the corners of the window-dressings, is in a vicious style, which is gaining ground, and which we think it behoves all to deprecate; the mixture of Venetian windows, none being in Jones's work, mar the design. The great receding hollow between the Banqueting-house and its proposed duplicate copy has a broken effect, and the turrets at the side of it appear deformed, irregular additions to the work of the chaste English Palladio; their surmounting work is quite foreign to the character of Inigo's work; which, though it have its entablatures mitred over each pilaster, nevertheless has a wonderful air of beautiful chasteness, quietude, and simplicity.

## NAWORTH CASTLE.

The melancholy destruction of this noble edifice by fire may be deemed a calamity not only to the county of Cumberland, but to the whole of England. It was by far the most perfect of those castles in the border country, where the fierce barons of former years lived in feudal magnificence, and whence they were wont to issue with a retinue of followers to scare those with whom they might for the time be at variance. To a lover of antiquity a visit to this fortress was one of the most interesting employments that a summer's day could afford. The times which the imagination of Sir Walter Scott delighted to wander in, and his genius to body forth—the days of which our ballad minstrelsy was at once the inspiration, the effusion, and the history, were brought more vividly before the mind by an explanatory ramble through Naworth, than by any other object in the "North Country." The contrast of the period referred to with the present, in point of security to person and property, and with regard to the habits of life which states of things differing so widely generate and uphold, could be nowhere more pointedly impressed upon the attention; for, thanks to the noble house of Howard, the castle, until the fire broke out, was kept in a habitable condition, and matters preserved to our day pretty much as they existed two centuries ago. Its very position upon the edge of a ravine, overlooking a large expanse of ground; the amazingly thick walls, to be measured not by feet but yards; the "secret winding passages," the dungeons, the portcullised gateways, the narrow stone staircases, all spoke of a period and a place that required watchfulness and defence before comfort and embellishment.

Let us first describe the castle as it appeared before this disastrous accident reduced it to a few bare walls. It was built in a quadrangular form round an extensive court-yard, just at the point where two foaming brooks before becoming confluent swept down the hill at the opposite sides of a precipitous rock. It was only to be reached from the south, and on that side it had formerly been protected by a double moat, whilst a barbiican defended the drawbridge. Here the principal front extended to a length of 203 feet. This front was guarded at each end by a lofty battlemented tower, from a corner of which sprang a slender watch-turret, like a feather in a cap. The grand gateway led into the outer court, and above it were boldly sculptured in stone the armorial bearings of families who possessed the castle before it came into the hands of the Howards. To gain admission to the great court-yard the visitor had to pass through a low narrow archway, that pierced the main building not quite in a line with the grand gateway we have mentioned. Out of this court-yard, which, from the picturesque appearance given to it by oriel windows, sculptured doorways, fantastic chimneys, and thick bushes of climbing ivy, demanded something more than a passing glance, many entrances led into the interior of the mansion.

The apartments were numerous, but our space will not allow us to particularize more than the principal ones. The great hall was a noble room, 70 feet by 24, chiefly lighted by a large bay window. The ceiling was divided into a great number of panels, containing portraits of our English monarchs, from Brute to Henry VI., all accurate likenesses no doubt. Lord William Howard's suit of armour hung in the hall, and one of the two remaining suits that were there were bestowed, through want of an owner nearer home, upon the knight who led Joan of Arc to the siege of Orleans. The dining-room was lined with tapestry, storied with faded and undecipherable designs. Many portraits, valuable in an historical point of view, hung high on the walls. Amongst them were portraits of Philip, Earl of Arundel, celebrated as the introducer of coaches into England; three of the eighth Harry's queens, and that famous lady Ann Clifford, Countess of Dorset, Pembroke, and Montgomery. With the pride of ancient family, the genealogical tree of the Howards, and of the previous owners of Naworth, was reserved for the chapel, upon the ceiling of which some quaint old painter had depicted ideally ugly likenesses of the persons mentioned in holy writ, carefully appending his name underneath, that neither envious time nor equally envious brother



limmers might steal the glory of the performance from him:—

"Magister Lucas Eglicment,  
Pictor. M.D. XII."

The guard-room, 116 feet long, formed a sort of gallery in the south front. Here were deposited several paintings, the refuse, for the most part, of Castle Howard, and many pieces of rusty armour. Some of the paintings, however, were of great excellence, and it is to be hoped that these have been saved from the fire. A portrait of Charles I. by Vandyke was one of the finest we ever remember to have seen. The King was represented in armour, his left arm resting on his helmet, which lay on a table beside him, and his right hand holding a baton. The pensive expression which was natural to Charles sat well upon his handsome features, and exhibited as clear a prophecy of his doom as the most ardent physiognomist or republican would desire. Here, also, was Raleigh, with his olive complexion and hair of midnight darkness; a painting of Lord William Russell winding up his watch for the last time before his execution; Queen Bess, with a ruff so stiff as to lead to the belief that the three kingdoms had been ransacked for starch to fortify its regular folds; Arthur Lord Capel, beheaded in 1643;—all these, with many others, hung in the guard-room. Memorials of "Belted Will" were here submitted to the stranger's inspection. There was his cradle, and there his military saddle, the belt that braced him in many a tough encounter; the gloves that grasped his good Bilboa. The belt was (we hope that we might say is) a curiosity well worth examination. It was of leather, three or four inches broad, and covered with metal studs arranged so as to form this couplet in the German language:—

"O mensch gedeneck an diesen tag  
Dass Gottes starcke hand vermag."

The distich comprehends a fine moral, and may be thus translated:—

"O man reflect that on this day,  
God's hand hath power to save or slay."

This is the "broad and studded belt" alluded to in the "Lay of the Last Minstrel," from which the Lord Warden of the Marches derived his well-known epithet. Perhaps we may be pardoned for pausing a moment to notice that Mr. Howard, of Corby Castle, who wrote a large volume, containing memorials of his family, thus alludes to the passage in the lay already quoted:—"Lord William Howard is called by Sir Walter Scott 'Belted Will Howard,' meaning, I apprehend, that he was in the habit of wearing the baldrick, or broad belt, which was formerly worn as a distinguishing badge, by persons of high station. But this, as to him, is not at all founded in fact, as the belt which he wears in his pictures are particularly narrow. But the characteristic epithet with which his name has come down to our times is 'Bauld,' meaning 'Bold Wyllie.'"  
With submission, we think Mr. Howard is wrong upon this point. Whatever may be the dimensions of the Warden's belt in his pictures, the baldrick shown at Naworth was nearly four inches broad. This cannot be called "narrow," nor is it, perhaps, remarkable for its breadth. It is very probable, however, from the lines in a foreign language wrought upon its face, that there was some superstition connected with the belt, such as being endowed with a secret potency protecting the wearer from harm, and hence the origin of the epithet in question. Sir Walter does not tell us where he acquired his description—possibly by ocular inspection. At all events, we see that on this, as on other occasions, the poet was minutely accurate as to costume.

Passing from the guard-chamber, where we have been lingering so long, into one of the towers on the south front, a dark cavernous passage was entered leading to Lord William's bedchamber, a small apartment containing a bed, such as not even a board of guardians would dare to give to a pauper *protégé*. The room was furnished with appliances of defence, and means of escape to boot. The first consisted in a floor formed of a composition as hard as stone, and doors of enormous thickness, secured with bars and bolts past counting. The second is a secret apartment, vaulted, and without light, entrance to which was gained by removing a portion of the wainscot panelling. But the person who inhabited these rooms was

a scholar as well as a soldier. A winding staircase conducted from the sleeping apartment to a room above, stored with books and manuscripts, which, when we saw the place two summers ago, were in a sad state of disorder. Many volumes, once there, had disappeared; what remained had been woefully mutilated, and were in such a dirty condition that the fingers instinctively recoiled from the operation of opening them. Curiosity in the end overcame minor considerations. The books, upon investigation, seemed to have been more studied by Lord William 200 years ago than by all his posterity since. His lordship, in many instances, in addition to inscribing his name on the title-page, had written a few words in allusion to the subject. Thus, in a copy of a work by the "Starry Galileo," was written—

"For their glory is to change,  
And their liberty to range."

In "Calvin's Institutes" he had placed, "Qui sibi videtur stare, videat ne cadat;" and in a controversial work "Merces amoris amor,"—a hint, we suppose, to the polemic author.

Alongside the place of study was the place of prayer. The oratory contained a quantity of carved wood brought from the neighbouring priory of Lanercost, and a confessional. Before descending from this "peaceful citadel" we might have conducted the reader to the watch-turret, thence to gaze upon an undulating plain, scattered with villages and farms, woods and pastures, that stretched away to the border highlands. What a different prospect from that beheld by the watchmen from this very turret, when homestead and rick, blazing through the gloom of night, disclosed deeds of rapine and spoil in the plain below, which the castle inmates were immediately roused by sound of horn to remedy or avenge! In those days it was requisite that a castle should be a man's house, if he wished to experience the truth of the proud maxim which declares every Englishman's house to be a castle.

The dungeons (to make a rapid transition from airy turrets to airless dens) are formidable affairs indeed. Not a ray of light was allowed to penetrate, and rings in the wall remained to show that my lord warden knew how to keep a prisoner when he had caught him.—*Times*.

#### THE ROYAL EXCHANGE.

THE interesting ceremony of opening the new Royal Exchange, it will be remembered, was originally fixed by the Gresham Committee to take place in the course of July, and, although no decisive promise was made, still there was little doubt that her Majesty and her royal consort would honour the city of London by opening it in person. An event, however, of the deepest and most lively interest to the nation at large, and which is likely to occur about the same period, precludes the hope of her Majesty's presence at so early a date, in consequence of which the ceremony will be deferred in all probability, for as yet no day has been named, until September. Since the completion of the masonry of this splendid structure, the committee have diverged from the plans they had formerly agreed upon, and have made several important improvements, which when completed will render the building far more interesting than was anticipated. Amongst those of the most moment are the clock, bells, and chimés. The clock, an important feature in the consideration of the committee, is being made by Mr. Dent, the eminent chronometer-maker in the Strand. The works are nearly completed, and for ingenuity and correctness will surpass any other of the kind in this country. The original intention of having the same number of bells (eight) as before the fire has been abandoned, and the number increased to fifteen. The alteration was at the suggestion of Mr. Dent, who, having visited Brussels and other parts of the continent to obtain information as to the arrangement of carillons, for which the artisans of Flanders have acquired a well-deserved celebrity, was induced to recommend that number, so that a more harmonious chimé might be gained, 15 bells giving three octaves, thereby increasing the melody. They have been cast by Messrs. Mears, the bell-founders in White-chapel, and are almost ready for hanging in the tower. The largest weighs 22 cwt., and

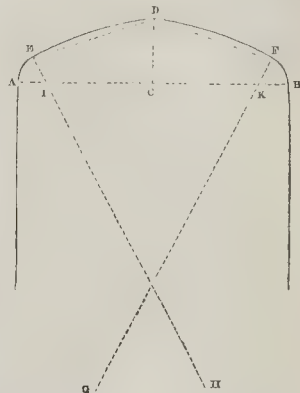
the smallest 5 cwt., the whole set weighing 7 tons. The largest is also the hour bell, and bears the following inscription:—"Cast for the Royal Exchange in the year of grace 1844; Richard Lambert Jones, chairman of the Gresham College Committee; Daniel Watney, Master of the Mercers' Company; Ebenezer Trotman, Assistant; William Tite, Architect. Charles and George Mears, founders." The others only bear the words "Royal Exchange, 1844." As yet the whole of the tunes have not been agreed upon, the only ones decided on being "God Save the Queen," "Rule Britannia," and an ancient madrigal. The barrel for the chimés is completed, and appears to be an astonishing piece of mechanism; it contains upwards of 7,000 holes. The clock and chimé works will be securely protected in a separate and well-fitted apartment in the tower, and not exposed, as is generally the case in the metropolitan steeples, to the inclemency of the weather. The pendulum weighs 4 cwt., and is 16 feet in length; each vibration being two seconds. The roof of the arcade, or merchants' walk, will present a very beautiful appearance, work-people being now busily engaged in painting it in the fresco style. The roof of the southern entrance is already done, and may be seen from Cornhill. It is also understood that Lloyd's and other public rooms will be similarly decorated. The sculpture executed by Mr. Westmacott for the pediment of the grand façade will be erected in the course of a few days. The foundation for the Wellington statue has been laid, and awaits the masonry, and nothing has as yet transpired that will prevent the statue being raised on the 18th of next month.—*Times*.

#### ARCHITECTURAL GEOMETRY, No. I.—CENTRES OF TUDOR ARCHES.

TO THE EDITOR OF THE BUILDER.

SIR,—Will some one of your talented correspondents furnish me, through the medium of your valuable periodical, with a correct rule for drawing the Tudor (or four-centred) arch?

This is sufficiently easy when the height is not limited; but I have had the following proposition given me, which, with the slight attention I have given it, I am unable to solve:—



Given.—The width at the impostes A B, the height C D, and the angle at the vertex E D F, formed by the chords of the upper arcs.

Required.—The radii E I and E H of the arcs forming the curve.

An early solution will oblige, Sir, yours, &c.,  
A SUBSCRIBER FROM THE BEGINNING.

[In such arches, the point of union, E, of the two curves composing one limb of the arch, and the centre, I, of the smaller curve, and the centre, H, of the larger curve must all be in the same right line; otherwise the two curves will not blend perfectly. If the situation of the point E be not previously determined, it may be found practically by finding a radius, the centre of which shall be in the line A—B, which will strike a circular curve, which shall, at E, meet the line E—D. When this is done, a line must be produced through the points E and I indefinitely, and on this line will be found, at H, a centre for striking the larger circular curve, which shall extend from D and blend at E with the smaller curve properly, and without



an angle. If sufficient dimensions be given, the case may be argued arithmetically. The letters F, K, and G, are repeats, and may be dispensed with in the description. The premises are deficient; the smaller radius ought to be first determined; this would render unnecessary several trials in order to prevent the curves from not blending without an angle.—[Ed.]

#### INSTITUTION OF CIVIL ENGINEERS.

MAY 21.—The President in the chair.

The discussion upon the atmospheric railway was extended to such a length as to preclude the reading of any papers, but as many points, both of the theory and practice of the system, still remained to be examined, it was decided that the discussion should be renewed at the next meeting, of June 4th, after which a full report of the proceedings will be given.

The president's annual conversazione was announced to take place on the evenings of Friday, 7th, and Saturday, 8th June, to which the members and the president's friends were invited, and their co-operation was requested in procuring models, works of art, and curiosities for exhibition on the occasion, when a more than usually interesting meeting was anticipated.

The following papers were announced for reading at the meeting of June the 4th, there not being any meeting on Whit Tuesday, the 28th instant:—

No. 670.—"Account of the plan adopted by William Preston White, for raising the 'Innisfail' steamer, sunk in the river Lee, near Cork (Ireland)." By G. P. White, Assoc. Inst. C. E.

No. 678.—"Description of a coffer-dam used for closing the ends of the building-slips at H.M.'s dockyard, Woolwich." By B. Snow, Assoc. Inst. C. E.

No. 683.—"Description of the iron shed roof at the London terminus of the Eastern Counties Railway." By W. Evill, jun., Grad. Inst. C. E.

#### REDCLIFFE CHURCH.

THE vestry of the parish of St. Mary Redcliffe again appeal to the public on behalf of the beautiful fabric of which they are the present custodians. They do not feel justified in entering upon so great an undertaking as the substantial repair of the church, until they have obtained a sum sufficient to ensure the satisfactory execution of that portion of the work absolutely essential to the stability of the building; and this sum they have fixed at 7,000*l*. The amount already raised we understand to be about 5,000*l*, and lately subscriptions have come in but slowly. We believe the public are not fully aware of the nature of the demand made upon them. They do not know that this magnificent fabric is crumbling away with a rapidity that must soon reduce it to ruin, if steps are not speedily taken to check the progress of decay, and support its declining masses. We can speak from observation, having carefully inspected the building; and we are sorry to say that the architects, Messrs. Britton and Hosking, whose report has been published, have not exaggerated the dangerous condition in which it stands. The rotten state of the external stone-work is an evil only of second magnitude, yet one not to be fully appreciated without close inspection. The crockets, finials, ball-flowers, and other ornamental works, are crumbling away; but however much we might regret their loss, as the stability of the fabric is little dependant upon them, there would be no imperative necessity for repairs on that account; though it should be known that these do not wear away by imperceptible degrees, but are constantly falling in fragments of considerable size. Almost the whole of the exterior surface of the stone-work consists of a loose crust of soot and sand, the disintegration of the stone having taken place to a depth of from one to three or four inches. But an evil of a much more formidable nature exists in the declension of the walls themselves from the perpendicular, in their unstable foundations, and the thrust constantly exerted by the roof to push them outwards. The parts where this is most observable are the choir, with its south aisle, and the south transept. The walls of the choir (or what is called its *clerestory*) are supported

on the piers and arches that separate it from its aisles, and its heavy groined roof has, of course, a tendency to thrust them outwards; to this thrust of the roof the architect had applied the usual counteracting forces, pinnacles placed over those parts of the wall against which the ribs of the groining converge, to give the outward thrust a more downward tendency, and flying buttresses supporting the clerestory wall from that of the aisle, which in its turn was strengthened by strong buttresses, in stages. We doubt whether sufficient support was originally given to the clerestory; but probably little injury would have resulted, if the stability of the outer walls and buttresses had not materially suffered from the reprehensible practice of digging graves close to their bases. This practice has destroyed the resisting power the walls would derive from foundations firmly set in the earth; and the outward pressure of the flying buttresses, which convey the thrust of the roof from the wall of the clerestory to that of the aisle, has thrown the wall of the aisle, likewise, and its buttresses, out of the perpendicular. The clerestory, as we have already explained, was originally supported from the wall of the aisle; but as this can now scarcely support itself, it may be supposed it has become incapable of affording efficient support to the other. Some bungler has been employed to remedy this evil, and has endeavoured to uphold the outer wall by connecting it by iron bars with the inner one; thus each has now the office assigned it of supporting the other, which, as they both lean in the same direction, and not towards each other, it is impossible for them to do. The transept is in a similarly unstable state, but in that *both* the walls have an inclination to the westward. The mullions and tracery of most of the windows are so much decayed that it is with difficulty they have been held together.

On going up the tower and upon the roof of the church, the manner in which the masonry is crumbling away becomes more apparent than from below. We observed one mass of stone, weighing fifty or sixty pounds, which had fallen very lately from the pinnacle at the south-west corner of the church, upon the leads of the south aisle; it was part of a finial, and the iron bar in its centre, which had been used to connect it with the rest of the stone-work, had made, in its fall, a hole through the leads of the size of a hen's egg. Within the parapet at the top of the tower was a still larger fragment, which had likewise fallen within the last few weeks. A member of the vestry, who obligingly accompanied us in our examination of the building, stated that it had fallen since he was last up the tower, which was not long since. In another place we observed a split down the centre of a pinnacle, a large portion of which can scarcely fail to be detached by the first frost occurring after rain, and it will fall on the west side of the tower, towards the street.

It will be seen from what has been said, that the question of the restoration of Redcliffe Church is not merely one of what would be well in an æsthetic point of view, but it is a question of whether the building is to stand or fall. And this being understood, we cannot entertain any doubt as to the liberality with which the dwellers in the west will come forward to support the vestry in the exertions they are so creditably making. Very unjust aspersions have lately been cast upon Bristol for its alleged illiberality, merely from the thoughtlessness of a clever writer, who considered that she could not be wrong in abusing a city with a bad name. Bristol has a bad name, and though very causelessly, the sooner it is retrieved the better. A Bristol merchant built Redcliffe Church; another rebuilt it when decayed; by another the beautiful church of St. Stephen's was erected; by another that of St. John; St. Werburgh by a fifth; the church and convent of St. James, too, were built by private munificence; and the names of Colston, and Spencer, and Forster, and many others, might be adduced to show what has been the liberality of the wealthy merchants of Bristowe in times past; whilst to this day no town is more ready in its support of all pious and charitable purposes, though it may, as yet, be behind some others in its patronage of the tasteful arts. We cannot believe that any real difficulty will be experienced in repairing, in the nineteenth century, when the wealth of Bristol has in-

creased twenty-fold, a church which was erected in the fifteenth by the munificence of one of her sons,—

"The morning starre of Radcleve's rysinge raile,  
A true maune, good of mynde, and Canynge highte."

The object is one in which the pious, and the useful, and the ornamental are all united; the church has claims every way upon the people of Bristol; but its claim as a temple worthy of the holy purpose to which it is consecrated will be sufficient, it may be hoped, to ensure it against being allowed to perish through neglect.—*Great Western Advertiser*.

#### SCULPTURE FOR THE NEW HOUSES OF PARLIAMENT.

A considerable number of persons of the highest rank, including the commissioners, have visited the studio of Mr. Lough to view two clay models about to be cast for the above-mentioned purpose. The first is a magnificent group, representing an incident in the life of one of the heroic race of the Plantagenets—we believe Edward III. The king has spurred his charger up a steep ascent, covered with heaps of the slain, to bestow the honour of knighthood on a soldier who has just taken the standard from the enemy, but received a mortal wound in so doing. The dying man is falling sick and faint into the arms of a companion, and though a gleam of joy passes across his face, it is evident that the voice of honour is breathed into ears that are fast becoming deaf to the pomps and glories of the world. The majestic figure of the king rises above the rest, his sword stretched out across the expiring warrior, his features elate with stern triumph, and seeming to look beyond the "ignorant present," to the glorious future, and to heed but little of the sacrifices by which victory is to be purchased. From behind, another wounded man, overcoming the intense suffering visible in every feature, has dragged himself forward to drink in, with almost envious eagerness, the words that are to confer immortal renown on his fallen comrade. The second group, though perhaps less imposing on a first glance, as not including so many figures, and such variety of action and expression, affords a triumphant refutation of the charge of "necessary" coldness, so often brought against sculpture, or at least shews that it is in the power of true genius to mould all that is material to its purposes. A wife has sought her husband on the field, after the battle, and discovered his senseless remains,—guided, it would seem, by her recognition of his horse, who stands in a drooping attitude over the body of his master. The first agony of the discovery is over, and she is leaning her cheek in a passionate burst of grief against the face of the poor dumb mourner, who bends towards her in the mute sympathy which is the only consolation for a genuine sorrow. No one who has ever felt its power can fail to appreciate the pathos of this exquisite performance, and the sudden gush of tears which it brought to the eyes of more than one spectator was a higher compliment to the power that produces them than any that words can furnish.—*Morning Journal*.

#### USELESS LEARNING.

By JOHN BYRNE,

Late Professor of Mathematics in the Columbian College, Washington, United States.

"The history of men's follies," says the inimitable Fontenelle, "makes no small part of our learning; and, unhappily for us, much of our knowledge terminates there." But if there be one folly greater than another, it is the having the mind stored with a large amount of useless learning. Yet this is the reason why men who have spent a long apprenticeship at college very often become useless members of society.

The superfluities of life should follow only after the necessities—so it is with knowledge. Society calls forth from the mind what she calls forth from the soil—useful products. Reason should be cultivated more than memory; nor is the bare acquisition of new ideas of any real advantage, unless they be such as are adapted to the circumstance of our wants and occasions, or be capable of becoming so. We have very few instances of men who advanced the interests of society, whether by



machinery, manufacture, politics, or morality, that have not been drawn out into a sphere of active life, to perform a more or less conspicuous part. The chief object of an education is to prepare us for some useful and important vocation of active life. This is the essence of true merit—aside from this, learning is not worthy of its name. It is all the same to the present generation, whether the ecliptic will coincide with the equator in two or three millions of years—whether the Medea of Sophocles or Ovid's Metamorphoses best illustrates the doctrine of space and infinity—if the mind of man be placed in the brain or in the spinal marrow, or whether it be a spirit or an assemblage of monadical particles—if the mountains were formed at the creation, or produced by a deluge—whether the falls of Niagara will take 16,000 or 20,000 years to wear their way into Lake Erie, or if what is called matter has sensation, in the same manner as it has gravitation; with a multitude of other *ifs* and *whethers*. Everything now-a-days is a science; but science is useless knowledge, unless it become subservient to human purposes, and under the direction of human reason. We would not give a straw for all the senseless prattle about the claims of one of the heathen gods over another; nor do we care whether Jupiter was born upon Mount Ida, or upon the hill of Lycotus. It makes no difference to the present inhabitants of the globe, though Venus was lovely and Minerva wise; though Janus was worshipped as the ruler of the year and all human fortunes; though Leda brought forth an egg only to Jupiter, or one to both Jupiter and Pyndarus; and though Psyche, the pure, devoted Psyche, was the daughter of a king, or of Sol and Constancy, it makes no matter: all this sort of pretended knowledge has never advanced commerce or agriculture, nor can it improve manufacture. Will it aggrandize art, or enlarge science? Will it lessen the fuel or friction of our steam-engines? Can it harmonize society, or prevent men from deceiving and calumniating each other? No—it is all useless learning. We are formed to count, measure, and weigh, without engaging in a labyrinth of philosophical absurdities of first causes, which has been so long honoured by the name of science. In short, let us hold in contempt all those kinds of philosophy which do not tend to make mankind happy: which give us false notions of our duty to ourselves and our neighbour; which do not teach us to regulate our conduct; which fill our minds with uncouth terms, incomprehensible theories, or ill-founded conjectures; which do not give us a clearer idea of the author of nature than what we may acquire from his works, and the wonders that are every day passing before our sight. But if there be one thing to be more dreaded than another, it is an inveterate love for reading works of fiction, and especially for roaming in the boundless literary deserts of some of our trashy periodicals, with their effeminate tales and butterfly poetry.

It is all useless learning; and the time absorbed in weakening the mind with the paltry, effeminate stuff, is a blot on our lives, diminishing instead of lengthening. All those tender charming love-tales, that suit ladies and gentlemen of independent fortunes, who only seek an agreeable amusement in reading, have their day, but then vanish into utter oblivion, like many of our metaphysical phantoms, or the dreams of a sick man: while the fruits of useful knowledge and industry are permanent, and remain to eternity. Again, what solid benefit does a student receive from the majority of the public lectures at college? Though rather opposed to the popular doctrine, we have very little faith in the knowledge derived from this mode of instruction. It certainly will not make scholars: and those who just get a smattering of science, are proverbially the worst kind of bores. Those we encounter every day,—they know that water will find its level; that the atmosphere presses with the force of fifteen pounds on the square inch; that all that is gained in power is lost in time; and the angle of 45° is an angle of *all-work* with those scientific gentry. Although not knowing the difference between discount and interest, they will suggest several plans of paying the national debt; without understanding the adjustment of a sextant or theodolite, they have many schemes to effect perpetual motion; and *squaring the circle* is a favourite hobby, yet not being able to distinguish be-

tween the circumscribed, inscribed, and escribed circles of a triangle. Knowledge and learning cannot be acquired without exertion. Those who aspire to possess these distinctions must prove, by industry and perseverance, that they deserve them. There are books to be studied and experiments to be gone through with. There are certainly great evils in the prevalence of this college-going spirit, and, in short, in all our lecture-mania; it begets in the minds of its disciples a superficial, trashy kind of accomplishments, or rather the reputation for accomplishments; for mankind generally are fonder of appearing to know something, than of seeking after knowledge.

The system must be faulty that dubs a man A.B., or A.M., merely from his sitting still and listening to a routine of discourses, which are generally unconnected, or trivial, and often senseless. These are facts, of course, that almost every one knows; but "nothing," says Montaigne, "is so firmly believed as that which we least know;" for which reason Plato said, "that it is more easy to satisfy my hearers with a discourse about the nature of the gods than of men."

We speak to the intelligent. If you wish to benefit yourself, or the community in which you live, measure in your mind only that knowledge upon which the grand pillars of society rest for its peace and happiness. Fame sought in this channel is lasting. Knowledge of this kind is always in demand. It is from this acquirement that we daily see instances of men, who never were crowned with the lowest collegiate honour, soar into the high heavens of intellectual greatness, and win the esteem and admiration of the world. Let it not be understood that we undervalue the consideration of speculative philosophy; no, but we must distinguish between chimerical speculations and demonstrable theories; the former can never produce any thing which is not imaginary, and which does not vanish like the dreams of alchemy, or the idle reveries of judicial astrology; while the latter stands immutable amidst all the ravages of time, and ultimately must have a practical application. For instance, the conical pendulum of *Huygens* remained useless for ages, until Watt converted it into a most efficient regulator of the steam-engine. And, again, the accurate observations of the longitude, which preserve navigators from shipwreck, spring indeed from a theory which, by a chain of truths, goes as far back as the discoveries made in the school of Plato, though they were afterwards buried twenty-one centuries in perfect inutilty.

#### CHURCH-BUILDING INTELLIGENCE, &c.

*Hook Church.*—The small church at Hook, near Goole, has undergone considerable repairs and restorations, both internally and externally, which have been executed in a simple, effective, but characteristic manner, under the direction of Messrs. Hurst and Moffatt, architects, Leeds and Doncaster. Much care and attention have been paid to having every part correctly restored, an aim in which they have been ably seconded by the Rev. J. Pacey, the incumbent; and as a whole this little edifice may be pronounced a model of what a parish church ought to be in a rural district.—*Hull Packet*.

*New Church, at Milton, near Gravesend.*—The foundation stone of the intended Holy Trinity Church, Milton, near Gravesend, was laid on Tuesday, the 14th May, by the Archdeacon of Rochester. The church will be built of Kentish rag-stone, with Caen-stone dressings, in the decorated English style of the fourteenth century, from the designs of Mr. James Wilson, architect, of Bath. The plan is that of a Latin cross, to accommodate, in open seats, 1,000 persons, 600 of which seats will be free. The chancel will be executed in proportion to the church, with a large eastern window. The tower and spire will be at the south-west angle 130 feet in height.

*THE HOUSES OF PARLIAMENT.*—It appears, by a return made to the House of Commons, that, in 1838, the Lords of the Treasury limited Mr. Barry's remuneration, as architect of the Houses of Parliament, to 25,000*l.*, to be paid at intervals in proportion to the advance of the works.

#### RAILWAY INTELLIGENCE.

*Railway from Birmingham to Shrewsbury.*—This long-contemplated project, we perceive, at length in a fair way of being carried out, and in a manner which must prove highly beneficial to the inhabitants of Birmingham and the densely-populated district through which the line is intended to pass. It was originally contemplated that the Shropshire Railway, communicating with the metropolis, should fall into the Grand Junction line, either at Wolverhampton or Stafford; but this plan was found, on consideration, not only to be open to many objections, but that, by its adoption, a large portion of profitable traffic would be lost. Under these circumstances, it was represented by several influential members of the Provisional Committee, connected with Shropshire, Wolverhampton, and Dudley, that by extending the line through Coseley, Tipton, Dudley, and Oldbury, to Birmingham, a liberal return might be obtained for the capital invested, while a great accommodation would be afforded to the important mining and manufacturing district of the neighbourhood. In consequence of these suggestions, several meetings of the Committee were held, and an interview was obtained with the chairman and directors of the London and Birmingham Company, when Mr. Ormsby Gore gave an outline of the plan, the mode proposed for carrying it out, the result of the reports of engineers, and the statement of traffic taken by Mr. Pacy; and when these had been satisfactorily explained, the deputation, on the part of the committee, offered the London and Birmingham Company the lease of the line, on the latter guaranteeing to the subscribers of the required capital 4 per cent. interest, and a moiety of the surplus profits. This proposition was at once acceded to, and, with the powerful influence of the London and Birmingham Company, backed by the support of the noblemen and landed proprietors of Shropshire and the district through which the line is intended to pass, scarcely a doubt remains that the project will be sanctioned by the legislature, and carried out without delay.—*Birmingham Journal*.

*Legislation of Railways in France.*—The *National* has the following:—"It is said that the deputies of all shades of opinion in the chamber have decided that the proposition made last year by M. de Larochefoucauld, that no members interested in any line of railroad, either as shareholders or as directors, shall take any part in the votes of the different lines to be granted, is to be again brought forward in a few days, and that all deputies having any personal interest in railroads will be invited to sign a declaration to this effect."

*Atmospheric Railways in Austria.*—A letter from Vienna says:—"We are going to have a trial of an atmospheric railroad. A company has been formed here to construct one between Vienna and Huttlesdorf, by Hiertzing and Miedburg, on the left bank of the Wein. The expense will be 1,200,000 florins. All the shares, each of which is 10,000 florins, were disposed of the very day the prospectus of the company was published."

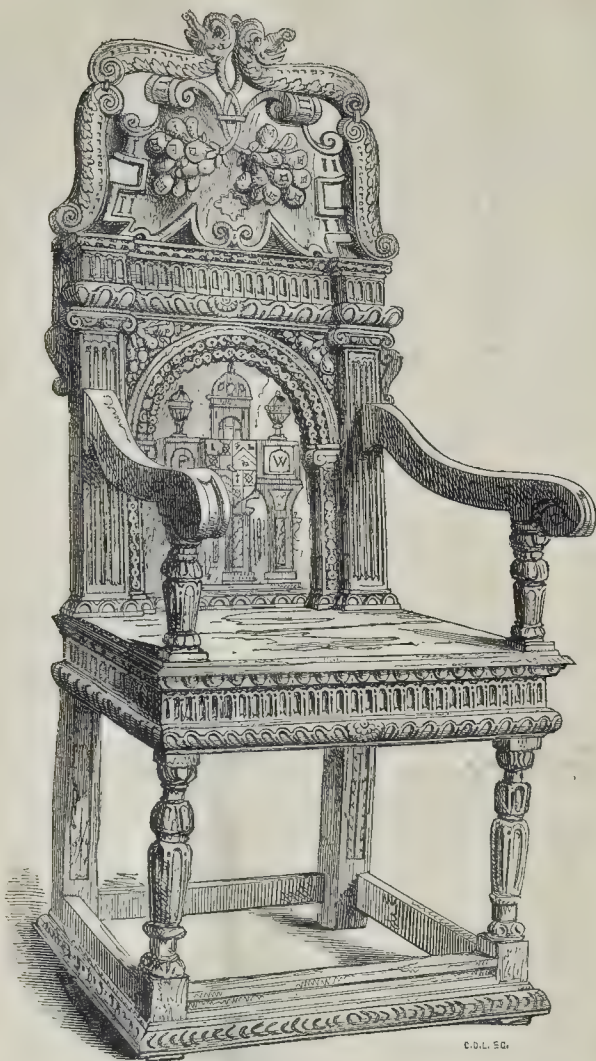
The *Railway Record* says—"We have reason for surmising that a new move is about to be made, more startling than any which has yet occurred in these exciting times. What will be thought of a new London and Birmingham Railway, guaranteed by the Great Western and Grand Junction jointly?"

The experiment of an atmospheric railway is about to be made on a line 21 miles in length, from Croydon to Epsom.

Several workmen are busily employed in making additions and alterations at the Royal Observatory, Greenwich, for the purpose of facilitating the scientific labours of the Astronomer Royal.

Messrs. Bright and Sons are erecting a new cotton-mill, to be 300 feet long, 75 feet broad, and five stories high, at Cronkshaw, near Rochdale.





ANCIENT CHAIR BELONGING TO THE EARL OF DERBY.

(FORMERLY AT STRAWBERRY-HILL.)

TO THE EDITOR OF THE BUILDER.

SIR,—Among the many rarities dispersed at the Strawberry Hill sale was a very fine old English arm-chair, lot 117, and described as "a most curious and finely-carved Elizabethan arm-chair, the back pierced and ornamented with grotesque heads: in the centre is the date 1603."

This chair, being occupied by the person who sold the catalogues, escaped the observation of many of the numerous assemblage of visitors. At my request it was placed in one of the rooms, and I made the sketch of which the above is a copy. It is a large arm-chair, rendered imposing by the carved open work at top, which contains the inscription

ANNO  
DOMINI  
1603

in a small panel on a white ground. It is of English oak, the prominent parts of the en-

richments gilt; in the back, under the carved arch, is a coat of arms, on each side of which are the initials P. W.; these, with the architectural ornaments about them, are formed of an inlay of different coloured woods, a very common mode of decorating all kinds of furniture and joinery during the reigns of Elizabeth and James I.

The arms are:—Quarterly I. and IV. Quart, Argent and Gules, a fret or: in the first quarter an ermine spot.

II. Argent, a chevron between three cornucopants sable. III. Argent, two chevrons gules; in a canton of the last, a mullet or; in the nombrel point, a martlet for difference.

Through the kindness of a friend, I am enabled to inform you that these are the arms of the Cheshire family of Warburton; and on inspecting "Ormerod's History of Cheshire," I am inclined to believe that the chair be-

longed to Sir Peter Warburton, Kt., one of the justices of the Court of King's Bench, who died in 1621, who introduced a martlet in the centre of his shield. He was a very eminent man, and an account of his legal progress is given by Ormerod. The family of the Warburtons were very numerous, and there were several of the name of Peter contemporarily with the date 1603. Their descendants still remain at the ancient seat, Arley Hall, built by Peter Warburton, who died in 1495.

The small collection of details will be sufficient to shew the style of the ornaments: the patterns are repeated in the chair. I have only to add that at the Strawberry-hill auction, the chair was sold by Mr. George Robins to the Earl of Derby, for the sum of 21*l*.—I am, Sir, yours, &c.,

C. J. RICHARDSON.

22, Brompton-crescent, May, 1844.

Since I sent you the account of the old



Elizabethan chair, I have had the honour of receiving a note respecting it from my friend, Mr. R. S. S. Warburton, of Arley Hall, Cheshire. He states, "that the coat of arms upon it were those borne by Sir Peter Warburton, knight, and to whom no doubt the chair belonged." Sir Peter was not knighted till some time subsequently to the inscribed date,

1603; he was one of the justices of the Court of King's Bench, purchased the manor of Grafton, in Cheshire, and erected the Hall of Grafton, now in existence; a view of it is given in "Ormerod's History of Cheshire," likewise in the small book, "Clarke's Elizabethan Architecture." C. J. R.



ARMS AND OTHER DETAILS OF THE CHAIR.

## PETRALOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 267.)

In the earliest epochs of civilization a knowledge of rocks was almost exclusively confined to the architect and sculptor, and the magnificent remains of former greatness testify that the ancients were not only well acquainted with the several varieties adapted to architecture and sculpture, but also with the localities where the materials most suited to their views were to be found, and with the conditions essential to their usefulness and durability. Little is left of Babylon commemorating of its former renown and greatness, and the little that is left denotes the more extensive use of sun-burnt bricks than the treasures of the quarry so lavishly bestowed on the perhaps equally celebrated city of Thebes; but even the latter, magnificent as they are, and evidencing a degree of excellence in finish not to be surpassed in modern times, sink into comparative insignificance before the architectural monuments of the eastern peninsula. Many of these architectural remains, in addition to the stately and primitive grandeur of the Egyptians, exhibit in an apparent exuberance of ornament an exquisitely classic style, a mathematical exactitude not to be surpassed by Greece or Rome, and a finish of sculpture and grouping of character evidencing a prior and extensive acquaintance with the arts, at a period, too, placed beyond the records of man.

Antiquarians have surmised that the Egyptians were unacquainted with the use of iron because no iron implements have been found in the ruins of tombs, temples, and palaces; but the now deserted quarries, and many of the existing monuments, exhibit marks which could only have been impressed upon them by iron, and we have it on historical record that iron was one of the earliest discoveries of man when he entered into the social state. On the other hand, iron is the least durable of all the metals, and particularly so in the arid climate of Upper Egypt, where it oxidates rapidly, and disappears.

I have hitherto spoken almost exclusively of granite, a term which embraces a vast variety of rocks as it passes by transition into all other known species, and is endlessly diversified in composition and character; its colour is generally more or less reddish, which is the prevalent colour of the felspar, usually its predominant part. Sometimes the felspar is greyish or yellowish white, approaching to the appearance of quartz, and only distinguishable from it by its peculiar fracture and lustre. Geologists

have observed that the red colour appears more frequently in the newer, while the greyish white appears to be more characteristic of the older formation of granite, but these distinctions are arbitrary and without foundation; the colour depending entirely upon the nature of its components and upon local influence: in Nubia granites present an endless diversity of composition, and every shade of colour, from the black or greenish black sienites to the milk-white quartz. Those kinds which contain a large proportion of felspar, or hornblende, and are exposed to the unintermitting and intense tropical action of the atmosphere, generally assume this reddish hue, but as the rock dips into the earth, so the colour gradually disappears, passing off by almost imperceptible shades to a greyish white; or should the rock be stratified, the change is sometimes sudden. The same conditions under which it is formed govern also its crystalline texture and hardness, the rock in those regions where it is generated, being always harder and more compact above, than it is below the surface, although all the numerous varieties exhibited in particular localities are all contemporaneously produced.

Again, the size of the crystal varies much in granite; in some kinds we observe the ingredients equally mixed, and the grain small, and this kind is termed the porphyritic granite, a material very abundant in this country, and highly desirable for the purposes of paving and numerous appliances of machinery, grinding, &c. The Portsoy granite is a variety in which the felspar forms the greatest part of the mass, and which contains mica in small groups at great distances from each other; the quartz is disposed in such a manner, that when the rock is cut in a certain direction, it exhibits some resemblance to written characters, whence it derives its name of graphic granite.

The felspar is sometimes found in the shape of coniform concretions, representing on their fracture a surface comparable to the paws of some animals, or to the petals of flowers; at other times the quartz, intersecting the granite throughout in large nodules, represents the form and appearance of petrified mollusca, bearing a striking similitude to some of the shell marbles; the granite of which London-bridge is composed abounds with these nodules. The felspar of the white granites of Cornwall occurs in a completely disintegrated state; cohesion is maintained in general, but the substance is so far softened, as to yield to the knife like statite, but upon the whole it is in a loose earthy state. In the working of a tin mine in the neighbourhood of St. Austle, the miners, laying aside the usual mode of shafts and levels, were used to quarry

the granites out like freestone. In some kinds the mica assumes very peculiar forms, being in laminated plates, and irregularly disposed in bunches within the rock. The felspar of some species, as in the Cornish mines, passes by incipient decomposition into porcelain earth.

GNEISS—like granite, is composed of parts cohering together without any intermediate cement, often in the form of crystals, and sometimes alternating in layers of a slaty texture resting on granite. It is essentially the same as granite in its elementary constituents, consisting of quartz, felspar, and mica, variably blended with each other without determinate order or regularity, and uniting with these components numerous mineral beds and veins, being the most metalliferous of all the rocks.

It is the strongly expressed opinion of geologists that gneiss rocks derive their origin from the more ancient granite and other crystalline compounds, but observation does not tend to confirm this view, for many varieties of gneiss pass gradually into the state of granite, and its laminated structure and horizontal position, independent of the nature and peculiarity of its mineral beds, point rather a modified cause, proceeding from sedimentary deposition of matter analogous to the granite beneath, but uniting with it other mixed material, which granite very often, but does not always, possess. Mr. Phillips says that as some gneiss shews evidently a degree of wearing of the edges and angles of the quartz and felspar, and much more decidedly by the laminar arrangement of the mica, and consequent minute stratification of the rock, that its materials were ready-made and crystallized when brought together, and arranged by some mechanical agent, principally influenced by gravitation,—in fact, by water. But this wearing of the edges and angles is purely imaginary, and the disposition of the mica, which is sometimes disposed in large horizontal plates, is the very reverse to being favourable to the supposition. The nature of the sedimentary deposit always determines the nature of the rock: rivers carry into the sea-sands washed from the loose beds of the earth, and the finer material of the disintegrated beds, and all these matters unite and form vast beds, covering previous deposits at the bottom of the waters, and suiting their disposition to the beds beneath; among these commingled matters there may be, and no doubt often is, the disintegrated material of rocks, but generally speaking it is the material which has not yet passed into rock, subject to the same conditions, and undergoing the same change as granite, the difference being, that gneiss is formed by continuance of deposition, modified by place and association, of the finer particles of matter, and in a similar manner to the shales, which it so resembles in structure; whereas the granites are ruder masses, thrown together as accidental circumstances may determine, the one and the other being sometimes contemporaneously produced. It is ridiculous to suppose that granite on disintegration can be thus produced, for the waste created must of necessity become united with other matters held in suspension by the waters of all running streams, and on deposition will be a bed of another nature, unless we can conceive the whole of the superficial beds of the earth to have been originally granite—but this is against reason and observation, neither can we conceive granite decomposing and recombining in its undisturbed position; nor could it, under these circumstances, assume the stratified appearance it now presents to us. It is evidently the result of sedimentary deposition, and, in common with all other sedimentary deposits, has a tendency, under favourable dispositions, to assume the form of rock, first, while in its disintegrated state, arranging its material within itself according to the laws of affinity, the force of cohesion, and mechanical combination.

Such is the order of events observed by Nature in her changes in the present era; the sedimentary deposit no sooner becomes a portion of *terra firma*, than it changes, in accordance with its nature and to the local influences to which it may be exposed. Sometimes we observe the quartz crystals first make their appearance in a rich blue unctuous marl, felspar next appears, and mica is the last to assume the crystalline structure. It is acknowledged that fragments of granite are most rarely discovered in it, and it is exceedingly improbable that they have ever been discovered,



Men go great lengths to sustain their respective theories. It must also be borne in mind that gneiss often exhibits a higher degree of crystalline structure than granite, from which it is supposed to be produced; and again, this material often alternates with hornblende slate, mica slate, and other compounds. It alternates with granite in the Reesengeberge and in Quito, and in some cases graduates into the character of granite, as on the southern declivity of the Tifis and Jungfrau; more frequently it exchanges beds with mica schist, hornblende schist, and granular limestone and clay slate.

In some of these formations we have evidence of periodical depositions such as now take place within the ocean, every successive bed marking its origin and the primary cause of that origin. The bed of gneiss alternates with mica schist, the continuous deposits of the ocean are interrupted or united for a short period with the deposits held in suspension by rivers; this action ceases, and Nature assumes her undisturbed process. Thus, year after year, the bed increases in thickness over a limited region, the sedimentary matter, singly or conjointly produced, covering in the inequalities of the ocean bed on which they repose, varying in thickness and presenting the like extraordinary curvatures throughout their whole thickness.

It is this sedimentary deposition simultaneously taking place with the chemical and mechanical increase of limestone and calcareous beds, that renders the latter so remarkably local and irregular in their occurrence, giving them the form of large lenticular masses, common to the Pyrenees, and enveloped on every side by the predominant rocks of gneiss. By the substitution of hornblende for mica, gneiss gradually changes to hornblende schist, the latter being of pure oceanic character, the former being of mixed material of the ocean and river deposits. The very numerous transitions of gneiss into other rock, is proof sufficient that its origin is in common with all other kinds, and deducible from the like causes still existing.

Mica schist is a species of gneiss not readily distinguishable from the latter, and, in fact, no real distinction can be made other than that presented by chemical analysis or where the preponderance of mica gives it a marked character. These kinds of rock are almost unknown in England, but in Ireland and Scotland they are abundant, and include among them many gradations. Gneiss is often found porphyritic at Urt; kaolin is derived from it in the mainland of Zetland, and in Fella. It forms the beautiful and picturesque region around Loch Sunart.

Granite rocks, including gneiss, are formed by the slow operation of natural causes, a degree of heat far greater than that belonging to the temperate regions of the earth being essentially necessary to produce them; the equable distribution of many of the true granites and of gneiss, proves their common origin, and the true mathematical and mechanical combination existing primarily in the organic frame. A bed of shell-fish, a bed of sands and shell-fish, a bed of sands, shell-fish, and animal and vegetable matter, of dry land, or the comminuted particles of shell-fish and marine exuviae united in the like uniform manner, each of them is a type of the rock in its crystalline state, the ultimate result being the highest of a series of changes, and the after changes depending upon the accidents of time and circumstance, for all kinds of rock however durable their qualities may be, are liable to corrode and decompose as they become exposed to atmospheric action, or to mechanical action produced by winds, rains, &c.

Men are taught that the crystalline rocks are produced by the heat of fusion, but the facts collected in the present day have weakened, and must ere long banish, notions so erroneous and contradictory in their nature. It is true that the material of lavas is analogous to that of granites, and naturally so, for the beds of the earth from which the one and the other are produced simulate in their nature, and boast one common origin; the earths of which they are formed composing the interior and exterior beds being acted upon by flood or fire as accident may determine, for there is no one prescribed rule applicable to natural operations. The ancient and modern lavas are all distinguishable in the present day, and the older streams rapidly decompose

as they become exposed to atmospheric influences.

Common gneiss, used for laying the beds of large furnaces, is found in most of the mountainous parts of Europe in innumerable varieties of proportion, combination, distinguishing colour, and hardness, being covered with argillaceous slate, sand, or limestone. The celebrated Eddystone Lighthouse is said to be a species of gneiss, having a degree of elasticity, and its present state of preservation is demonstrative of its value for buildings and monuments. A species of gneiss, consisting of quartz, mica, and alumine, makes a very superior whetstone for sharpening scythes and other instruments, and a polishing gneiss found in Norway and Sweden, and composed of alumine and mica, is much used to polish steel instruments. Steatite gneiss, consisting of steatite and mica, is used for the walls of melting furnaces, and for the covering of houses in Sweden, Hungary, &c.

Gneiss is the most metalliferous of all rocks, some of the richest mines in Europe and South America being in this formation, and in this respect also it shows its common origin with granite on the one hand, and to common schistus or slate on the other, for granite often passes into tinstone and other metalliferous rocks, and the close alliance of both kinds with their beds and veins intersecting them is demonstrative evidence of the common origin and contemporaneous formation of both. The like remarks equally apply to the schistus beds comprising so great a portion of the carboniferous series: the continental mines in Saxony and Bohemia, and the silver mines of Konesberg are formed in gneiss.

Gneiss often abounds with garnets, and this species, which is very common to Europe, is also abundant in Upper India, and may be seen under a variety of forms and combinations, from the simple conglomerated mass of garnet sands, interspersed with mica, to the most highly finished schistose beds and rocks. The low range of hills near Nagpoor abounds with the most beautiful specimens of crystalline rock, interspersed with blocks of marble, hornblende, and other rich and ornamental stones. Ceylon is also abundantly supplied with this beautiful natural product, which presents a polish throughout its schistose structure utterly unattainable by art. In all countries its close alliance with granite, and its origin from the one common source, are evidenced by the same mechanical combinations of its constituents, the same colour and compound structure, the like divisions into mineral veins and beds, and the like metalline bodies, the observable difference being that some species are evidently composed of the finer particles of matter in which extraneous bodies are irregularly distributed, manifesting periodical deposition as well as local deposition, analogous to the earth forming the delta of Egypt, which, where undisturbed by the operations of man, exhibits, even in its disintegrated state, a laminated or schistose structure; the other granite, as previously observed, forming, by local deposition of larger aggregates, the intermediate species, shewing the transition of the one into the other.

**PORPHYRY.**—A term in mineralogy applied to a large and varied class of rocks falsely termed *primitive* and *volcanic* by modern geologists, and defined as having a compact basis, in which are disposed granular particles, or crystals. This base is generally siliceous, or silico-aluminous, as compact felspar, hornstone, pitchstone, pearlstone, claystone, or obsidian; the inclosed grains or crystals being of quartz or felspar. Of these varieties the pitchstone and pearlstone porphyries appear to take precedence, in the order of production, over the claystone and other porphyries containing potash and mica in their mechanical composition.

It is a very difficult matter for the practical mineralogist to separate the porphyries from other kinds of rock; for we observe them pass, on the one hand, into granite, gneiss, mica, schist, &c., and on the other, into sandstone, pitchstone, and clay.

(To be continued.)

**OPENING OF THE TROLLHATTA CANAL.**—GOTTENBURG, May 11.—It is confidently asserted on the best authority that the king will be present at the opening of the new Trollhatta Canal and Sluices; and that he will arrive here on the 31st instant.

#### BUILDERS' SOCIETY.

*Report of the Committee on the Metropolitan Buildings Bill, as printed by order of the House of Commons, March, 1844.*

Your Committee would congratulate the Society on the very much improved character of this Bill, as compared with all those to which your attention has been called, as they have been severally printed by the House of Commons during the last three years, and they cannot but advert with satisfaction to the lucid form and clear arrangement which pervade the Bill as now presented.

To the general intentions and purposes of such an Act, it is quite clear that we, as builders, can offer no possible objection, in so far as it tends to improve the character of buildings generally; nor have we any right, or any disposition, to interfere in the matter further than to bring to bear upon it so much of technical knowledge and personal experience as we may be able to command, for the purpose of pointing out the probable practical effect of the proposed enactments, and thereby assisting the framers of the law to the better carrying out of their own intentions.

The leading features of the present Building Act (14 Geo. 3, c. 78) are of course generally known, it will therefore suffice for the committee to point out the most important points on which the proposed Bill differs from it.

It proposes to repeal the Act 14 Geo. 3, c. 78, except as to that part which relates to dangers by fire.

Also, the 50th Geo. 3, c. 75, which is an Act to legalize the use of patent tesserae as roofing.

Also, the 3rd and 4th Will. 4, c. 35, and 3rd and 4th Vic. c. 85 (both known as Chimney Sweepers Acts), so far as they relate to the construction of flues.

The limits of its operations are much more extensive, taking at once a circle of about eight miles round the metropolis; but as there is a provision for its further extension to twelve miles from Charing-cross, it is most probable that the rapidly increasing size of the metropolis soon will render it desirable that this extent should come under its control.

District surveyors are to be continued in office, their duties being similar to those at present imposed upon them—their numbers being necessarily increased. All public buildings, however, and all private dwellings or warehouses beyond certain limits are to be under the control of a new body of officers styled official referees; and to consist of two architects and a registrar; the duty of this latter officer being to judge of the legality of all matters connected with this Act; and, as his name implies, to keep a register of all transactions connected therewith. The official referees are further to be a court of appeal, with power to settle all questions of disputed rights, value of works, or any other matter that may arise in relation to this Act. From this court of second instance, however, there is to be an appeal to the Commissioners of Woods and Works, who have final power of decision in such cases as may be brought before them.

Your committee feel that this arrangement of official referees promises fair to constitute a ready and competent tribunal for the adjustment of differences relating to questions of building; not only as to the points touched by the proposed Bill, but as to all such questions whatever; an important benefit to the public, and to our trade especially, which, from its intricacy of detail and abundance of technicalities, offers so many difficulties to the real investigation of the differences which arise in reference to it, and renders a peculiar professional education imperative for the right understanding of them.

It appears, however, that the amount of work which will necessarily devolve on the official referees will render it desirable that their number should be increased; which will be obvious, if you consider the large extent over which their services may be required, and that under the proposed arrangement all moderately large dwelling-houses would require their special supervision.

The official referees are to be appointed by the Secretary of State for the Home Department; the registrar by the Commissioners of Woods and Works.



Under the proposed Act, buildings are divided into three classes:—  
1st. Dwelling-houses.

2nd. Warehouses, workshops, and similar buildings.

3rd. Public buildings.

The two first classes are subdivided into rates, according to the size and height, and when in either case they exceed the limits prescribed, they are removed into the third class.

The two first classes are subject to the supervision of district surveyors, as has been the case heretofore.

The third class are to be placed under the special superintendence of the official referees.

By a reference to Schedule C, part II., you will more clearly understand this arrangement, and as it has a most important practical bearing upon the questions involved, your committee request your special attention to the schedule as it now stands, and also to the various modifications suggested.

The Bill proposes to make drainage imperative.

The broad and important features of the measure being thus before you, your committee request you to refer to the Bill itself, in which they suggest various alterations, and with regard to the detailed instructions contained in which, they have to propose certain modifications. The observations which follow will give you the opinion of your committee on these several matters, and the clauses to which they immediately refer are—

Clause 10 . . .	Page 8 . .	Line 18
" 14 . . .	" 10 . .	23
" 15 . . .	" 11 . .	43
" 21 . . .	" 16 . .	30
" 25 . . .	" 19 . .	14
" 42 . . .	" 28 . .	8
" 51 . . .	" 34 . .	40
" 53 . . .	" 36 . .	40
Also Schedule C . . .	Part II. . .	64
" C . . .	" IV. . .	66
" C . . .	" VI. . .	67
" D . . .	" I. . .	68
" D . . .	" II. . .	69
" D . . .	" III. . .	70 and 71
" D . . .	" VI. . .	72
" E . . .	" . . .	73
" F . . .	" . . .	73, 74, and 75
" H . . .	" . . .	76
" I . . .	" . . .	77

Clause 10.—The change proposed in the thickness of the party-walls of the smaller-sized houses would render it impossible to fulfil some engagements. As, for instance, a party having entered into a contract to erect upon ground a certain number of small houses, may be prevented, by the additional room required for the thicker walls, from placing that number of houses upon the ground; besides which additional expense would be entailed upon each house. Thus, if 100 houses are to be built, having each 12 feet frontage, three entire houses would be thrown out; and the probable return of rent diminished in the proportion of 3 per cent.

Provision should, therefore, be made to compensate persons under such engagements. The party under contract would be compelled to expend all the money and receive a smaller return; whereas the ground landlord would have a better article, and his reversion would be improved in value.

Clause 14.—If the surveyor should be wrong, there should be some remedy afforded to the owner or builder, otherwise the clause might be very oppressive.

Clause 15.—It is suggested that in this clause the form should be, that if the official referees do not give notice of defect within fourteen days of the survey, then the buildings may be used; but if this should be considered objectionable, then some power should exist to compel the attention of the official referee; as, otherwise, the building may be suspended indefinitely, without the owner having the opportunity of knowing why, or the means of setting the matter right.

Clause 21.—The present form in reference to this matter is three months; and for all practical purposes it has been found to be sufficient. Much inconvenience may result from the longer time.

Clause 42.—Your committee suggest that the words "to the satisfaction of the surveyor" should be erased; because, if he were dissatisfied, he has only to try the case before official

referees; whereas now, if litigious, he might withhold his consent and entail expense and vexation.

The clauses affecting the size of rooms to be used as dwellings is difficult to be dealt with, because, although it appears probable that some present injury might be inflicted thereby upon parties owning houses in which there are rooms let out in separate occupations, yet, if a paramount necessity can be established with reference to the question of public health for the discontinuance of such occupation, your committee feel that it would not become us, as builders, to throw any obstacle in the way of a manifest public benefit; at the same time, it is suggested that if there was a discretion vested in the district surveyor, so many circumstances, besides the mere question of size, go to make up the comparative healthiness of a dwelling-room, that much of the private injury might be obviated by the wise use of this discretion, and all the public mischief avoided; for which purpose, your committee would suggest, that it should be allowed to the district surveyor to license for dwelling any room which, though not as large as required by this Act, yet had a sufficient door and window and chimney, and was so situated in respect of width of opposite street, or other circumstances, as not to appear to him to be unhealthy for such occupation.

Clause 53.—The powers given to remove nuisances within thirty years, your committee consider to be a question not affecting us as builders, but of great importance to proprietors of gas-works, &c., and owners of premises employed in the specified trades.

This Bill provides that noxious and offensive trades shall not be carried on nearer than forty feet from a public way, nor nearer than fifty feet to any other building of the dwelling-house class, and that all such as now are in existence shall, at the end of thirty years, be removed beyond the limits of this Act. Now, although this provision affects the owners of such properties only, yet as it is accompanied by another which makes it illegal to construct dwelling-houses on ground within the prescribed distance from premises so occupied, this would render a great injustice to the owners of lands so adjoining.

Your committee further feel, that the prohibition of offensive trades in this form is an unnecessary interference with the vested interests of a large number of persons, and that in the existing laws relating to nuisances, the caution of land-holders for the protection and improvement of their own property, and in the efficient drainage of the larger portion of the metropolis (and the improvement in this respect to be anticipated from this Bill), the public have quite a sufficient security in this matter; at the same time, dangerous manufactures and explosive trades, such as lucifer-match making, &c., should obviously be removed from populous neighbourhoods.

Schedule C, page 64.—It is proposed that the superficial area of the rates should be modified as suggested, because the sizes of the schedule, as proposed in the Bill, would throw all moderate houses into so high a class as to increase their expense unnecessarily; and the same remark applies to the thickness of party-walls. The thickness suggested will be amply sufficient for the weights that will have to be sustained; and because of the small amount of combustible material that such houses would contain, the resistance to fire would be complete.

The thicknesses of party-walls for the several rates are suggested as being, in the opinion of your committee, and as the result of their experience, sufficient.

Moreover, with reference to the lower class of buildings, it is most desirable that no unnecessary expense should be imposed, because if this class of dwelling is made too costly, the effect will be to huddle together many families into houses of somewhat larger size; whereas, both the health and morality of the lower classes would be improved, by facility being afforded for the erection of such dwellings as would accommodate the smaller number; indeed, as far as possible, single families in separate tenements: besides which, the expense, if increased, would necessarily fall eventually upon the poor, and tend to the decrease of their comfort in other respects.

If it should be thought that the arrangement suggested appears to give an inefficient party-

wall to the third rate of building, while it extends the area beyond the size limited by the existing Act for a much higher rate of building, it should be recollected that most of the four-story houses of the present day have been erected under such a rate as placed the upper story in the roof; and the experience of the past fifty years has shewn that the party-walls so built have been quite a sufficient protection against the mischiefs of fire. And although to the area suggested this may appear thin, yet it should be remembered that any house having four stories, however small the area, would come under the operation of the clause; and in crowded districts more stories would be required, and thus the house would be removed into a higher rate. And the sufficiency of this wall will be the more apparent when it is borne in mind that now all wood will be kept out of party-walls of this thickness, which was not the case under the existing Act. And further, that this is the minimum thickness of walls.

Besides which, this rate of building will, under the new limits of the Act, take in a very large number of houses in the outskirts of the town, where additional expense would be important, and where the area, from the value of land, might be increased without much increase of cost in this respect; which within the immediate metropolis could not be the case, because of the value of the land.

It appears to your committee very undesirable to adopt the change suggested of calling the smaller houses first rates, and so upwards, it being at variance with all practice, not only in reference to buildings, but other matters also. The largest vessel is called a first-rate, and there would be an obvious absurdity in the announcement, that a fifth-rate house in Belgrave-square was to be submitted to competition. The third class may be easily designated as a class by itself; the limits as to extreme of size and height in each of the two first classes being defined, all buildings exceeding those limits would be taken out of those classes as they now are, and would not need to be designated by a rate under them; but if it be considered imperative to place them in a rate, then they may be called an extra rate.

Schedule C, page 60.—No authority can compel the shutting of these doors, but if they are considered desirable, then it is submitted that the size should be increased, and it is suggested that if the opening were allowed to be not more than 9ft. by 5ft., leaving it to the discretion of the parties to plan the height or width within those limits, as they pleased, much advantage would be afforded; and further, it is suggested that the piers should be omitted, as they will occupy great space, impose considerable additional expense, afford no important additional security against fire, and would also prevent the use of sliding-doors, which under some circumstances would be a most desirable arrangement, on account of the small area they would occupy.

The limit as to stables appears unnecessary, and would in some cases be vexatious.

Schedule C.—Green-houses and aviaries are so unimportant in their character, and affect the question of health, or risk by fire, so little, that it is submitted they might be left altogether out of the supervision, particularly when detached from the house.

Schedule D, Part I, page 68.—It is submitted, that if the Act provides sufficient walls, private interest is the best security for their being placed upon proper foundations; and as to natural solid strata, the expression itself is too vague to be used in an Act of Parliament in this way.

Materials.—The word stock should be omitted, being a trade name for a particular description of brick, leaving the description—good sound bricks.

Construction.—This can only be properly illustrated by a sketch, because a course of bricks and a course of stone may differ very widely, and if the width at the bottom is defined, it may then be stipulated that the wall shall not be brought into its thickness in less than a certain height.

Width.—The increase of 9in. on a 9in. wall is unnecessary; if it was made 4½ in., and to the thicker walls 9in., enough would be provided; or it might stipulate that the footings should spread to one-half more than the net width of the wall.

Height.—This would be unnecessary altogether, being provided for in construction.



*Walls generally, and depth below lowest floor.*—This is an unnecessary interference, which would not be certainly efficient for the purposes proposed, and would involve vexatious interference.

**Part 2.—External Walls.**—It is suggested that recesses may be allowed to be made in all stories that are above one story above the ground, nor would any evil result if, in case of building two stories only above the ground, these should be allowed to be carried through both stories.

**Part 2.—Brestsummers.**—The whole of this appears objectionable, and, in the opinion of your committee, ought to be left to the security the public enjoy, from its being the private interest of the parties building to make them efficient, and particularly ought not to be subject to the dictation of the surveyor, who, for his own security, will be obliged to impose an unnecessary degree of strength, and, as before stated, it is not right that the power of law should be given to the opinion of an individual.

**Part 2.—External Walls as Party Walls.**—The provision of present Act should be continued, that if 14 in. from top to bottom and sound, the wall might be allowed to stand.

**Part 3.—Party Walls.—Division of Buildings.** A.—It is suggested that this should not have a retrospective operation.

**Part 3.—Site of Walls.**—Provision should be made in this for the payment of the additional brickwork as well as for the site.

**Schedule D, Part 3.—Construction and Materials.**—The object of this appears to be the exclusion of bond timber from the centre of party-walls; but the words do not clearly convey this. Your committee are of opinion that this regulation would be a wise one, and they recommend that this should be made clear. In all other respects this clause appears unnecessary, and going into details which would involve vexatious interference, and is sufficiently provided for by the former provisions of this schedule.

**Openings in Party Walls.**—This provision should be extended to all rates of buildings, and, under the restrictions here imposed, could involve no public risk.

**Part 6.—Party Fence Walls.**—This is altogether a matter not involving public right, and might be well omitted.

**Schedule E.**—The regulation of height of wooden shop-fronts appears unnecessary.

**Schedule F.—Construction of Chimneys.** Page 73.—It is submitted that the limitation of chimneys and chimney-backs as existing in the present Act has been found a sufficient security against fire, and if it be deemed imperative to have some more definite regulation, there is no necessity to compel the chimneys

of the upper floors to be brought, as to their projections and the inconvenience of it, through the more important floors below.

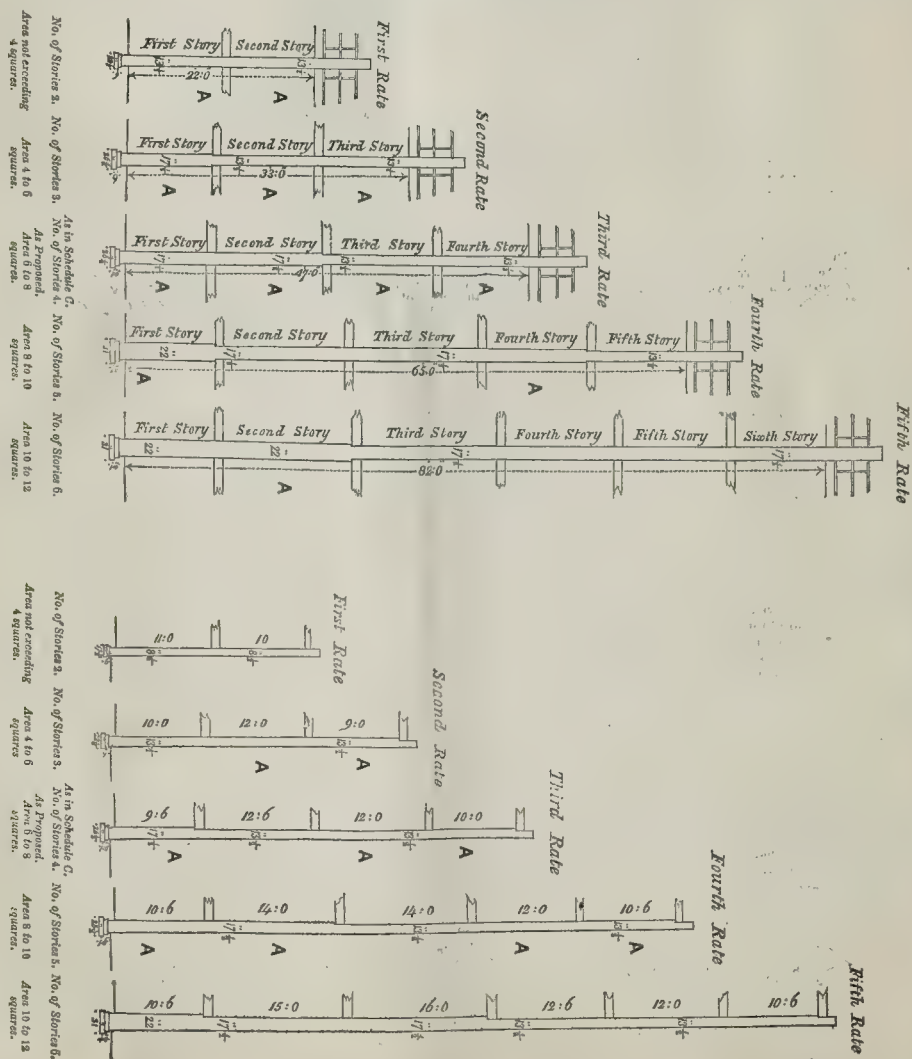
**Schedule E.—Slabs.**—Cement should be allowed.

**Schedule H.—Cesspools and Privies.** Page 76.—It is suggested that all this had better be omitted, because if a sewer is within reach, it would be in most cases better to have no cesspool. The whole of this clause has more the aspect of the description of a specification than the general provision of a legislative enactment.

**Schedule M,** page 79, affords a good illustration of the clear and lucid arrangement which pervades this Bill. It is a tabular view of the various acts to be done, notices to be given, &c., and will be found a most useful guide when the Bill shall become the law of the land.

Upon the whole, your committee are of opinion that the great amount of skill and labour which has been called into requisition in this matter, has produced the result which might have been anticipated; and that we may expect to have for our guidance an intelligible and wise enactment, which cannot but be a great advantage to all who will have so much to do with its practical effects and operation.

THOMAS PIPER, JUN., Hon. Sec.  
Freemasons' Tavern, April, 1844.



Alterations in the Thickness of Walls, under the Proposed New Building Act, suggested by the Building Society, viz. half a brick less in the stories marked A.



## Correspondence.

## TENDERS FOR BUILDINGS.—SCHEDULE OF PRICES.

Sir,—At a time like the present, when the spirit of competition is abroad, and the existing practices of builders appear to militate against the great body of that community, I am desirous of proposing the revival, in some degree, of a practice which has now become nearly extinct. I allude to the practice of a *SCHEDULE OF PRICES* being furnished to contractors, instead of the present uncertain and pernicious practice of estimating.

The benefits arising from this system appear, in my mind, to be of very great importance, inasmuch as there is a possibility of carrying it, in detail, to the advantage of all connected with the science of building. I would refer to the satisfaction a schedule of prices affords in the working of the Government establishments, such as the Ordnance, in which department all the works are executed at the rates and agreeably with the descriptions given in the said document, subject to percentages over or under, as the case may be.

It may be argued, that in private practice this regulation could not be effected, upon the principle that no individual about to commence building would do so without first ascertaining the cost. We cannot surely find fault upon that account, but I think that this could also be done in a manner to give satisfaction.

I shall now enter into the details of my plan by taking a case in this way. A gentleman requires a mansion to be erected. His first step is to engage an architect to furnish the designs for the work; they are approved of, and the individual is desirous of ascertaining the expense.

A frequent mode of acquiring this information is by advertisement, inviting builders to tender for the erection of such works. Here the spirit of competition makes its way, and instead of allowing a reasonable profit for the outlay and anxiety of the builder, we find, in most cases, quite the contrary result. My proposal is, that the architect having his designs approved of, should be empowered to hand them over to an experienced surveyor, for the purpose of ascertaining as nearly as possible, by estimate, the expense of the proposed work.

This would be of course for the satisfaction of the individual who is about to make an outlay.

The description of work required in the erection of such a building can be ascertained by the architect thereof; a schedule of such work, with fair prices thereto attached, might be thence framed, a general specification and the terms of the proposed contract being attached. Thus contractors being invited to tender would, on examination of those prices, be enabled to state at how much per cent. above or below them they were willing to execute the work.

It would be desirable that the works should be measured as they proceed, so that at the end of each quarter or half year, the contractor's bills might be prepared for payment.

In order to the proper execution of the works, it is suggested that intelligent individuals be selected to fill the situation of clerks of works, whose duties being well known, I shall not stop here to describe.

Such is the nature of the plan I propose. The objects to be gained by it are these:—

1st. The employer for whom the work is being executed can ascertain actually the amount of work performed as it proceeds.

2nd. By the employment of a responsible individual as a clerk of works, he is assured the work is properly executed.

3rd. The architect who has designed and superintended the works from time to time, can extend his engagements, having the assistance of a resident clerk of works.

4th. By this means a source of employment would be opened for a large number of young men of talent, who, from circumstances, instead of occupying the position to which they of right belong, are obliged to rest contented as clerks in builders' establishments. I allude to the young surveyors who, for want of interest or connection, are unable to follow their profession.

To the existing surveyors I see no disadvantage in my plan, as the field for the extension of their labours would be increased.

It may be argued that by this arrangement spurious surveyors might get into the profession, but I see no difficulty in setting that question at rest.

I would suggest that the body of respectable surveyors form themselves into a society for the protection of their profession, and that they procure power, such as that enjoyed by the Royal College of Surgeons, or other bodies similarly constituted, that candidates be examined in open court, touching their abilities, and be not allowed to practice as surveyors unless found capable of bearing such examination.

To builders I would recommend the introduction of this practice in consequence of the satisfactory results to be derived from it. The expense of the engagement of a competent surveyor would be but trifling compared with the present hazardous system of estimating; which, however great the perfection to which it has been brought, can afford no security, in the event of circumstances occurring over which neither the architect in making his specification, or the surveyor in framing his estimate could have any control.

Builders should form themselves into a society for the promotion of such a desirable object, the interests and respectability of their business require it.

I leave these few suggestions with you, and must apologize for the length to which I have extended this letter.

I am, Sir, yours, &c.

Brecon, May 27th, 1844. STABILITAS.

## PETRALOLOGY.

SIR,—In reading an article in last week's Builder entitled, "Petralogy, or the Knowledge of Rocks and Stones," I was surprised to find granite described as of sedimentary origin, and the idea of its having been produced by the agency of fire, or "formed of matter once in a state of fusion" discarded, as being an unphilosophical notion. Now I would ask the writer how he accounts for granite being found as at Glen Tilt, in Scotland, described by Mac Culloch; where it is found intersecting different strata, and occasionally "intruding itself in tortuous veins into the beds of clay slate and lime-stone." Mac Culloch also describes another instance, "in the same district, where the granite sends forth so many veins, as to reticulate the lime-stone and schist, the veins diminishing towards their termination to the thickness of a leaf of paper or a thread." There are also numerous other junctions of a similar nature, where, according to Lyell and other eminent geologists, "large masses of granite are found to send forth dikes and veins into the contiguous strata, very much in the same way as lava and volcanic matter penetrate aqueous deposits."

If, therefore, granite be of sedimentary origin and deposited by water, I should like to see how these are to be accounted for in a satisfactory manner. It appears to me that some subterranean and internal power must have been employed to have effected such a complicated arrangement.

The writer also says that "Geologists inform us that granite is primary rock,"—now it has been discovered of late years that granite has been produced or formed at different geological periods, some of which are comparatively modern, therefore, the term primary or primitive cannot be at all applied to it. For instance the granite of Dartmoor, in Devonshire, which was formerly supposed to be a primary or primitive rock, has been satisfactorily ascertained to be newer than coal.

I am, Sir, your obedient servant,  
May 21, 1844. J. K. C.,—B.A.A.D.

## THE ATMOSPHERIC RAILWAYS.

SIR,—In your valuable journal several allusions have been made to Messrs. Clegg and Samuda as the inventors of the Atmospheric Railway. Allow me, however, to state that these parties have not the slightest claim to the invention, and that they themselves disclaim it. They rest their claim entirely upon a valve, which valve is to be found in my specifications. Their patent was taken out in 1839, my patents are dated in 1834 and 1836. The Dublin and Dalkey line has been constructed in conformity with my specifications; and though some important details are omitted, nothing has been done which is not in direct violation of my legal rights;

consequently, it becomes my duty, through our journal, which has so great a circulation, among practical engineers and builders, to state that Messrs. Clegg and Samuda will not be permitted to continue in their infringement of my rights, and that any parties connected with them will be liable with them as parties to the infringement.

In order that the public may be on their guard, and that these assertions may be received with their due weight, I beg to refer to my specifications, and also to the following extract from a letter from Mr. Clegg:—

"April, 1838.

"I must be informed of all particulars. Your first patent, as it appears to me, is of much more consequence than your last for improvements. Your patents are of that importance that nothing must be left to conjecture.

(Signed) "SAMUEL CLEGG."

In conclusion, permit me to state that a true history of the Atmospheric Railway will soon be placed before the public, containing documentary evidences; a portion of them under the hands of Messrs. Clegg and Samuda, which will astonish those who have witnessed the proceedings of these parties, who seem to flatter themselves that such pretended histories as that in the "British and Foreign Quarterly Review" will save them from the opprobrium which, sooner or later, overtake all men who endeavour to impose upon the credulity of the public.—I am, Sir, with sentiments of respect, your obedient servant,

HENRY PINKUS.

Maddox-street, May 30, 1844.

## WINDOW LIGHTS.

SIR,—I should feel obliged by your stating in your next number what restrictions exist as regards building walls near windows, the light of which may be partially obstructed by such walls, or in what work information on this point may be found?

Yours obediently

May 28th, 1844.

GNICK.

[We have repeatedly answered questions much the same as this. No window-light rightfully held must in any way be injured by a neighbour: twenty years' possession gives the right of maintaining unimpaired a right of the kind. If such a window be through a party-wall, by the present Metropolitan Building-Act it is necessarily sacrificed upon rebuilding such wall, for by that Act no holes are allowed in party-walls.—Ed.]

## Miscellaneous.

THE TRIGONOMETRICAL SURVEY.—SPIRE OF THAXTED CHURCH.—One of the points selected for the purposes of the trigonometrical survey of England, now in active progress, under the superintendence of the officers of the Royal Engineers (Sappers and Miners), is the spire of Thaxted Church, in this county. The church is one of considerable beauty, of a late period of Gothic architecture; is built of rubble, with stone dressings, the rubble being coated with cement, so as to give the whole an appearance of stone. It consists of a nave, with a clerestory, aisles, chancel, transepts (north and south), porches, and a tower surmounted by an elegant spire, nearly 200 feet high. Around the spire is erected the scaffolding supporting the platform for the purposes of the survey, presenting a singular aspect. The construction is firm and ingenious, every advantage being taken of the condition of the spire. From each of the lowest windows are seen projecting a couple of planks laid edge-wise, well secured at their ends at about eight or nine inches apart, blocked together, and forming a case for the reception of the main scaffold poles. The plan of the spire is octagonal, the windows being in every other face; and, consequently, the plan of the scaffolding is square. The projecting ends of the planks are further supported by struts from the roof of the tower; horizontal ties are fixed upon the projecting planks, over the flying buttresses, and between the finials of these and the spire. The main poles are received in the before-mentioned cases, formed by the projecting planks, and are braced by horizontal and diagonal ties, and firmly secured to the spire, the whole height to the platform. The platform is hexagonal, and is supported by the main poles and extra struts from these. From the lowest windows of the spire the ascent to



the platform is by ladder. A daring fellow of the corps of Sappers and Miners ascended the spire, prior to the erection of the scaffolding, by means of the crockets, and removed the vane, weighing about a quarter of a hundred weight.—*Chelmsford Chronicle*.

**IRON TRADE.**—This branch of business appears now to have fairly recovered from the effects of the late depression, the improvement has been gradual, and is likely to be permanent. The capital invested in it is enormous, and the effects of an improved price and demand, in the underground workmen, can scarcely be understood by those not immediately interested in the business. The quantity of pig-iron now used in this country is unprecedented, and, independent of foreign demand, exceeds the present production. Continental orders are already coming to our manufacturers; during the last month upwards of 1,300 tons of pig-iron have been exported for France, being two months earlier than was anticipated. The certainty of an increased demand for home and foreign consumption is sure to keep prices up, and the manufacturers are sanguine of realising 4l. per ton; this rate is now quoted as their price, with one or two exceptions, and the trade know perfectly well that the makers who are quoting under this, have not only none to sell, but cannot fulfil their orders for past contracts.—*Glasgow Citizen*. On Saturday last, and since the above was written, a meeting was held in Glasgow, at which it was finally arranged to give the men 1s. 6d. per day extra, making their wages now 4s. a day—an increase which is equal to 7s. 6d. or 8s. per ton on the price of iron. This, of course, will have to be added to the present prices, therefore, a further rise is confidently expected. The market was very much brisker on Monday, in consequence of the news from Scotland, and holders are unwilling to dispose of their stocks at present prices, having great confidence in the market. The Acadia, which arrived on Wednesday last, brought extensive orders for iron, at an advance of 15s. per ton upon the limits per the Samuel Hicks, which sailed ten days before her, and it is expected that the next steamer will also bring higher rates. In tin there has also been a large business doing at improved prices, and a further advance of 2s. to 3s. a box is generally expected.

**THE WORKS OF THORWALDSEN.**—A letter from Rome of the 26th ult. says:—"The spacious galleries of the Barberini palace, in which the numerous works of art belonging to Thorwaldsen were placed, and which were constantly open to the public, and to the study of artists, has been closed, and put under seal, in virtue of authority from the testamentary executors of the deceased sculptor. The whole of the collection will, according to his last will, be sent to the Thorwaldsen Museum, at Copenhagen; but, before their departure, in compliance with a clause in it, casts from all these works will be taken, and presented to the Kings of Württemberg and Bavaria, who honoured the great artist with their esteem and friendship."

**WEIGHT OF BRITISH COINS.**—The following is the legal current weight of the various silver coins:—The crown, or 5s. piece, 18 pennyweights 4-11 grains; the half-crown, 9 pennyweights 2-11 grains; the shilling, 3 pennyweights 15-11 grains; and the sixpence, 1 pennyweight 8 grains. The gold sovereign, 5 pennyweights 21 grains; the gold half-sovereign, 2 pennyweights 13 grains one-eighth.

#### TO OUR CORRESPONDENTS.

**AP.**—On further inquiry we find, the ancient iron work, given in page 253, No. 67, was found, some years ago, in the neighbourhood of, and for some time occupied a place in the museum of an antiquary of Norwich, at the sale of whose property it was purchased by its present possessor, Mr. G. Isaac, of Claremont-terrace, Pentonville.

We have received and sent to our engraver the Tower Doorway of Thornbury Church.

"A Student."—*At Weale's*, price 28s.

"R. C. W.'s" communication relative to bracing piles is received, and will appear in our next.

#### Tenders.

**TENDERS** delivered for a pair of detached Cottages, to be built in Barnsbury-park, for R. Matthews, Esq. A. Trimmer, Esq., Architect.

King and Co.	£1,749
Smith	1,611
Mason	1,580
T. J. Hill	1,580
Stevens	1,570
Sugden	1,547
Glenn	1,546

Mr. Glenn's tender was accepted.

**TENDERS** delivered for furnishing four Houses at Upper Clapton, for Mr. Merriman, of Marlborough. James Edmeston, Esq., Architect. May 28, 1844.

Chivers (Bethnal-green)	£990 18 4
Trayhorn and Pink (Clapton)	977 17 0
Rumens ditto	825 0 0
Hayworth (Kingsland)	791 10 0

**TENDERS** delivered for sundry alterations to be done at Mr. Lowe's, 8, Nelson-terrace, Stoke Newington-road. May 23, 1844.

Little (Kingsland-road)	£242 15
Hayworth, ditto	211 0
Kebbell (Dalston)	208 0
Smith (Watling-street)	198 0
Goulden (Dalston)	187 6

#### Current Prices of Metals.

May 28, 1844.

	£.	s.	d.	£.	s.	d.
SPELTER.—Foreign ton	22	15	0	23	0	0
" For delivery	0	0	0	22	0	0
ZINC.—English sheet	0	0	0	30	0	0
QUICKSILVER				per lb.	0	4 6
IRON.—English bar, &c. per ton	6	5	0	6	10	0
" Nail rods	0	0	0	7	0	0
" Hoops	8	0	0	8	10	0
" Sheets	9	5	0	9	10	0
" Cargo in Wales	5	10	0	5	15	0
" Pig, No. 1, Wales	0	0	0	4	0	0
" No. 1, Clyde	3	2	6	3	5	0
" For., Swedish	9	15	0	10	0	0
" Russian, COND.				16	10	0
STEEL.—Swedish keg, p. ton	17	10	0	18	0	0
" Faggot.	0	0	0	18	0	0
COPPER.—English sheathing, per lb.	0	0	0	9	4	0
" Old.				ditto.	0	0 8
" Cake p. ton	0	0	0	83	0	0
" Tile	0	0	0	82	0	0
" S. American	75	0	0	76	0	0
TIN.—English, blocks, &c. cwt.				3	13	0
" bars	0	0	0	3	14	6
" Foreign, Banca	0	0	0	3	8	0
" Straits	0	0	0	3	4	0
" Peruvian	0	0	0	3	0	0
Tin plates, No. 1C. p. box	1	8	0	1	12	0
" No. IX.	1	14	0	1	18	0
" wasters 3s. p. box less						
LEAD.—Sheet milled				per ton	17	15 0
" Shot, patent	0	0	0	19	15 0	
" Red				21	10 0	
" White				23	10 0	
Pig-LEAD.—English	0	0	0	17	0	0
" Spanish	0	0	0	16	10 0	
" American	0	0	0	16	5 0	

SHORT and MAHONY, Brokers,  
1, Newman's-court, Cornhill.

#### NOTICES OF CONTRACTS.

For enlarging, straightening, and improving the course of the rivers Devon and Smite, and the Car-dyke, in the parishes of Hawton, Fardon, &c. &c., in the counties of Nottingham and Leicester, and for the erection of building, enlarging, &c., the several bridges connected with the above works.—Specifications, &c., Mr. Talents, Newark. June 1.

For the erection of Two Shed-Buildings, to adjoin the main building of the New Workhouse at Rye-hill, Sussex; also for the erection of extensive inclosure-fences of brick, stone, and iron palisade in front of the Workhouse, and other necessary works. The Guardians, Rye Union, Workhouse Tender, June 1.

For the executing of certain works for the improvement of Aberdeen Harbour.—Plans, &c., Mr. Abernethy, 69, Waterloo-quay, Aberdeen. June 20.

#### COMPETITIONS.

A PREMIUM of 100 guineas will be given by the commissioners appointed to erect a lunatic asylum in the vicinity of the city of Kingston, Jamaica, to the person who shall produce the best plan, accompanied by a specification, of an asylum for the reception of the insane. The institution must accommodate 200 patients of both sexes, with the requisite number of officers and servants, and due attention must be paid in the plan to the proper classification of the patients, and the climate in which the asylum is to be erected. The plan must also show how an addition may be made for the accommodation of 100 patients more, in the event of such being required. The plans must also set forth the probable cost of the building in stone, brick, and iron. The principal portion of the building is to be allotted to paupers, but the commissioners are desirous of setting aside sufficient apartments for the accommodation of about 25 persons in better circumstances of life, and direct the attention of competitors to this arrangement. The plans must be prepared and transmitted to William Burge, Esq., Q.C., 1, Paper-buildings, Temple, on or before the 22nd of August next.—London, May, 1844.

The Committee of the Hardy Testimonial are desirous of receiving designs for a plain and substantial pillar, to be erected on the summit of a high and exposed hill, not far distant from the sea, at an expense of from 500l. to 750l. A premium of 10 guineas will be given to the architect whose plan shall be adopted. The designs are to be forwarded to the hon. secretary, at Dorchester, on or before the 14th day of June next.

#### MEETINGS OF SCIENTIFIC BODIES.

To-day and during the ensuing week.

**SATURDAY, JUNE 1.**—*Asiatic*, 14, Grafton-street, 2 P.M.

**MONDAY, 3.**—*Entomological*, 17, Old Bond-street, 8 P.M.; *British Architect*, 16, Lower Grosvenor-street, 8 P.M.; *United Service Institution*, Middle Scotland-yard, 9 P.M.

**TUESDAY, 4.**—*Linnean*, Soho-square, 8 P.M.; *Horticultural*, 21, Regent-street, 3 P.M.; *Civil Engineers*, 25, Great George-street, 8 P.M.

**WEDNESDAY, 5.**—*Society of Arts*, Adelphi, 8 P.M.

**THURSDAY, 6.**—*Royal*, Somerset House, 8½ P.M.; *Antiquaries*, Somerset House, 8 P.M.; *Zoological*, 57, Pall Mall, 3 P.M.

**FRIDAY, 7.**—*Royal Institution*, Albemarle-street, 8½ P.M.; *Botanical*, 20, Bedford-street, Covent Garden, 8 P.M.

**SATURDAY, 8.**—*Royal Botanic*, Regent's-park, 4 P.M.

**CIVIL ENGINEERS.**—Library open from 9 A.M. to 9 P.M.

**ENTOMOLOGICAL SOCIETY.**—Museum open every Tuesday from 1 till 7.

**SOCIETY OF ARTS.**—Open every week-day except Wednesday, between 10 and 2. Admission by members' tickets.

**LINNEAN SOCIETY.**—Library open on Monday, Tuesday, and Thursday, and the Museum on Wednesday and Friday, from 12 o'clock to 4 in the afternoon.

**GEOLOGICAL SOCIETY.**—Library and Museums are open every day from 11 till 5.

**ROYAL ASIATIC SOCIETY.**—Museum is open every Tuesday, Wednesday, and Thursday, from 11 till 4.

**UNITED SERVICE INSTITUTION.**—Museum open all the year, from 11 till 5 in summer, and from 11 till 4 in winter. Admission by members' tickets.

**LONDON INSTITUTION.**—Lectures will be delivered every Monday and Thursday evening, at 7 o'clock, until May 6.

**BOTANICAL SOCIETY.**—Herbarium open every Wednesday and Friday evening, from 7 till 10 (except September).

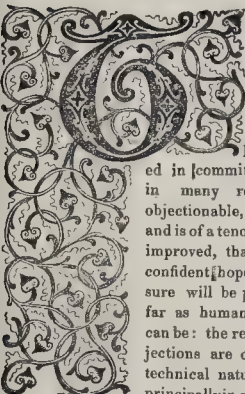
**ROYAL COLLEGE OF SURGEONS.**—The Museum is open to visitors on Monday, Tuesday, Wednesday, and Thursday, from 12 till 4, except during the month of September; on Friday to gentlemen for studying in it; and on Saturday from 10 till 1 to gentlemen desirous of comparing specimens with those in the Museum. The Library is open to members and students of the college, and visitors having tickets of admission, daily (Sundays excepted), from the 1st of October to the 1st of April, from 10 till 4; and from the 1st of April to the 1st of September, from 10 till half-past 5.



# The Builder.

NO. LXX.

SATURDAY, JUNE 8, 1844.



HE proposed New Metropolitan Building-Act, as it now appears amended

in committee, though in many respects still objectionable, is in a form and is of a tenor so greatly improved, that we have confident hopes the measure will be perfected as far as human legislation can be: the remaining objections are chiefly of a technical nature, and lie principally in certain points

of minute practice, which, though the insisting upon them by the framers and promoters of the act could give them no satisfaction, yet the enacting them might render an otherwise good statute so obnoxious as to endanger its usefulness and permanence. We are engaged upon a minute review of the bill in its present form, in comparing it with the form in which it first appeared, and in weighing the various suggestions which have been made upon the subject in the different reports which have been published: all this is no small labour, and the result of our occupation upon the subject we propose giving in our next number, with cuts of the sections of walls, as they are now proposed to be arranged. We advise a temperate and close immediate view of the details of the bill to be made by every person likely to be affected by the enactment of such a measure, so that if a new Building-Act be not passed this year, one may be so perfected that early in the ensuing spring it may be passed without the necessity for new agitation, or further consideration of its details.

The separate bill relating to the prevention of damage by fire, a copy of which we lately gave, is so short that it might well have been inserted in the same general act, nor do we see why it is otherwise, unless, indeed, the government, despairing of passing any new Building-Act, resolved that the less intricate matter of a Fire-bill meeting with no opposition, might without delay be passed, containing any improvements which could be suggested.

One thing we observe in the improved proposed Building-Act, viz., sufficient care has not been taken to diminish the quantity of combustible materials used in buildings. We firmly assert good building, and a proper humane care of the lives and property of every human being within the realm, imperiously demand that combustible materials shall be kept from all party-walls.

It is some years since we have used any bond-timber whatever in any building; iron rat-hooping is so much better a tie, is so readily carried without danger near flues, as to be in every respect superior to timber. Whenever it is necessary to insert the end of any timber in a party-wall, we should so allow it only when covered with a

sheath of iron; plates in party-walls are commonly so broken by the occurrence of flues, that they become useless as ties, hence we have for a long while past mostly superseded them by granite and other kinds of stone. The day is not very far distant when a knowledge of architectural statics being duly restored, a total change will come over practical architecture, and those roofs which are now made combustible will be no longer so,—when vaulting and abutment are so distinctly understood, that churches and other public buildings, improved in fabric and beauty, will have their excellences carried down to posterity, because they cannot be burnt. We know there is a sad perverseness in the human heart, by which abuses, though again and again brought to prominent view, are still persisted in, notwithstanding the remedy of such abuses is again and again shewn to bring increase of beauty. When this is reformed, into oblivion will fall the unstable timber roofs, which, in defiance of science, prudence, and a right knowledge of legitimate architecture, are now so frequently set over churches and chapels, and which, indeed, have never received the approval of any competent judge, but are, from their false construction, in the very teeth of every prudent and scientific architect who has ever practised or laid down canons upon the subject. Ere long a right knowledge of Freemasonry will cause these nuisances to be entirely superseded by vaulting compressed firmly in every joint, and adroitly buttressed and pinnacled into stability; walls of even very small buildings will no longer be thrust over, roof-tenons will no longer be all in a state of destructive strain, nor will there be that concealment or mystification of ignorance and bad construction which is so fatally indulged in by the modern perverters of architectural science, who have lately gone back some centuries in the scientific knowledge and construction of roofs.

We are pained by seeing the observations relative to the re-institution of the use of chimney climbing-boys, which will be found in the report inserted in another part of our work. We can see no case sufficient for the re-tolerance of so inhuman a practice. If the present machines used for chimney-cleaning be insufficient for the purpose, that does not, in our opinion, afford the slightest reason for repealing an act which has declared penal a brutal practice, the mere necessity for the forbidding of which by statute was a disgrace to the age and country; and we trust, that if there were in a Parliament, forgetful of its public duty in a Christian land, the bare shadow of a chance of repeal, the whole body of the humane in these realms would rise up in arms, to decry, with one acclamation, a practice so savage and disgraceful. We have heard of such a thing as the kidnapping of one master carpenter's child, and the selling of him to a chimney-sweep. We have heard, too, of another master carpenter, who, languishing in "the article of death," recognized, in the body of a half-roasted child, who had been forced up that father's kitchen-chimney on fire, which should have cooked his sustenance,—that illegitimate offspring whose neglect he was counting over with those his sins.

We have had thirty years' experience on the subject of chimneys, and we beg to declare our unqualified opinion, that no necessity whatever exists for the employment of chimney-climbing-boys. We believe that, with proper apparatus, chimneys can alone be properly cleaned. The mere passing of a boy through a flue is not the slightest guarantee that it shall be cleansed; and we do not believe that,

when boys ascended chimneys, they were ever half cleansed. We believe that the kicking and scrambling of children through difficult parts of flues, practically damages them an infinite deal more than any ordinary machine; but even though machines may damage flues, that only affords a reason for the improvement of such machines, by shortening their rods, or by other modifications. But the most powerful argument against such a frightful scandal is the necessity which the continuance of such an act would bring for an improved structure of flues themselves, by obliging them to be made easier in their turns, and of materials better than those used at present. Now flues, which ought to be of the choicest work and materials, are made so unsoundly, that in many places, particularly in their cross-withs, there is often nearly as much mortar as brick: no wonder then that withs should be worn away, and smoke should penetrate from one flue to another.

It is not our intention this week to carry further our observations relative to the measure, but we shall give thereon amply detailed observations in our next.

J.

## NEW BUILDINGS BILL.

In our last number we noticed the meeting of the Master Carpenters which took place at the Freemasons' Tavern, Great Queen-street, Lincoln's-Inn-Fields, to receive a report, and further to consider the amended new Buildings Bill; we now having received a detailed account of the proceedings which then took place, are enabled to lay them before our readers. Mr. H. Biers, the president, upon bringing up the report of the committee, stated that the deputation appointed at a former meeting had had an interview with Lord Lincoln, the First Commissioner of Works and Buildings, who was assisted at the conference by Mr. Pennethorne, one of the Crown surveyors. The deputation urged upon his lordship, that although the Bill formed a considerable improvement upon many of its predecessors, yet several objections existed in the intended new Bill. The proposed Act then under their notice is dated 1st March, 1844, the interview with his lordship was on the 25th of April, since which period the Bill has gone through a Committee of the House, and an amended Bill has been printed, dated the 17th inst. He (the chairman) would call the attention of the meeting more particularly to this amended Bill and the alterations therein, as meeting the objections urged upon his lordship as to the several clauses in the former Bill. The deputation stated the objections to reversing the rates in the Bill, calling what is at present a first-rate house a fifth-rate house, and a fifth-rate house a first-rate house, a method of description at variance with all present practice, and likely to lead to much inconvenience; in the amended Bill this has been altered, and a first-rate house now remains of its original designation; and buildings beyond a first-rate are now called, as suggested by your report, an *extra*-rate. The amended Bill still leaves undecided what is to be for the future the general line of fronts, for the regulation and restriction of projections; this is one of the faults in the existing Act of Parliament (14 Geo. 3, cap. 78), and ought in any new enactment to be defined precisely.

Your report recommended that in all new sites for building, the width of the streets ought to be regulated by the height of the intended buildings; by the amended Bill, it is proposed that no street shall be less than 40 feet wide, and that where houses are of height greater than 40 feet, the street is to be widened in proportion.

The section relative to dwelling-rooms, which were not to be inhabited unless of an area of 100 feet, has been altered, by taking away the restriction as to superficial extent, thus removing from the Bill a very objectionable and unjust proposition, which the society have from its first introduction opposed and endeavoured to get expunged; and as the amended Bill now stands, a room may be occupied as a dwelling apartment, if properly lighted and ventilated, propositions with which this society most fully concur. But upon the subject of ventilation, he (the chairman) was sorry to say that the government did not go so far as he thought they should; and here for a few minutes he would digress, and state that



a deputation from this society, conjointly with a deputation from the Metropolitan Improvement Society, waited by appointment upon the Chancellor of the Exchequer, for the purpose of obtaining some concession in the window duties, and more particularly in the ventilation of cellars and basement stories, especially in the houses of the poorer inhabitants. At that interview he (the chairman) took the opportunity of stating that the very stringent way in which the window duties are levied by the several assessors, under the direction of the Board of Stamps and Taxes, almost entirely hinders that ventilation, which ought in a great number of instances to be permitted, and that window-lights ought not to be assessed, unless placed in dwelling apartments; but if purely for ventilation, that they ought not to be charged to the window-duties. It must be some satisfaction to the society to hear that, although they might not be permitted to the full desirable extent, yet that light and air are always permitted free of tax to privies; and water-closets, being only an improved description of these conveniences, he supposed were also exempt; but further than this, the chairman of the Stamps and Taxes (who assisted the Chancellor of the Exchequer at this conference) stated that a frame with perforated zinc paneling would be permitted free of duty, although fixed in an external wall. This the society, he was sure, would appreciate as of great moment; and it gave him much pleasure, inasmuch as the endeavours and suggestions of the deputation had not been without a beneficial result. That the society and the public in general might know exactly the footing on which they stand regarding these ventilating apertures, he had, as directed, addressed a letter to the chairman of Stamps and Taxes upon the subject, the answer to which he hoped to be able to lay before the society at its next meeting.

Having laid before the meeting the result of this communication with the Chancellor of the Exchequer, upon the subject of ventilation, and having stated to the society some of the improvements which have been made in the amended Bill as to the regulation of buildings, it now became his duty to state, and he did it with much regret after so much discussion had been entertained upon the subject, that there were still many important objections to the present Bill, and many improvements that might and ought to be effected in it prior to becoming law. One improvement, and he had most seriously considered the subject in all its bearings, would be the repeal of the 4th & 5th of Wm. 4, cap. 35; and the 3rd & 4th of Vict. cap. 85, commonly called the Chimney Sweepers' Bill. Persons unconnected with the building business are unaware of the very inefficient method as now adopted of sweeping any flue, but most especially those flues built with angles; and also the great damage that is occurring to the withs of flues at their salient angles, by the machinery now in operation. The society would see by the drawing which he held in his hand, and which drawing he submitted to Lord Lincoln, that these flues must, at their salient angles, be in a very short period of time worn away one into another, and the damage that will be done will be irreparable, and the liability to damage by fire be greatly increased. It is true that in new buildings this wearing away may be in a manner prevented by iron-work fixed at the salient angles of flues; yet in old houses, or houses built previous to the passing of these Acts, great damage must inevitably be progressing, and no flue, whether of new or old construction, is it possible to cleanse completely by a small round brush at the end of a stick, and which, after a little use, becomes diminished to less than a fourth of its original size.

The amended Bill still retains the clause preventing the over-sailing of chimney-breasts, which is an useless prohibition, and ought to be expunged.

The amended Bill still retains a most objectionable clause or section connected with the appointment of a registrar, whose salary is to be 1,000l. per annum! but it is provided that in case of absence, the duties are to be performed by deputy, who is to be paid by part of the salary of the registrar, or is otherwise to be remunerated, as the Lords of the Treasury shall appoint; this is so objectionable,

that although his lordship's attention was particularly called to this subject, and precedents were adduced to shew that where a large salary is appropriated, and the duties of office are permitted, nay, even sanctioned, by Act of Parliament, to be done by deputy, that principal office will no doubt become an absolute sinecure.

The attention of the society is also directed to the alterations in the fees proposed to be paid in the various matters under this Bill, and it is with much regret that, great as the fees are under the present Act, under this amended Bill, a variety of fees not included in the fees at present chargeable are now introduced. In the proposed Bill an exemption is made in any trifling addition to a principal building, if such addition be carried up at the same time, or within twenty-one days after the principal building is covered in. By a most ingenious leaving out of a few words, these additions will all have to be paid for by additional fees; and although to an unprofessional observer it will appear that but one fee, according to the rate of the house, yet, in fact, several fees will be payable in new buildings, and in alterations and additions; nor are these fees all defined, even in the elaborate tables as set forth, but there appears a special table for special fees, and which no person can comprehend until enlightened therein by the official referees. As regards the fees payable under the present Act, they amount now to nearly 10,000l. per annum; under the new Bill, with its extended limits, fees to the amount of nearly 30,000l. will be payable by the public; for although a Building Bill is supposed only to interest the builder, yet it is the public generally which have to bear all its contributions, and to share in its enactments. Much has been done by this society in watching, in considering, in petitioning, in advising, and in shaping into its present form the twelve or fourteen Acts of Parliament which have been introduced to the Legislature since 1841, and he still hopes this amended Bill may, by the exertions of its committee, be still further amended, so that, without looking to the interests of those who may be looking forward to the various appointments under the intended Bill, they will still work as they have heretofore done to obtain a Bill really beneficial to the public.

In conclusion, although he had trespassed so much upon their attention, he could not but congratulate the society upon the great benefit they had done to all persons dwelling within the limits of its operations, and to the exertions of the society might be traced the alterations and improvements in the Bill. Compare the Bill brought in by Lord Normanby in 1841 with the amended Bill, and read the evidence, and the various petitions and reports by this society, and it will be found that although they stood almost alone in opposition to the objectionable Bills on their first appearance, yet they have, by exertions, now assisted by members of both houses of Parliament, been enabled to obtain thus far an improvement upon all its predecessors; and the committee cannot but regret that from the multiplicity of business in which the noble lord at the head of the Woods and Forests must be engaged, he must have forgotten the arrangement made by him at the last interview, that, previous to the Bill further progressing, the deputation was to have a further interview with his lordship and the Crown surveyors, as his lordship was obliged to leave the meeting before it could come to a conclusion upon the merits of the matter. If another meeting had been obtained, no doubt some of the objections in the amended Bill might have been rectified, altered, or expunged; but, as it is, it is to be hoped it is not even now too late to obtain such alteration in the Bill as an experienced and disinterested person may think an improvement. The chairman sat down amidst loud cheering.

Mr. W. Cubitt moved the thanks of the society to the chairman and committee for the great trouble they have had in the various Bills brought before the public, and hoped that until a good and sufficient Bill be before the public, they would still continue their valuable services. He then moved that the amended Bill be referred back to the committee to re-examine, and to report thereon.

Mr. Higgs, in seconding the motion, stated that his only objection was, that it entailed so large a portion of trouble, and must engage so

large a portion of the valuable time of their excellent chairman; for although to all appearances the various reports were the works of the committee, yet in fact they were the sole labours of the chairman; and he could congratulate the society on the good fortune of having such a president at such a time. Still trespassing upon their worthy chairman's time and attention, they could not do better than to again refer it to the committee, feeling assured that although it must, after four years' strict superintendence, be exceedingly irksome, and no doubt, from the many public as well as private calls upon the chairman's vigilance and care, yet he felt convinced the matter would still have his advice until finally completed. It was then carried unanimously that the amended Bill be so referred again to the committee.

After the thanks of the meeting were passed to the chairman, the meeting adjourned until the last Wednesday in June, unless specially summoned previously by the chairman.

#### OXFORD ARCHITECTURAL SOCIETY.

MAY 29.—The Rev. the Rector of Exeter College in the chair.

The following new members were admitted:—Rev. R. P. Smith, Pembroke College; E. J. Howard, Esq., Lincoln College; R. Gray, Esq., Exeter College; Rev. Foliot Baugh, All Souls; Alexander Joseph, Esq., Brasenose; J. G. Joyce, Esq., Magdalene Hall.

Pugin's Glossary of Ecclesiastical Ornament and Costume, &c., was added to the library.

Short notes of several churches in the immediate neighbourhood of Oxford, prepared for the third part of the "Guide," by different members, were read, illustrated by sketches.

Marston.—Mr. Rooke, Oriel.—The pillars and arches are of the time of Richard I.; the outer walls and windows of Henry VIII. The windows are square-headed, with rather singular returns to the dripstones, inclosing in a square form the letters I H C and I H S, and other ornaments. The tower is also late.

Woodstock.—Mr. Rooke, Oriel.—This church is chiefly of the thirteenth century, with a tower added in the fifteenth, in an unusual manner, being built within the original walls of the church, standing partly on the west wall and partly on arches, instead of being added on the outside. It is very picturesquely situated.

Noke.—Mr. Rooke, Oriel.—A small plain church, of the thirteenth century, with some alterations of a later period, which are far from being improvements.

Cuddesdon.—Mr. Rooke and Mr. Freeman.—A cruciform church, of the end of the twelfth century, with a tower at the intersection. The mouldings of the west doorway are very remarkable, shewing the change from the Norman zig-zag to the early English tooth ornament. The pillars and arches of the nave, walls of the aisles, and the south door, are of the thirteenth century. The chancel has been rebuilt in the fifteenth, and has arches in the side walls, as if for the addition of aisles, but these do not extend more than half through the thickness of the wall, so that they must have been built for ornament.

Stanton St. John's.—Mr. Freeman.—A very interesting church, of the time of Edward I., and a valuable specimen of early decorated work. A paper on this church has previously been given to the society, with drawings, by Mr. Simpson, of Oriel.

Elstfield.—Mr. Freeman, Trinity.—A small church, of the thirteenth century, the west end of which, with its two lancet windows, separated by a tall buttress, supporting a bell-turret, with small buttresses at the angles, is a particularly good design. There is a low side-window, in the usual situation (blocked up), in the inside of which is an original stone seat.

Cowley.—Mr. Millard, Magdalene.—The chancel and walls of the nave are of the end of the twelfth or beginning of the thirteenth century; the east end has a triple lancet; the side windows of the chancel are square-headed, but the mouldings shew them to be of the same age as the east end. There is a low side-window. The tower is very small and low, scarcely appearing above the roof of the nave; it was added in the sixteenth century.

St. Bartholomew's Chapel.—Mr. Millard.—



A small but elegant building, of the latter part of the fourteenth century, shewing the transition from the decorated to the perpendicular styles. Drawings of the chapel are about to be published by the society, and an accurate estimate has been obtained of the cost of building a copy of it, which would be 280*l*.

#### ELEMENTARY ESSAY ON MORTAR AND CEMENTS.

BY JAMES WYLSON, HON. SEC. B.A.A.D.  
(Continued from p. 262.)

##### MAUDE'S PATENT PORTLAND CEMENT.

THERE has lately been introduced into the London market, by Messrs. Maude, Son, and Co., of Upper Ordnance Wharf, Rotherhithe, a cement which bids fair to leave in the rear all other competitors for distinction in that line. Though a recent introduction to London, its excellence has been successfully tested by many years' experience not only in and about Wakefield, where the manufacture was carried on by Mr. Aspidin, the inventor, but throughout the northern counties of England, where its extensive use is the best testimony to its superiority. The expense of conveyance, and the comparatively high price of the cement itself, had, however, deterred the proprietors hitherto from attempting its introduction into the metropolis to any important extent; but the firm above named have at length surmounted those obstacles, by concluding arrangements with the son of the patentee, empowering them to manufacture it in town; by which means the London price of the article is considerably reduced, and increased facilities are made available for its most perfect preparation.

The distinguishing properties of the Portland cement, which, indeed, are essential to a good cement, each and all of which it possesses in an eminent degree, are—

1st. That which is a permanent recommendation, viz. a very remarkable resemblance to Portland stone (from which circumstance it derives its name), and its permanently retaining its resemblance to that material; thus obviating a serious annual outlay for colouring or painting, the necessity whereof is inseparable from other cements, but which, for this, is not only unnecessary, but would be a proceeding evincing as much bad taste as the injuriously covering the beautiful stone itself.

2ndly. Its perfect freedom from any liability to be changed, in its substance or superficially, by atmospheric influences, whatever the season or the climate, having none of those tendencies to vegetate and oxydate which so commonly shew themselves in cements.

3rdly. The extraordinary strength of its cementitious quality, which admits of its receiving more sand than any other cement now in use; and, indeed, is the circumstance enabling the proprietors to offer it in competition with other cements, which the cost would otherwise preclude.

From the ease with which it is worked, its extreme hardness, adhesiveness, uniformity, and durability, and being impervious to damp, it is obviously well-calculated for all the variety of uses to which cements are applied; and when the expense of stone ashlar in London is considered, the incomparable superiority of its appearance over that of the ordinary stuccoing, and the unquestionable imitation of it which this cement affords, no doubt can be entertained of its obtaining that decided preference to which it is so highly entitled.

For carrying up any brick-work, where the necessity for superior strength, or its immediate hardening superior to setting, requires that a cement superior to common lime mortar should be used, one part of the Portland cement of the best quality (there being two sorts), and four parts of clean, dry river-sand, form the admixture recommended. For stuccoing, one part of the best cement, and four parts of sand, or one part of the second quality, and three parts of sand, are proper. The materials being mixed with water to the consistency of mortar, are applied immediately, and are finished in one coat. In damp situations a smaller proportion of sand should be employed in the admixture; and for building in water, the cement should be used alone. The building materials with which it is to be brought into contact ought, in every case, to be thoroughly wetted previous to its application

(especially in summer), to prevent the too rapid absorption of moisture.

Nor is it merely for building, exterior stuccoing, and the usual adjuncts of balusters, chimney-pots, copings, &c., that it is suitable; for it is also well adapted for landings and paving, both plain and ornamental; its compact and enduring nature, together with its uniformity of surface, renders it superior to Yorkshire paving stone, the laminar structure of which is exceedingly objectionable, where it is subject to the vicissitudes of the weather, or, being within doors, it has to be frequently cleansed by washing; from this disadvantage the artificial Portland cement paving is, from the nature of the method observed in making it, quite free. In the inclosed quadrangle of Trafalgar-square, to which Mr. Barry has devoted so much care and attention, the darker asphaltic paving is relieved by portions executed in the Portland cement; the lining of the basins for the fountains is also of the same composition, the preference being awarded to it in consequence of its great resistance to the action of the atmosphere and of water, and from its possessing and retaining so eminently the texture and colour of stone.

For friezes in bas-relief, and other similar purposes, it is peculiarly available, on account of the baking that is necessary in other artificial stones being dispensed with in this, thus obviating that warped irregularity in the plain surfaces and joints which has formed the stumbling-block to their general application. For sculpture generally, as applied to architectural embellishments, it needs no exertion of fancy to perceive that so felicitous a material is not only most suitable, but that it is suggestive even of a more ambitious range of design,

and presents facilities for embodying any triumphs of conception; a consummation which, however devoutly it might be wished, was utterly unachievable in Roman cement, as the denizens of Battle-bridge have not yet had time to forget.

With regard to the expense of the Portland cement, it appears, according to the statement of the proprietors, that paving can be laid down below the price of the commonest Yorkshire paving-stone; and that, for stuccoing, if the best cement be used with four-fifths of sand, the composition will cost somewhat less than that formed of equal parts of Roman cement and sand, which is inferior in strength and appearance, and involves the necessity for frequent re-colouring.

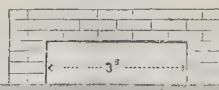
In order to test the comparative strength of the Portland and Roman cements, Messrs. Grissell and Peto caused a series of experiments to be made in October last, at the new Houses of Parliament, under their own superintendence; these experiments and their results are exhibited in the diagrams appended to this paper, and the tabular comparisons accompanying them. The deductions thence arrived at shew an advantage on the side of the Portland cement, which speaks most strongly in its favour; and which, judging by the authority from which these contrasts emanate, must be considered as at once authentic and conclusive, establishing this to be, beyond all doubt, decidedly superior to the Roman cement, whether as to strength, adhesion, or the capability of receiving sand, the latter of which properties it is shewn to possess to such a degree as to render it actually cheaper than the other; whilst its other recommendations, of beauty and the saving of colouring, alone render it highly preferable.

EXPERIMENTS at the New Houses of Parliament, made by order of and under the superintendence of Messrs. Grissell and Peto, October, 1843.

##### ROMAN CEMENT.

FIRST TRIAL.—Half Brick Beam, 3 courses deep, tested on third day after formation.

Elevation.



##### PORTLAND CEMENT.

Section.



##### ROMAN GAUGE.

Weight on Beam when broken down.

	C.	Q.	lb.
1 of sand and 1 of cement	2	3	11

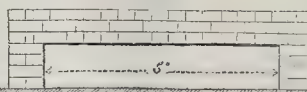
##### PORTLAND GAUGE.

Weight on Beam when broken down.

	C.	Q.	lb.
1 of sand and 1 of cement	5	2	18
2 ditto 1 ditto	4	1	14
3 ditto 1 ditto	3	1	25

SECOND TRIAL.—One Brick Beam, 3 courses deep, tested on the tenth day after formation.

Elevation.



Section.



##### Weight on Beam.

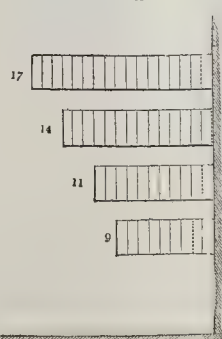
	C.	Q.	lb.
1 of sand and 1 of cement	2	1	15

##### Weight on Beam.

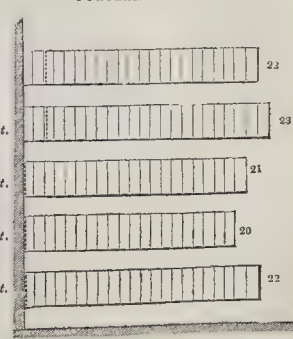
	C.	Q.	lb.
1 of sand and 1 of cement	7	1	25
2 ditto 1 ditto	8	3	16
3 ditto 1 ditto	6	0	0
4 ditto 1 ditto	5	2	0

##### THIRD TRIAL.

##### ROMAN CEMENT.



##### PORTLAND CEMENT.



NOTE.—The figures denote the number of bricks each specimen carried before it broke from the wall. The dotted lines indicate the points of fracture, trials of adhesion were worked without a centre.



## INSTITUTION OF CIVIL ENGINEERS.

JUNE 4.—The President in the chair.

THE applicability of the system of the propulsion of railway carriages, by the pressure of the atmosphere upon a piston, travelling within an exhausted main, or line of pipes, has occupied a portion of three evening-meetings of the society; and although much time has been devoted to the discussion, it cannot be said that any positive conclusion has been arrived at. Indeed, when it is considered that the system has only been tried upon a line peculiar in its locality, in its steep gradients, in the engine having only to exert power in drawing the carriages in one direction, and their descending by their own gravity, and in the trains being only required to run a distance of a mile and three-quarters from end to end of the line, without stopping at any intermediate station, it may be argued, that although, as is evident from the testimony of the several speakers, extraordinary results have been obtained, it is scarcely possible to infer what the results would be on lines with gradients in both directions, with a great number of heavy trains at short intervals, and under all the varied circumstances of ordinary railway traffic.

It appeared, however, to be the general opinion, that the present system of atmospheric propulsion, as employed on the Kingstown and Dalkey Railway, although susceptible of much improvement, was in a more advanced state than the system of traction by locomotive engines, at a corresponding period from the date of the introduction of the several systems upon railways.

Messrs. Clegg and Samuda, the improvers and executors of the present atmospheric system, detailed the progress of the improvements, and in answer to questions from the members, reiterated the information which has been already published in the various reports of the examinations before the committee of the House of Commons on the Epsom Railway Bill, and which it is useless now to repeat.

The various previous plans of Medhurst, Vallance, and Pinkus, for somewhat similar systems, were explained, and it was shown that the system had been taken up by Clegg and Samuda where the former speculators had abandoned it, and, as usual in such cases, the practical improvers had been more successful than the inventors.

The principal improvement was shown to be in the continuous valve, and the mode of closing it by a mixture of tallow and bees'-wax, which, under all variations of temperature and seasons, remained unchanged, and enabled a good vacuum to be formed. Many other improvements in the mechanical details were also described at length.

Mr. Barry Gibbon, as engineer of the line, stated his satisfaction with the manner in which it worked. Thirty-five trains per day had at times been conveyed without danger, and with great regularity. The train was enabled to be started in one minute after the engine commenced working to form a vacuum. Mr. Samuda detailed the progressive trials of the system at Wormwood Scrubbs during two years and a half, until it was laid down at Dalkey, where a load of fifty tons had been propelled up gradients averaging 1 in 115, and a maximum velocity of nearly fifty miles per hour had been obtained, with an engine which was stated to be of 100 horse-power, using, as a divisor, 66,000lbs., raised one foot high in a minute. This deviation from the ordinary calculation of Boulton and Watt, who used 33,000lbs., was justified on the plea that steam-engines were now made in such a superior manner, that their effective power nearly doubled their nominal power, and that the usual acceptance of the term "horse-power" was no longer to be relied upon. This position was combated by several members, who argued that the commercial question should not be mixed up with the scientific inquiry; and that for the latter purpose the accepted divisor of 33,000lbs., as fixed by Boulton and Watt for the horse-power, should have been used, when the power exerted would have appeared nearly double what had been quoted, which would materially affect the question of the cost of first laying down a railway and the expense of subsequent working.

In considering the comparative questions of traction by locomotive engines, by fixed en-

gines with ropes, and propulsion by the atmosphere, it was argued that, in the two former cases, the weight of the moving power must be carried along the rails at a corresponding cost and loss of power; added to which was the loss resulting from the slip of the driving-wheels, in the one case, and the friction of the rope against the pulleys, in the other case. The destruction to the rails resulting from the beat of the driving-wheels being put out of the question. Against this it was argued, that with the atmospheric system the whole power of the engine must be used whether for heavy or light trains; that a power capable of pumping out the leakage, stated at ten horse-power per mile, must be always provided, although it was only exerted for a part of the length of each section; and that the real power employed at Dalkey, if calculated by the usual standard of Boulton and Watt, was shown by Indicator diagrams to be nearly double what had been stated, and that, consequently, a greater outlay for power was required than was imagined.

The additional security in traversing the rapid curves of the railway at high speed appeared to be admitted. A curious circumstance was mentioned which deserved more attention; it was, that the temperature of the air on leaving exhausting air-pumps was increased to upwards of 200 degrees, and that there was a certain absorption of power consequent upon this increase of temperature. Our limits will not permit the whole, even of the heads of the discussion, to be detailed, and, although much time has been devoted to it, the question was not fully examined, nor were all the necessary data clearly stated; so that for all practical purposes we shall only arrive at the comparative value of the new system, after it has been applied to such a line as the Epsom, where, under the scrutinizing care of Mr. Cubitt, the engineer of the line, there is no doubt of its merits being fairly tested; meanwhile the question remains open, and, as before, to be discussed as the interest or prejudices of parties may dictate.

The papers read were:—A description, by Mr. Rankine, Assoc. Inst. C.E., of a simple and ingenious safety drag, which has been applied to the carriages of the Edinburgh and Dalkeith Railway, for preventing accidents to the carriages in case of the fracture of the rope, by which they are drawn up the incline plane of 1 in 30. The drag consists of two cheeks of iron, united by rivets; it is attached at the end of an iron bar, and is suspended at the back of the carriage behind each hind wheel; when a retrograde motion commences, the drag falls beneath the wheel, and turning over, acts as a wedge between the wheel and the rail, and, by skidding the wheel, stops the downward progress of the carriage.

A description was also given by Mr. G. P. White, Assoc. Inst. C.E., of the mode of raising the Innisfail steamer, which was sunk in the river Lee, near Cork. It was accomplished by making a slight coffer-dam against one side of the vessel, and by pumping this out, the leak was arrived at; which being temporarily repaired, the vessel was enabled to be floated, and, at an expense of 350*l.*, was saved from total loss.

A description was also given by Mr. W. Evill, Grad. Inst. C.E., of the corrugated iron roofs over the terminus of the Eastern Counties Railway; the drawings accompanying the description, which was necessarily of a purely technical character, were much eulogized by the president, and the members who examined them.

The president renewed his invitation to his conversazione of the 7th and 8th instant, at which many distinguished personages may be expected, and all models and works of art for exhibition were requested to be sent as quickly as possible.

Messrs. H. T. Wright, J. Reid, and J. L. Manby were elected as associates, and the following papers were announced to be read at the meeting of June 11th:—

No. 687. "On the purification of coal gas, and the application of the products thereby obtained to agricultural and other purposes." By A. A. Croll, Assoc. Inst. C.E.

No. 688. "On the means of rendering large supplies of water available in cases of fire, and on the application of manual power to the working of fire-engines." By J. Braidwood, Assoc. Inst. C.E.

## SOCIETY OF ANTIQUARIES.

MAY 2.—Lord Viscount Mahon, V.P., in the chair.

T. W. King, Esq., F.S.A. Rouge-Dragon Pursuivant of Arms, communicated some remarks upon the Stall-plates of the Order of the Garter, existing in St. George's Chapel at Windsor. It appears that, on an examination made in the year 1757, there were no plates for 146 of the ancient knights, and of those which exist many are not contemporary with the knights whose achievements they represent. Mr. King's remarks were directed first to the point of the shields of arms being surrounded by the garter, which is not the case in the oldest plates. The first so represented is that of the Duke of Burgundy, K.G., from 1469 to 1477. The plate of Lord Lovell, in 1 Richard III., is the first English subject whose arms are so encircled, and many of later date have no garter. The fashion became prevalent in the reign of Henry VII., and constant in the next reign. Mr. King remarked, secondly, upon the form of the helmet. The side-standing close helmet now assigned to the rank of esquire is found used by a peer (the Earl of Derby) in 13 Eliz., and by two other knights in the next reign. The barred-helmet is first used by a baron (Lord Knollys), in 1615, and gradually became universal with peers. This distinctive use of helmets appears, in fact, quite a modern notion, nearly, if not entirely, subsequent to the actual use of helmets in the field of battle.

MAY 9.—W. R. Hamilton, Esq., V.P., in the chair.

Extracts were read from a third letter of William Roofs, Esq., to Mr. Hamilton, dated May 6, respecting the relics extracted from the Thames by the ballast-beavers near Walton. Two articles recently found are, a portion of a dagger or small sword, and a pocket-piece of Charles the First and Henrietta Maria. Mr. Roofs is inclined to attribute the former to the same age as the latter, and thinks that both are memorials of the conflict on Surbiton Common, in which Lord Francis Villiers was killed, not a quarter of a mile from the place of their discovery.

The reading of Mr. King's paper on the Stall-plates of the Garter was concluded. His remarks were directed to—3. The use of coronets. Many earls and viscounts have no coronet in the reigns of Henry VIII. and Edward VI., and its use did not prevail until the beginning of Elizabeth's reign. 4. Supporters. Among the privileges of the Order of the Garter is that of using supporters, whether the knights are peers or not. Supporters are not, however, of high antiquity. The plate of the Marquis of Dorset (afterwards Duke of Somerset), K.G. in 20 Henry VI., which has supporters, is not contemporary. That of John Lord Dinham in 1 Henry VII. has supporters, which (as in many other ancient achievements) really support the helmet and crest, not the shield. But there are only five plates with supporters to the 29th Henry VIII., after which time they are universal.

Charles M. Joplin, Esq., communicated a memoir on the remains attributed to the Druids in the neighbourhood of Furness, in Lancashire. His descriptions were illustrated by several drawings, which represent—1. Various monuments at Stone Walls, Urswick, consisting of ruins of an oblong inclosure, a square one, a third of an extraordinary wheel-like form, and two cromlechs. 2. A temple of two circles of stones, called Sunbrick, at Birkkrigg. 3. A circular temple or camp called the Kirk, at Kirkby Moor, accompanied by a cairn, which, on being opened, disclosed a tomb and a stone chest. 4. The Moot, at Aldingham, an artificial hill now situated on the brow of a high cliff above Morecambe Bay. 5. A British camp at Appleby Slack, Birkkrigg; and 6. Three stone hammers, or celts, found at Lindale and High Haums.

MAY 16.—Henry Hallam, Esq., V.P., in the chair.

The following gentlemen were elected Fellows of the Society:—Charles Tucker, Esq., of Harpsford, county of Devon; Major John Arthur Moore, of Queen Anne-street, and Frederick William Fairholt, Esq., of Grosvenor Cottage, Regent's Park.

Robert Porrett, Esq., F.S.A., exhibited a gold ring, containing a miniature painting,



supposed a contemporary portrait of Mary Queen of Scots. It belongs to R. B. Aldersey, Esq., of Chigwell-row, Essex; and its descent is traced for a century and a half.

W. R. Hamilton, Esq., V.P., exhibited, from W. Roots, Esq., two relics drawn from the bed of the Thames just above Kingston, one of them a spear-head.

Dawson Turner, Esq., F.S.A., communicated five drawings, the subjects of which are as follows:—

1. An urn found at Burgh Castle, the Gariannonum of the Romans; it was exhumed on the 29th December last, in the same field, called the Brick-kiln Field, on the eastern side of the castle walls, as were three figured by Ives, p. 35, and was partly filled with bones, which were accompanied by four iron nails.

2. A Pax, from the same village, carved in front with the Holy Rood, the Blessed Mary, and St. John.

3. A Roman sacrificial instrument, or præfericulum of brass, found at Heringfleet, in July, 1842; it is inscribed QUATTENVS F. Its length is 10½ inches, and its diameter 6 inches.

4. A gun, of wrought iron, of the time of Henry VII. or VIII., found in the sea near Lowestoft, and now in the possession of Geo. Edwards, Esq. Others have been found near the same spot, and probably from the wreck of the same vessel. Its total length is 9 feet.

5. A wooden shield, 24 inches long, and three-quarters of an inch thick, found in the wall of a house at Yarmouth. It is carved with the quarterings of the Prince of Orange, and painted in colours.

Richard Almack, Esq., F.S.A., of Melford, communicated a letter written by Sir Thomas Stanhope, of Shelford, county of Notts, to Lord Burghley, in 1588, relative to the funeral of his mother, Lady Stanhope, the widow of Sir Michael Stanhope, one of those who suffered with the Duke of Somerset, in the reign of Edward the Sixth. The lady was lying dead at Nottingham. Mr. Almack supposed this document to be indorsed by Lord Burghley himself; but the indorsement is in the writing of one of his secretaries.

Edward Hailstone, Esq., communicated transcripts from the register of trials before Major-Gen. Lambert and the Council of War sitting in Yorkshire in the year 1647.

May 23.—W. R. Hamilton, Esq., V.P., in the chair.

Walter Hawkins, Esq., exhibited an ancient sword found in the bed of the river Thames, in 1739, at the building of Westminster Bridge. It resembles the large swords of state of the thirteenth and fourteenth centuries. The silver furniture of the sheath (itself decayed), adheres to it by the rust, and is impressed in several places with the motto, *lufft i and a stag's head*. It is probable the sword itself was a century at least older than the sheath. Its length is 5 feet 6½ inches. It has been welded, and it may be presumed has lost something by the mending.

The Rev. J. B. Reade, of Stone, near Aylesbury, exhibited an impression, in tinfoil, of a Norman font recently placed in his church (to which it is suitable in style), after having been long since removed from its original site, the church of Hampstead Norris, in Berkshire. It has been for some years in a garden of a southern suburb of London, and was presented to Mr. Reade by J. Y. Akerman, Esq., F.S.A. Mr. Reade noticed a statement in "Dr. Lipscomb's History of Buckinghamshire," which asserts that Stone Church was erected on an artificial mound, whereas it has been ascertained to be a natural sand-hill.

The Rev. John Webb, F.S.A., communicated a memoir upon a Preceptory of Templars (and afterwards of Hospitaliers), at Garway, in Herefordshire, which is neither described nor enumerated, even in the new edition of the Monasticon, but of which he has collected many very interesting notices, both historical and architectural. Their church (of Norman architecture) remains, and extensive indications of the site of their mansion, together with a remarkable dove-cote, which is still perfect. It is built of stone, the wall of rubble rough-casted without and lined with ashlar within, of circular form, measuring 17 feet 3 inches in diameter, and 16 feet in height. There are twenty tiers or compartments for the birds, forming altogether 666 holes. From the following inscription over

the door, it is shewn to have been erected in the year 1326.

+  
A<sup>o</sup> D<sup>ni</sup> MCCC  
xxvi fact' fuit i<sup>o</sup> co  
lunbarium per fratrem  
Ricardum.

The two last lines being somewhat obscure, from the wear of centuries. On the interior face of the building occurs in one place the name

GILBE  
RTVS

and on other stones are carved the double cross of the Templars, accompanied in one instance with the letter R, of the scriptorial form.

#### THOROUGH DRAINING.

Mr. J. H. Charnock, secretary to the "Yorkshire Land-draining Association," has lately published a pamphlet on the important subject of Thorough Draining, a paper read before the Wakefield Farmers' Club. It was truly said by Lord Spencer, a short time ago, that farming was yet in its infancy; and many circumstances present themselves to the attention which amply verify the assertion. Through the operation of the several agricultural associations which have been established throughout the country, much valuable information upon this important matter has been extensively diffused. Much good has been already produced, and much more will inevitably follow, so long as scientific men turn their attention to all the various matters which are comprehended in the subject. Amongst these, thorough draining has been considered one of the most important. Mr. Charnock has ranged himself in the ranks of those who have devoted their attention to supply the most efficient means for the attainment of the most beneficial ends. His attention, and skill, and devotion to the subject, will, we trust, meet with their due appreciation, and his suggestions engage the attention of all who are not only labouring in the same field as originators of improvements, but anxious to carry into practical operation the plans which are based on experience and a due conviction of all needful means, modes, and appliances. We should deem it wrong to transcribe an undue portion of this useful publication; but we confidently recommend it to the cultivator of the soil, with the assurance that it is fully entitled to their attentive perusal, merely subjoining the following general observations:—

"In the first place, then, if there is one operation more than another in which the maxim 'that what is worth doing is worth doing well,' holds good, it is in draining; effective and permanent must be your work, or it is comparatively money and labour thrown away. And for this reason, if for no other, should it be done under the superintendence of the landlord; it is in truth an owner's work; it is principal invested, and cannot, except by an occupier, be with justice treated as a mere outlay for repair. It is a permanent improvement of the fee, and if permanently and effectually done, gives as surely a rental fully commensurate with the outlay. At the same time, however, rather than farm undrained land, it is the palpable interest of the occupier himself to undertake the work, and especially if he previously concludes for any certainty of tenure. But the most desirable arrangement is, that owner and occupier should act mutually in the matter, and as the best interests of each are so intimately bound together, they should mutually concur in the execution of the work. And here I may mention the plan which is adopted on the Greenwich Hospital estates in Northumberland, under the superintendence and by the advice of that eminent agriculturist Mr. Grey, of Dilton, which I think may be considered as perfectly equitable and unexceptionable in all cases. The rule is this,—if the drainage is done during the first seven years of the lease, the hospital pays one-third of the entire cost; if during the second seven years, one-half the cost; and if in the last seven years of the term, it pays two-thirds of the cost of draining, the lease being for twenty-one years.

"In the second place, prior to commencing operations, great care should be taken accu-

ately to ascertain the character of the subsoil—its porousness or tenacity—thereby to regulate, as far as practicable, both the distance and depth of the drains. That of the former should in no case, where drainage is necessary at all, exceed ten yards; and where the substratum is tenacious, it will often require not to be more than half that distance in order to be thoroughly effective, without which, I repeat, it is comparatively lost labour. With regard to the latter, if circumstances permitted, I would never (as a general rule) have drains shallower than two feet, but I should prefer thirty inches or three feet, in order to admit, without apprehension, of the subsoil plough following; and so as to be out of the way of all damage, under any circumstances.

"Thirdly, I would have the drains cut with a little more slope at the sides than is usually practised, affording thereby the operator more room for laying the tile and clearing the bottom, both which are very essential, but in a deep drain cut perpendicularly, somewhat difficult without injury being done. And besides, I conceive it affords a more regular percolation into the drain, with less liability to the washing in of the sides, or any portion of them; and also because the edge is thus rendered much safer and firmer for the tread of a horse.

"Fourthly, I would in all cases use some porous substance, other than the earth from the cutting of the drain, as covering over the tile; such as broken stone, where the locality afforded it, or burnt clay, or engine ashes (the best of all) if obtainable; and in the absence of all such materials, heath or ling (very good and durable) and thorns, or brushwood, properly cut and put in; but in no case the soil from the drain alone immediately over the tile.

"Fifthly, it is desirable the drains should be cut as near the exact width of the tile at the bottom as practicable, otherwise, in filling up, the tile is almost sure to get displaced, and thus create an interruption. Much greater pains too than are usually bestowed should be given in the general manipulation of the work, particularly in laying the tiles firm and clean; which would be readily acquired by the men, without any diminution of their allotted task, were the superintendents persons of skill and judgment.

"And lastly, I must ever hold the opinion, that in all cases of ordinary levelness of surface, the most advantageous as well as cheapest disposition of the drains is down the furrows; that being usually the natural direction of the fall, and because the surface water thereby more readily reaches the drain, and at the nearest point. Not that I would continue to retain the high ridge and furrow after the land is drained, but in every case would work the lands down to a suitable flatness as soon as practicable without injury to the succeeding crops. There are two other points which I also consider essential; the one is practicable under all circumstances, and must, therefore, not be disregarded; it is, never to permit one drain to enter another (and especially the main receivers) at right angles, but to give them such an inclination in their junction as shall allow the water free course without injury to the recipient drain: the other is, perhaps, a matter of more difficulty, but nevertheless, of great utility—I allude to the drains being so disposed as to admit the air throughout their entire course, in fact beneath the whole surface of each field; the effect upon strong tenacious clay will be to facilitate their operation most materially, and will be obvious to every reflecting mind."—*Doncaster Gazette*.

**THE NELSON COLUMN.**—The committee lately assembled for the purpose of taking into consideration the completion of the column in a manner due to the memory of the illustrious hero. The additional sum required for the purpose of making lions, bas-reliefs, and steps, is between 10,000*l.* and 12,000*l.* The committee have expended 20,000*l.*, the total amount possible to be raised by public subscription, and are obliged to express a decided opinion, that if the government do not come forward and supply the money for finishing the monument, it must remain in its present condition, and be viewed rather as a reproach upon the metropolis than a credit. They agreed in the propriety of waiting upon Sir Robert Peel, to represent the exact state of the case, and to request the Minister's aid.





INTERIOR VIEW OF THE CHANCEL OF THE PRIORIAL CHURCH, BRECON.

TO THE EDITOR OF THE BUILDER.

SIR,—Having a short time ago sent you an exterior view of the Priory Church of Brecon, which appeared in page 54 of the present volume, and as I then described the chancel of the fabric as possessing a great degree of architectural beauty, I now beg to send you this view of the interior, to which I am sure you will feel pleasure in giving equal publicity. It will be plainly seen, that the roof was originally groined, or was intended to have been so, as a portion of the ribs appear springing from the tops of the columns. The large outside arch is one of the four upon which the tower stands, the piers of which may be seen by referring to the plan which is already published with the exterior view. Each pier is pierced by five lancet perforations, supported by slender clustered columns, which

throw over the whole structure an airiness and elegance. Many of the corbels are beautifully carved into the most delicate and fanciful foliage, curling round and recoiling from the moulding above, as if restrained in their farther luxuriant career, like the ivy which here and there peeps through the windows. The end window has a very fine appearance in the interior, being formed of five lancet-lights, divided by slender clustered columns, and rich flowing mouldings.

There is not much to admire in the roof, except the richly-gilded bosses which appear to be deeply sunk, forming shadows which, from the floor beneath, are very effective. In the floor are stones of a very early date, bearing very strange characters, now nearly obliterated. This chancel contains also many fine monuments, the most ancient of which represents the effigy of Sir David Williams, one of the judges

of the Court of Queen's Bench in the reign of Elizabeth, the maternal ancestor of Col. Wood, M.P., who has represented this county in Parliament for nearly forty years. This monument is peculiarly interesting, as a relic of that period of transition wherein the Pointed mode (which having prevailed for so many centuries at last dwindled into the imbecility of age), at length, on the introduction of the architecture of the great Italian masters, whose celebrity at that period became a subject of great interest in this country, mingled incongruously with the wrecks of another style. Within two corresponding arches to the right and left of the entrance into the chancel, are two handsome marble monuments, designed in accordance with the character of the arches. The one on the right is to the memory of the late Marquess Camden, who deserves a national tribute of respect for his munificent gift to the state. As



I think it will not be out of place, I give the inscription entire, as follows:—

Sacred to the memory of  
the Right Honourable  
JOHN JEFFREYS PRATT,  
Marquess Camden, K.G.  
Who died October 8, 1840,  
Aged 81 years.

During a long life passed in the  
service of the public,  
and in the highest offices of the state,  
He contributed by voluntary donations  
towards the exigencies of  
his country,  
366,116*l.* 14*s.* 3*d.*

This tablet,  
to record his patriotism and virtues,  
is erected by his affectionate niece,  
Lady Caroline Wood.

"A good name is rather to be chosen than  
great riches."

The other memorial within the arch on the left, records the name and virtues of his mother, the Baroness Camden, from whom the noble family inherited the priory. Both works are from the chisel of John Evan Thomas, F.S.A. There are several other finely-wrought works, by Thomas; one a beautiful monumental figure to the memory of the late John Powell, Esq., and on the opposite side another, commemorating the Rev. Thomas Coke, LL.D., the celebrated missionary, and a native of Brecon. But the work which forms the chief attraction, and gives to this church the greater interest and importance, is a beautiful group of figures, by its immortal sculptor, John Flaxman, R.A., to the memory of the Rev. Thomas James, of Brecon. Sweet serenity and spirituality pervade them; while a soothing influence involuntarily attracts and fixes the attention of the observer, and seems to extend and enlarge his faculties, to catch, by intuition, the contagion of virtuous tranquillity, and reach the level of such exalted associates. These almost breathing marbles, sculptured by such a master-hand, have a chaste and softening effect, when contrasted with the solemnity of the architecture and the loneliness of a country church, and appear to me to possess a far more sacred character than the gorgeous effigies of a city cathedral. We seem to fancy these blessed spots, fixed by our forefathers in Nature's penetralia ages long gone by, possess a peculiar guardian sanctity, free from the busy hum of human life, and the fiercer passions which degrade humanity; fit sanctuaries, therefore, for these productions of genius, so intimately connected with the last haven of repose.

I am, Sir, your very obedient servant,  
Berkeley-place, Brecknock. J. L. T.

#### RESTORATION OF ROSSINGTON CHURCH.

The above church during the last twelve months has been undergoing great alterations. These having lately been completed, the sacred edifice has been re-opened for the celebration of divine worship. Before entering into the details of the improvements which have been effected in the re-building of the greater portion of the church, we give the following extract descriptive of its former state, taken from "Wainwright's History of the Wapentake of Strafford and Tickhill."

"The church," says Wainwright, "before it underwent the process of improvement, was a venerable and highly interesting piece of architecture; but it now exhibits an aspect difficult to bring within the pale of technical description. To the world a sample of taste is left by its renovators, highly derogatory to the chastity of their views, and inimical to the end for which the edifice was originally reared."

"The era of its erection, like that of most others, cannot be precisely ascertained. The few remains of the original structure bespeak an early foundation, and throw back its building to an age coeval with the reign of King Stephen."

"The archway, under which we pass into the chancel from the nave, presents, in its mouldings, a genuine specimen of the Anglo-Saxon or early Norman mode of decoration.

The inner pilaster is short, round, and massy, and entwined with a spiral band, which is succeeded by some ornamental tracery-work and a number of rude devices. Above these is placed a square abacus, whence springs a circular arch ornamented with a chevron border, and other Saxon embellishments.

"The pedestal, whereon the western pilaster is placed, is unusually high, and corresponds in make with the abacus. The outer or eastern side of the same opening shews a face somewhat different to that of the western, being formed by columns taller and more slender, but in other respects it partakes of the same order and age.

"The door leading into the interior of the place from the porch wears also an antiquated aspect. On each side are plain round pillars, headed by square abacuses, supporting a circular arch with a billeted moulding, corresponding in age with the residue of the primeval structure.

"The ambo or pulpit is an aged oaken box, carved in the style which prevailed before the reign of Henry VIII. On the upper border is the following mutilated inscription:—

RICARDI STANILE, ET UXORIS EJUS.

"The residue is hidden by the wall, to which it is fastened. This venerable piece of sacred furniture is reported to have been brought from the desecrated church of St. Mary, in Doncaster.

"The tower is placed at the west end, and is of an age subsequent to the original erection of the church. It is divided into four parts by embossed partitions, flanked with light buttresses and surmounted with eight pinnacles.

"The fatality attendant on the alteration of the church, in reference to its architecture, was not less subversive of its monumental remains, for not even one, of either note or antiquity, has escaped the fangs of modern Goths. The injury done to the cause of truth by this wanton demolition of ancient tomb-stones is incalculable. To the biographer and the local historian the preservation of monumental memorials is of greater moment than is generally supposed. Not content with a bare recital of the good deeds, &c. of the defunct, the ancient as well as modern epitaphs often preserve, with scrupulous accuracy, much genealogical information, and bear forth to posterity historical and biographical notices, with a fidelity unequalled by any other documents whatever, save testamentary writings.

"This church is an ancient rectory, and from its foundation has belonged to the patronage of the De Maulays, from whom it descended to the Salveys, of New-Biggin; and, in the reign of Henry VII., passed with the manor to the burgesses of Doncaster, in a way already noticed.

"In its ecclesiastical character, it belongs to the deanery of Retford, in the archdeaconry of Nottingham; is a living in charge, and valued in the king's books at 11*l.* 5*s.* 4*d.* Archiepisc. pro. syn. 4*s.*; Archidiacon. pro. Prox. 6*s.* 8*d.* In the age of Queen Elizabeth it bore the estimated value of 10*l.*, and in that of Pope Nicholas IV. 8*l.* It is dedicated to St. Michael."

The advowson belongs to James Brown, Esq., of Leeds, who purchased it, along with the estate and manor of Rossington, from the corporation of this borough, in the year 1839. After Mr. Brown had made his purchase, he found the church in a very dilapidated state, and almost unfit for the performance of public worship. He immediately determined that it should be entirely renovated. With this view, upwards of twelve months ago, workmen, under the direction of Mr. Clarke, architect, of Leeds, commenced operations. It was then intended to build two new transepts, to add a vestry, to enlarge the chancel, and to raise the roof of the body of the church. It was, however, ascertained that the foundation would not allow of the insistent walls being enlarged. On this being made known to Mr. Brown, he at once determined to re-build the whole of the church, with the exception of the tower, which is placed at the west end. New plans and new contracts were accordingly made and entered into, and hence the erection of the present neat and chaste edifice. The adoption of the latter, we feel confident, Mr. Brown will never have cause to regret, since the former plan would not, had the foundation

allowed, have rendered the building so neat and appropriate as it now is. The present church is built in the form of a cross, standing east and west. The style of architecture adopted is the early English, or general style of the 13th century, of extreme beauty, and highly distinguished for its chaste simplicity and purity of design. The windows, which are long and narrow, consist of two round columns, with fine carved capitals and lancet arches, enriched with plain mouldings, relieved by deep narrow hollows. The columns of the two transept windows are banded in the middle. The roof is covered with dark blue slate, and the rain water is taken away by square cast-metal spouts, supported by fine carved buttresses. No alteration has as yet taken place in the tower, and the crevices having some years ago been pointed with lime, in a great measure detract from the beauty of the rest of the building. The church now consists of a nave, a chancel, two transepts running north and south, a vestry erected on the north side of the chancel, and a porch on the south side, as well as one under the tower at the west end. The arch formerly existing between the tower and the nave, which formed the western entrance, is now built up, with the exception of a small door to obtain access to the tower. The whole of the floor of the church has been considerably raised. From the nave to the chancel there are two steps, and the like number are also placed in front of the altar. The aisles are paved with dressed flag-stone, and on each side there is an iron grating running the whole length, under which is placed cast-metal pipes containing water. The water in these pipes is heated by a fire and boiler erected underneath the vestry, which will at all times render the church warm and comfortable. Underneath the whole of the chancel a family vault has been formed for the interment of the present and future lords of the manor of Rossington. The walls of the interior of the church are plastered and panelled, with a view to keep them perfectly free in all seasons from damp. In front of the communion table a fine oak painted rail has been placed, covered with a beautiful mahogany top. The roof is open, and supported by pointed deal arches, also painted oak, and resting upon some stone corbels, carved after the same design as the capitals over the columns in the windows. The nave and transepts are fitted up with pews, with panelled doors, of a dark oak colour. On each side of the altar table, which is of oak, of rude construction, boards are to be erected, containing in gilded letters the ten commandments, the Lord's prayer, and Apostles' creed. The position of the several entrances is precisely the same as in the old building. The font is placed opposite to the principal entrance, and near to the western arch. "This situation at the entrance of the sacred edifice is a most significant and appropriate position for the celebration of holy baptism, it being emblematical of that solemn sacrament by which persons are admitted members of the church of Christ." The tower contains three bells, which are not remarkable for that fine and clear tone so often met with in village peals. The only portions of the old building preserved in the present one are the arch over the porch door, and the arch leading from the nave to the chancel. The pulpit, which now stands at the north end of the south transept, has been repaired and made to correspond with the other portion of wood-work in the interior. The arch, the span of which has been enlarged, between the chancel and the nave, has been cleaned and repaired, displaying its rich tracery and zig-zag moulding. The arch over the entrance from the porch has likewise been repaired and cleaned, exhibiting more perceptibly its nail-head and raven-beak moulding. The new portion of the building has been erected of Mexbro' stone, supplied by Mr. Willey, of that village. The several contractors for the various departments of the work reside at or in the vicinity of Leeds, viz.:—Joiner, Mr. Shires, Chapeltown; painter, Mr. Wood; mason, Mr. Nettleton; metal-piping, &c., Mr. Nelson; and plumber, &c., Mr. Richard Gott. The architect is Mr. Clarke, of Leeds. It is stated that the cost of the alterations will not be less than 3,000*l.*, which sum has been entirely provided by the worthy proprietor of the estate, James Brown, Esq. of Leeds.—Doncaster Gazette.



# PETRALOLOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR  
OF NATURAL PHILOSOPHY.

(Continued from p. 278.)

The learned Bacon truly observes that "they who have presumed to dogmatize on nature, as on some well-investigated subject, either from self-conceit or arrogance, and in the professional style, have inflicted the greatest injury on philosophy and learning: for they have tended to stifle and interrupt inquiry exactly in proportion as they have prevailed in bringing others to their opinion; and their own activity has not counterbalanced the mischief they have occasioned by corrupting and destroying that of others." Never were words more truly applicable than to the plutonic geologists of the present day, who, having no facts of their own, presume to select those facts and opinions of others suited to their own theoretical absurdities, concealing or perverting the rest. The facts and opinions of such men as Saussure, De Luc, Werner, Van Boek, and numerous other observing mineralogists, are wholly lost sight of in the present day; baseless imaginings supersede facts the most important, and closet philosophers now seek rather to follow in the wake of discovery, than, by extensive travel and observation, to lead the way. The most recent works on geology and mineralogy are without exception so interwoven with extravagant speculations and theories, violating the natural operations of nature, that there is not one work fit to direct the minds of youth to the proper path of inquiry, and to prepare it for observation.

The writer of the letter in *THE BUILDER* of last week having skimmed the surface of one side of the question, adopts the opinions of others as his own, and were he to direct his steps abroad, the usual consequences would follow: instead of reviewing rocks, stones, minerals, and earths, as a sensible mineralogist, and studying the several causes of effects manifest to the senses, we should hear from him, as we do from others, that the mountains of such a district are plutonic; that their bases consist of primary rocks; that such and such beds and formations were of volcanic origin, and in every piece of jasper, porphyry, granite, &c., in every circular hollow in a mountain, in a plain, or in a coral reef, he would fancy he beheld the workings of volcanoes. The merest tyro in geology may, now he has the igneous marks pointed out, sally forth in his Quixotic voyage of discovery, and, by a few generalizing touches, become the fashion and the favourite of the day; but what do we learn by these generalizing terms, or who but geologists would apply local phenomena to general, nay to universal explanations?

I am asked if I can account for the filling up of veins, and the appearance of dykes and faults? Most assuredly I can, without having recourse to hypothesis, no matter whether these veins be filled up with granite or any other material. But those departments belong more strictly to that part of mineralogy which embraces the metalline formations, and to understand them rightly requires much disquisition. To the question of the writer I will put another. Whence come the veins of steatite, or mineral tallow, so often found intersecting the granites of Cornwall? Again, whence come the veins, lodes, faults, cross-courses, dykes, and other curious phenomena, as faithfully depicted in one small piece of tinstone as in the most magnificent mineral bed? Are they the one or the other, produced by some subterranean and internal power? Again, whence come the veins of nature, generally filled with quartz, and so common to granite and to all kinds of rock? Again, I ask, what is granite?

The material ejected from volcanoes is not generally melted masses of earth; it is more usually torrents of mud, or mud and water, ashes, fragments of rock, and other matters simulating to known strata of that locality. When in the state of molten lava, it moves a dense ponderous body, slowly advancing, melting small impediments, but encircling the larger; it flows as a stream of water would through a valley, but it does not throw out diverging lives even in yielding masses, nor is it known to fill up veins and fractures to that delicate point noticed at Glen Tilt; nor is it known to penetrate beds in contact in this manner, nor would it do so even in the most yielding

soil. Again, when it is seen discharging rivers of mud, sea-sand, sea-shells, and rocks, it must be borne in mind that these materials are like to the most recent formations, consisting sometimes of vegetable earths, sometimes of ocean marls and chalks, of sands common to the shores where the volcano is disposed, and of fragments of rocks common to observable strata. This, therefore, is but a displacement of matter, attended, of course, with new chemical and mechanical combinations, but still such as we know the origin of. The molten lava never forms as mountains, much less mountain-chains; it has never been known to elevate a mountain or an island, except piecemeal; for Humboldt's account of the rise of the Jurugo is purely fabulous. As it was ejected from the earliest records of man, so is much of it unaltered in the present day, and no two lavas are to be found alike. The appearance of the granite in Glen Tilt is that of a sedimentary deposit, filling rents and fissures, produced by various causes, in the limestone and clay-slate; and it is well known that clay, as it consolidates and imparts its moisture, separates into regular and irregular parts, and if much silica be therein, it exudes and fills up these divisions in the form of quartz, and the earths, after digestion in hot water, produced by volcanic or chemical action, on abstraction of their moisture, have a tendency to assume the basaltic form; for basalt is no more a volcanic product than is the muddy deposit of some rivers, which, treated as above, would, under like contingencies of climate and association, pass into the like result.

Granite is an ever-varied and perpetually-varying substance, and is equally varying in its form, disposition, and external character: although frequently found in continuous masses, or aggregated, it is very often stratified, and exhibiting in this stratified state two or more perpendicular fronts in common with limestone, and presenting the same perpendicular front along a whole chain of hills or mountains. All parts of Mont Blanc are thus composed of vast layers of granite, perpendicular to the horizon, and directed from south-east to north-east. The stratification is the same near Carlsbad and Tiplitz, in several parts of Bohemia, and also towards the Riesengebirge. La Perouse describes the granite of part of the Pyrenees as disposed in layers and beds; Cronstedt and others speak of it as existing in this state on the Kenne Kulle, in Sweden, and Belling, in West Gothland; Pallas followed vast and continuous layers of granite through whole tracks of mountains in Siberia, part of the Ural Mountains, in the neighbourhood of the lake Kolywan, having the appearance of huge artificial structures, in which the layers appear to be loosely piled on one another. Professor Playfair found stratified granite in England, at Chorley Forest, in Leicestershire, where, particularly near Mount Sorrel, beds of granite are seen holding the same direction with those of the subjacent "horn-stone schistus;" also at Farnet Water, in Berwickshire, and Humboldt, Charpentier, Von Gersdorf, and others, testify to the stratified state.

Again, granite is found alternating with gneiss, as for instance, on the Schneekoppe, the highest point of the Riesengebirge. Again, granite is found in some parts of Northern India, resting on a common and extensive base of a bluish clay; in Finland, micaceous quartz and clay-slate form the base in common, with or upon granite; in Nubia, it rests upon an undisturbed calcareous basis, in the Egyptian desert on clay.

Again, it passes by gradual transition into other kinds of rock; thus, for instance, the greatest part of the north-east side of the chain which separates Selega from the county of Glatz, between Wartha and Reichenstein, is covered with sienite, which passes into granite; in many parts of the world it passes into gneiss, hornblende rock, coarse sandstone, mica-slate, steatite, &c.

Granite occurs in continuous masses, forming the chief component part of many mountain-chains, the basis of some, the apex of others, and disseminated or intersecting other beds.

That granite is not the product of fusion, or ejected from the bowels of the earth, is demonstrated by the position, inclination, and dip of mountain-masses; by the unbroken continuity throughout parallel ranges and groups;

by its exact conformity to the laws of formation governing matter in its distribution in the ocean even in the present day; by the impossibility of these continuous mountain-masses having been once in the state of melted lava, as demonstrated by vast mineral beds, bitumen, sulphur, steatite, and other products which they contain, and of which we have no analogy in lavas; by their crystalline structure, their granular composition, and in some varieties perfect mathematical disposition of their compounds, which could not have been thus exhibited in the cooling down of a melted body of earths; by their known progression from the plastic state to semi-crystallization, and finally to the highly indurated state, which latter is only acquired by long exposure to atmospheric air. By the numerous reasons which I have adduced to prove the origin of the various kinds of rock, their gradual transition into each other exhibiting a common origin and common properties, and finally by the proofs with which I am furnished that the volcano, however deeply seated, is always locally disposed, and at a comparatively small depth within the earth.

Granite, in common with other sedimentary deposits, intersects and is intersected, covers or is covered in with others; there are no laws of distribution other than those arising from tidal action, sedimentary deposition, organic aggregation, and the action of winds, of expanding gases, and fire. Look for a moment at the phenomena of the uncovered regions of the desert, the loose masses consolidate into here rocks, the rocks, by the expansion of atmospheric heat, open into vast fissures, and the sands, driven by the winds, cover in these rocks and fill in their fissures. Again, in hot and even warm regions, the thirsty soil, parched up with drought, opens into cracks and rents of incredible extent and depth, and when the rains fall abundantly, the waters, loaded with the lighter matters of the surface soil, rush into these fissures, which thus filled up, the lower beds become traversed with dikes and veins of material differing from their own in composition and character. Admitting that the fiery deluge, pouring over the rent and distorted earth, would fill up those rents in a similar manner, still the violence done to nature by these subterranean movements must be impressed upon every bed exposed to its influence.

To talk of mountain ranges being bodily lifted up without displacement, and to assume the exactitude of sedimentary deposition, or of the limestone ranges which are the architectural displays of living action and local disposition, is to talk foolishly; to talk of those masses so contradictory in their nature, and disposition of parts, and containing many combustible bodies within them, being spouted out of the interior of the globe by one or by a thousand channels, is as repugnant to human reason, as it is contrary to all our acquired experience. The beds of this earth are locally disposed upon or among each other; the coral formations assume directions within the waters, precisely similar to those limestone, chalk, and oolite ranges we find now composing so vast a portion of dry land; the valleys and troughs of the ocean are filled up with sand-banks taking the direction of the tides, with chalky deposits blending with shells and other marine exuvia, with vegetable earths, and clays carried into them by rivers and deposited in the line of action, and over local areas, the one deposit covering, the one deposit blending with the other. Again, the dry earth is subject to like changes; the deposit of one epoch, the hill and the mountain chain, becomes covered with or intersected by the sedimentary deposition of another epoch; the necessary, the inevitable result is numerous changes; some of these unite, others exchange peculiar properties; the lower and disintegrated beds become substances of another nature by the addition of alumina, lime, iron, or some other product derived from the overlying beds, the elevated portions of primary matter are intersected by beds of recent deposits, and the rents and fissures produced by the action of heat or running waters are again blocked up.

The material from which granite is produced is variously accumulated; its vast perpendicular face and uninterrupted duration demonstrates an origin, gradual and progressive, within the waters, and firmly fixed in its position during the whole period of its accumulation; it often assumes the conical form, and appears



to have accumulated in heaps, and the recent formations of the Red Sea are very often little else than vast clumps or mounds of sand, sea-weed, and the finer particles of young shell-fish; at other times it is evidently a sedimentary matter periodically deposited on the continuous ocean deposit, differing in nature from the latter by containing more or less animal and vegetable matters of the earth. This material is as likely to intersect clay-slate and limestone as the two latter are to intersect granite; and its peculiar disposition at Glen Tilt is a much greater proof that it was in a soft and permeating aqueous state, than that it was a burning liquified mass, which could not by any possibility have produced the like phenomenon, nor is there any analogy to it in the existing lavas of the day.

It is true, as the writer observes, that geologists, changing their opinions continually, and following instead of leading in the path of discovery, have been compelled to acknowledge different epochs of granitic formation; but a very slight acquaintance with the most recent publications of the day must shew him that the basis of all their theories rests upon the notion of granite being a primary product, and constituting the lower or inner portion of the globe, surrounding the inclosed fire; of this, Mr. Lyall, in the last edition of the "Elements of Geology," gives his supposed section of the earth; and Mr. Phillips, in his Treatise on Mineralogy, assumes for granted that the crystalline rocks are products of fusion and primary formations. Dr. Buckland, Professors Brand, Thomson, Farraday, Sir W. Herschell, and other eminent men, implicitly follow the same volcanic theory, and unfortunately as unwisely make it the basis of their respective systems.

#### MONUMENT IN ST. STEPHEN'S CHURCH, BRISTOL.

THIS monument is a very pretty subject for antiquarian discussion. It is older by a century than the church—it has been built into the wall probably after the erection of the church, and it is composed of parts that do not appear to have been originally conjoined.

Costume is not always an infallible guide in determining the period of the erection of an ancient monument, as it was not uncommon for persons to be represented in the dress they wore, though the fashion of that dress had passed away at the time the monument was erected. It is possible, therefore, that the effigies now lying side by side were originally so placed; though several reasons would lead to the conclusion that the male figure formed no part of the original monument; there may be a difference of fifty years in the date of their costume, as well as in that of different portions of the architectural work.

From the manner in which this monument is built up,—the figures being on separate slabs, and the table-face of the tomb being without sides or back, and disjoined from the jamb-mouldings of the arch under which it is placed,—it is certain that we do not see the parts in their original connection.

The male effigy is one of the few specimens of a figure not attired in armour. Such equestrian effigies have been hitherto considered as belonging only to royal personages, with the exception of ecclesiastics, who have their proper costume; but as this figure appears to be of about the year 1400, it may represent some wealthy burgess of Bristol. Wealthy he must have been, as sumptuary laws in Edward III.'s reign imposed restrictions upon such luxuries as armour and monumental effigies.

The female figure is habited in the costume of Edward III.'s reign, about the year 1350. The architecture of the monument has the usual outline of that period—broad and low. It consists of a flat ogee arch, tri-cusped in the middle, with two smaller hanging cusps on each side—the moulding a simple fillet and hollow with square flowers at intervals. It had a crocketed ogee canopy, and a low-crowned buttress on each side, probably similar to the Berkeley monuments in our cathedral. The base is either cut away or sunk under the surface, yet unopened, which is about 18 inches beneath the floor of the church. There seems no reason to think that the floor of the present church has been much raised.

Under this monumental arch is no tomb, but

only the face of an altar tomb. This face is separated by square buttresses into six very shallow compartments, which contain mourning figures about 18 inches high—two are male, three female, in ordinary dress, the sixth is much mutilated, but may represent a knight by the conical head-dress. The square buttresses terminate in plain shields, and at the junction of these spring trefoiled ogee arches with crockets and finials, forming canopies to the figures.

We have described the arch and the altar tomb as far as their imperfect state will permit, and have only to add that they have been charged with colour as well as the figures recumbent on the tomb.

As the effigies of two sons of Edward III., one in York Cathedral, the other in Westminster Abbey, are the only published specimens of figures of the 14th century not in armour, this male effigy deserves inquiry as to the personage it may represent. For the present we can only describe the figures. They are, as was the custom in the middle ages, in the attitude of prayer; the hands have been placed together palm to palm, but those of the male figure have been broken off above the wrists. The female effigy, which is on the inside, is partly built into the masonry of the wall, under a rough arch of later date than the front arch of the monument. This is the longer figure, and appears to be that for which the monument was erected.

The head of the male effigy is uncovered—the hair is parted in the middle and falls down in a single curl over the ears—the face is not that of a young man, though without whiskers, and having the moustache and beard but slightly marked. The dress consists of a doublet, buttoned down in front, fitting close to the body and reaching to the middle of the thighs; round about the hips is an ornamented bawdrick, from which a dagger has been suspended on the right side. This doublet has a small cape over the shoulder, and leaves the neck to be covered by a loose collar; the sleeves reach below the elbow, and beneath them appears a covering for the lower arm, towards the wrist closely buttoned. The legs wear close-fitting hose, and the feet have pointed sandals of similar material. This costume belongs to the latter end of the 14th century. The feet rest upon a lion, and the head upon a diamond-shaped cushion with tassels.

The head of the female effigy rests upon a square tasselled cushion, and the feet, which are scarcely visible, against a dog.

The head-dress consists of a netted drapery, of square form, beneath which appears the hair, braided each side the cheek. The hood, or veil, falls from the back of the head, and a whole of linen encloses the chin and covers the whole of the neck and shoulders, except some strips in front of the neck. The body is habited in a surcote; the sleeves are tight and close, up to the wrist; the hands are without gloves or ornaments. The surcote, as far as the hips, fits closely to the shape, but below enlarges into numerous folds; the dress is not buttoned or laced in front, but two buckles of large size are placed low down the waist in front. The mantle, or cloak, is short, and stretches round the back and shoulders, being fastened by a cordon across the breast. This costume properly belongs to the date 1350, whereas the costume of the male figure appears to be later. The different sizes of the figures and other things above mentioned leave little doubt in the mind of the writer that the monument is compiled of two separate ones, which have been put together in their present situation since the time of Henry VIII.—*Great Western Advertiser.*

A circular is in private circulation, entitled a "Proposed Equitable Tax on the Transfer of Real Property in place of the Income-Tax." The writer estimates the entire property of England at 6,186,000,000*l.*, and proposes that all real property should be taxed with the probate and legacy duty. The produce of such duty would, he thinks, be about 12,000,000*l.* annually. Were his idea adopted, he says that Sir Robert Peel might dispense with the Income-tax, and still have a much larger revenue than he has at present.

#### RAILWAY INTELLIGENCE.

*Atmospheric Railways.*—Mr. Stephenson, the celebrated engineer, was appointed by the provisional directors of the Chester and Holyhead Railway, to examine into the atmospheric system, and report on its applicability to their project. Mr. Stephenson has made his report, and it is unfavourable. The following is a summary of the conclusion Mr. Stephenson has come to:—

"1st. That the atmospheric system is not an economical mode of transmitting power, and inferior in this respect both to locomotive engines and stationary engines with ropes. 2nd. That it is not calculated practically to acquire and maintain higher velocities than are comprised in the present working of locomotive engines. 3rd. That it would not, in the majority of instances, produce economy in the original construction of railways, and in many would most materially augment their cost. 4th. That on some short railways, where the traffic is large, admitting of trains of moderate weight, but requiring high velocities and frequent departures, and where the face of the country is such as to preclude the use of gradients suitable for locomotive engines, the atmospheric system would prove the most eligible. 5th. That on short lines of railway, say four or five miles in length, in the vicinity of large towns, where frequent and rapid communication is required between the termini alone, the atmospheric system might be advantageously applied. 6th. That on short lines, such as Blackwall Railway, where the traffic is chiefly derived from intermediate points, requiring frequent stoppages between the termini, the atmospheric system is inapplicable; being much inferior to the plan of disconnecting the carriages from a rope, for the accommodation of the intermediate traffic. 7th. That on long lines of railway, the requisites of a large traffic cannot be attained by so flexible a system as the atmospheric, in which the efficient operation of the whole depends so completely upon the perfect performance of each individual section of the machinery."

We subjoin a very brief summary of Mr. Brunel's evidence before that committee, in favour of the atmospheric system:—

"Mr. I. K. Brunel was then examined on the part of the promoters of the Croydon and Epsom line. He had been consulted by the promoters of this line, on the expediency of laying down the atmospheric principle on the Croydon line. He had witnessed the experiments upon this principle which had been made at Wormwood-scrubs. He made a portion of those experiments himself. He thought this line was peculiarly adapted for the atmospheric principle. He thought the atmospheric principle would enable them to run trains more frequently and with greater rapidity. He also thought that the expense of working would be less than on the ordinary railway, particularly in certain cases—such as that of a steep gradient. Considering the gradients which prevailed on the Croydon line, he should say that the atmospheric principle would be far less expensive than the ordinary locomotive principle. That was assuming that a great number of trains would be worked in a day. He could not fix a maximum speed by the atmospheric principle; but he would say that a speed of sixty miles an hour could easily be accomplished. He had himself reached that speed with a locomotive engine."

*Railway to Rugby.*—It is intended to bring forward in the next session of Parliament the project of a line in continuation of the Great Western Railway, passing through Banbury to Rugby, which for a distance of about thirty miles from Oxford will be identical with the line now suggested; and it is thereupon proposed that if such a project be brought forward and should succeed, the line from Wolverhampton shall merge into that line about eight miles north-west of the town of Banbury. The rough estimated cost of the work from Wolverhampton to this latter point, including the branches to Stoke Works and the river Severn, is 1,000,000*l.*, and the rough estimated cost of the work from the point of junction to Oxford is 500,000*l.*

Arrangements have been effected by the London and Birmingham Railway Company with the Eastern Counties for the purchase of their line from Ely to Peterborough.



**The Projected Line from London to York.**—Three lines have been projected direct to York, and all of them cross the head of the Hull and Selby Railway. The first, Walker's line, was intended to commence at Cambridge, and proceed to York by way of Lincoln. The cost of this line, which it was proposed should join the Northern and Eastern Counties Railway at Cambridge, was estimated at 4,600,000*l*. This line, however, according to the most authentic information of which we are in possession, may be considered abandoned. The second project sets out in the direction of the Great North-road from London, Barnet, Hatfield, Hertford, St. Neot's, Huntingdon, Stamford, Ryhall, Corby, Grant-ham, Newark, Gainsborough, and Doncaster, to York. This line would pass about thirteen miles from Lincoln, which would be connected with the main line by a branch railway. The third proposed line, and the most likely to be adopted, is that laid down by Sir John Rennie. This line would commence near King's-Cross in the New-road, the most central situation in the metropolis, both as regards the west-end and the city, proceed through Chipping, Barnet, Biggleswade, St. Neot's, Huntingdon, and Peterborough, between Market Deeping and Stamford, a little west of Bourn, and pass within five miles of Sleaford and Grantham to Lincoln, and thence direct by Gainsborough, Thorne, Snaith, and Selby, to York. It is said this line would be the nearest route to Leeds, Selby, Hull, Halifax, Bradford, Huddersfield, Wakefield, Pontefract, and Sheffield. It is considered that this line may be constructed at a moderate expense, that the fares will be proportionably less, and that an ample profit would be realized by the shareholders. But these are not the only points which ought to be taken into account; the probable benefits or losses of the towns along the line or in its neighbourhood ought to be considered. But no doubt the projectors of this line take care, if they be determined to carry it out, to make such deviations as shall meet the wishes of the towns on the Great North-road, and at the same time tend to augment the profits of the shareholders.

**Manchester and Leeds Railway.**—It was stated by Captain Laws, R.N., in his evidence before the committee of the House of Commons on the Hull Docks Bill, that the warehouses of the Manchester and Leeds Railway, at Manchester alone, comprise six acres of flooring. In their various warehouses along their line the company have had flour at one time, in sacks, which, when ranged together, extended over eleven acres of ground. The recognizances of the engineer of the Manchester and Leeds Railway, who, it will be remembered, was indicted, and very heavily fined, for violating the Act of Parliament, in stopping a public road, was on Wednesday discharged in the Court of Exchequer. General Pasley has certified that the road is completed, and that it affords greater facilities to the public than before.

**The Eastern Union Railway.**—The report of the committee on this Bill was agreed to in the House of Commons, on Tuesday week last. Some delay has been occasioned in consequence of it having been found necessary to deviate from the proposed line at Brantham, and the third reading will not be moved until the proper notices have been published in the *Gazette*.

**The Leeds and Thirsk Railway.**—In the committee on the Harrogate and Knaresbro' Railway Bill, Mr. Locke, C.E., proved that the tunnel, a mile and an eighth long, which is proposed to be made on the Leeds and Thirsk line, would cost more than the entire construction of the Harrogate and Knaresbro' line.

**German Railways.**—A letter from Berlin states that the responsible principals of the company for the intended railroad from Potsdam to Magdeburg are the Princes Frederick, Charles, and Albert of Prussia, and M. Jacob, a cloth-manufacturer, of Potsdam. The cost of the road is estimated at four millions of thalers (15,200,000*l*). The company engage to take only five per cent. interest for their capital, and to devote the surplus profit to works of charity.

**Rating Railways to the Poor-Rate.**—The Court of Queen's Bench has, after deliberate argument and much consideration, decided (in the case of the *South-Western Railway Company, Appellants*, and the parish of *Mitcheldrivers, Respondents*), that railways are rateable to the poor-rate in respect of *de facto* occupation; or, in other words, that the rate shall be assessed on the general amount of the profits which a railway company receives from the occupation of its own railway, and to an exclusive use of it, and not on the amount of certain tolls which have been fixed by statute, as payable by all carriers for the use of the railway.

**Railway from Inverness to Perth, by Badenoch.**—At a very numerous meeting, held at Badenoch, last week, Major Macpherson, Glentworth, through whose estate the projected line of railway must pass for several miles, publicly announced that, provided the other proprietors in the Highland districts along the line agree to do so, he will be ready to give the requisite ground on his property without making any charge.

**Worcester and Cardiff Junction Railway.**—A meeting was held at the Castle Inn, Merthyr Tydvil, on Monday, the 27th ult. when it was unanimously agreed that this railway would prove of the greatest possible advantage to Merthyr, and all the towns on the line, and also to all the country through which it will be taken.

The opening of the West London Railway took place on Monday week. The line commences at the basin of the Kensington canal, south of the Great Western-road, under which it passes, from whence it proceeds across the Great Western Railway at Kensall-green, and thence passing under the Paddington Canal, joins the London and Birmingham Railway.

**Bristol and Gloucester Railway.**—This line of railway will be opened throughout to Gloucester, on Monday, the 1st July next.

The South Eastern Railway Bill was on Friday week read a third time in the House of Commons, and passed.

#### TRUSSED PILES.

SIR,—I beg to submit to you a method of equally distributing the weight of those buildings which, from the nature of the ground, require to be erected upon piles; for this purpose I propose trussing the piles with iron arms, as shewn in the annexed sketch, which will more clearly illustrate my proposition. If this object be thus attained, it would undoubtedly prevent the possibility of a partial settlement, the evil consequences of which are too well known to require comment.

P P P (fig. 1) represent the piles; *b b b*, flat

iron bars attached to their heads, *h*: at the top of these bars, eyes are to be formed, to which the arms, *a a a*, are to be secured with bolts and nuts. These arms will rest at bottom in shoes, with the exception of those attached to the outer row of piles, which are intended (as will be seen in the sketch) to be secured at both ends, to preserve them in a perpendicular position, in case of a general settlement. On one side of each of the arms a feather should be cast, to resist any tendency to knuckle which the weight upon them might produce. Fig. 2 shews the general arrange-

ment. The ground is to be excavated to the depth of about 2 feet below the intended level of the first course of stones or bricks, and the requisite length of the piles first ascertained by driving a common one to the greatest possible depth. The length should be such that the tops of them (or that part to which the iron-work is fixed) shall be wholly above the ground-level after the excavation; by this means the arms will be fixed without difficulty: the spaces between them will then be filled up with concrete, forming one solid bed.—I am, Sir, yours, &c., R. C. W.

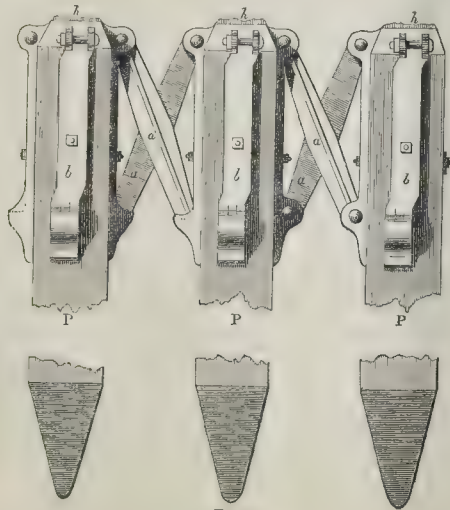


Fig. 1.



Fig. 2.



## CHURCH-BUILDING INTELLIGENCE, &amp;c.

**York Minster.**—The restoration of the nave of York Minster may now be pronounced as completed. The workmen have commenced taking down the wall which separates the nave from the transepts, and in a short time the whole will be thrown open to the public. Mr. Oliver, the bell-hanger, from the establishment of Messrs. Mears, of London, is now engaged in preparing the frames, in the south-west tower, for the reception of the new peal of bells. The repairs of the north-west tower, in which the great clock-bell will be placed, are likewise progressing. During the fire of 1829, in York Minster, the monument of Archbishop Hutton received considerable injury. The present high sheriff (Timothy Hutton, Esq.), being a descendant of that eminent divine, has determined to restore the monument to its original condition at his own expense.

**Vestries in Parish Churches.**—The bill before Parliament (brought in by Mr. Stafford O'Brien and Mr. Beckett Denison) for prohibiting the holding of vestries in parish churches, provides that vestries shall not be held in churches, but in some other convenient place, to be named by a vestry meeting, to be hired or rented by the parish; notice to be given of time and place; but the bishops may grant licenses, on cause shewn, for holding vestry meetings in churches. All proceedings contrary to this to be null and void. The act is not to affect ecclesiastical law, and not to extend to Scotland or Ireland.

**New Church, Greensted Green, Halsted.**—The contract has been taken by Mr. Johnstone, from London, who is also building Trinity Church, in the same parish. Messrs. Scott and Moffat, of Spring-gardens, London, are the architects for both churches.

It is intended to erect a church at Coalpitheath, from the design of W. Butterfield, Esq. The style is Decorated, and the plan comprises chancel, nave, aisles, south porch, and western tower.

A new church is in course of erection at Eisey, near Crielade, Wilts, and will soon be ready for consecration.

## Correspondence.

## BENEVOLENT INSTITUTION FOR THE RELIEF OF AGED AND INFIRM CARPENTERS.

**Str.**—The above society determined on taking a trip by railway to Brighton, in aid of their funds, and appointed a committee to carry the object out in March last, which committee applied to the directors of the Brighton Railway to know upon what terms they would carry a number of persons to Brighton and back on Whit-Monday. This application took place three weeks before Easter, when Mr. Parsons, the chairman, wished to know how many persons we thought would go upon the occasion; in answer, we said about 500; but if the charge were low, there was no doubt it would be 700 or 1,000. "Well, if you will guarantee to us 500 persons, we will take them to Brighton and back at 4s. each;" so that we should pay 100l. if only twenty went; and we paid them 20l. deposit to bind the bargain a fortnight before Easter, and they were to supply us with third-class carriages, and nothing worse, and we thought we had made a good job for the institution, as nothing of the kind had ever taken place before; but directly we had paid them the 20l., they, the directors of the Brighton Railway, issued advertisements to run trains at the very same fare they knew we should do; doing away with all novelty for us, and doing us a great injury, as no one would buy our tickets, as they gave the public liberty to go by all the trains during three days. As soon as the committee saw that, they went to them and complained of the breach of faith they, the directors, had committed, when the chairman treated us very roughly, and said it was only an experiment; could not say whether they would do so at Whitsuntide, but if we came after Easter they would let us know. We went again after Easter, and he said he could not say anything about it, but at any rate they would do nothing to injure us. Upon that assurance we proceeded, and were again surprised about a fortnight before Whitsuntide with another

advertisement from them to run their trains as they did at Easter. We again applied to them to allow our company the same privilege, but they would not, but reminded us that three-quarters of the money must be paid two days before the time, and the remainder before the trains started, which we on our parts were prepared to do, and did do; but when we went on the morning of the excursion, we found, instead of all third-class carriages, as per agreement, they had put cattle-trucks, and six of their luggage-trucks; we protested against them, but they paid not the least attention to us; and we tried to prevent our company using them, but it was of no use, they would go into them, and thus, after we had got all our company seated in the trucks and waggons, we went to settle with them; but they started the train, and left five of the committee behind, who had to go by their next train, which did not get into Brighton before one o'clock. Therefore I wish you to set us right with the public and the trade, as our agreement with them was to have third-class carriages, and nothing worse, for which we were to pay them 4s. per head, and which sum we did pay them; therefore, we have been most scandalously treated by the Brighton directors.

I am, Sir, your obedient servant,  
June 6th, 1844. Wm. Wood, Sec.

## COMPETITION IN BUILDING.

**Sir,**—In your last week's number I find inserted some remarks on the propriety of building by schedules of prices, as was formerly done; which plan I believe would not have been abandoned for the present one of competition, but for the inordinate desire of builders to obtain too large an amount of profit.

I am, Sir, your obedient servant,  
June 4, 1844. L. O. G.

## Miscellaneous.

**DISCOVERY OF A VERY VALUABLE PICTURE.**—A strange discovery of a valuable and interesting picture was made in this city a few days since, under the following singular circumstances.—Mr. Howis, portrait-painter and picture renovator, residing in Henry-street, had in his possession an original, and what is considered a good portrait of Lord Chancellor Burleigh. He offered it for sale to a gentleman well skilled in such matters, who proposed to purchase it, provided Mr. Howis consented to take two old pictures he deemed little else than lumber in exchange. This proposition was agreed to. One of these was apparently a portrait of a woman, about what is termed half size, that is, 30 by 25 or 26 inches. The gentleman had received this with some other pictures about fourteen years ago from a friend in Italy, but it was considered such a horrible production that it had been flung aside immediately, and remained covered with dust up to the present time. The exchange and bargain having been duly perfected, Mr. Howis, in the presence of the gentleman from whom he had the picture, rubbed some of the paint off, and finding another coat under it, proceeded to remove the top altogether, when it was discovered, to the no small delight of the party, that inside was a beautiful picture, which subsequent inquiry and competent connoisseurs have pronounced to be nothing less than an undoubted original of Saint Catharine (the martyr), by the great Spanish master Murillo. The gentleman who had just parted with this gem, being fortunately a good judge, at once, and before the artist was conjectured, proposed to give Mr. Howis 50l. His offer was accepted, and thus he once more became possessed of what had been so long a hidden treasure. Many gentlemen of undoubted judgment have valued this work so high as 700l. The former and present fortunate proprietor of this gem is Thomas C. Duffy, Esq., of Pembroke-road.—*Freeman's Journal.*

**CHELMSFORD SEWERAGE.**—The committee appointed to carry this work into effect met on Friday week, to receive tenders for that part intended to be completed in the present year. There were six competitors; the difference in the sum proposed between the highest and lowest was nearly 100 per cent. The tender of Messrs. Roper and Last, of Chelmsford, was accepted, and the work is in rapid progress.

**IMPORTANT IMPROVEMENT IN THE MANUFACTURE OF IRON.**—It is stated, in the *New York Tribune*, that a discovery has been made by Mr. Simeon Broadmeadow, of New York, in the manufacture of iron, by means of which the iron ore is by only one process converted into wrought-iron without being first made into pig-iron, and at a less expense than the pig-iron can be made. The iron ore is placed upon the floor of a reverberatory furnace, the flame of fire passing over it, when a chemical compound is used to unite the elements of the iron by separating the "slag" entirely from it. By this first and only operation the wrought-iron comes out as perfect in every respect as that by the double operation of "puddling" and piling pig-iron, and for the purposes of manufacturing steel even surpasses it. By this process wrought-iron of the best quality can be produced at a cost not exceeding 25-50 dollars per ton. To make the iron ore into balls of wrought-iron will require no blast, nor machinery of any kind; the anthracite or bituminous coals being used with equal advantage in a common air-furnace, a good draft being all that is wanting. These balls of wrought-iron can be made with a good profit (if the furnace is built near the mines of mineral and coal) for 14 dollars per ton. In the single article of railroad iron it will be a saving of millions of dollars to the United States; for, by statistical tables, we have already sent to England for that article alone the sum of 32,000,000 dollars. The inventor says that with a capital of 100,000 dollars 40 tons of railroad iron can be manufactured every 24 hours.

**WINDOW DUTIES — IMPORTANT TO THE ASSESSED.**—It has been the practice, in most country districts, to include in the assessment for the window duties all external openings for the admission of light and air, whether the same be glazed or not. It now appears from a competent authority, that such a practice is contrary to the intent of the Act of Parliament. A deputation having waited on the Chancellor of the Exchequer on the subject of those duties, the hon. gentleman declined holding out any hopes of a modification of the duties; but on its being urged by the deputation how necessary free ventilation was for the promotion of health, a Commissioner of Assessed Taxes, who was present to assist the Chancellor, gave it as his opinion that perforated plates of zinc may be placed in external walls for the purpose of ventilation, without being liable to the duty. His opinion, if correct, is a very important one; and it would be worth while to bring the subject formally before the local commissioners.

**MONUMENT TO THE EARL OF DURHAM.**—Preparations have been actively entered upon for the erection of the contemplated memorial in honour of the late Earl of Durham, on Pensher Hill, near the base of which runs the great northern line of railway. The design is an approximation to the Temple of Theseus, and is to consist of a rectangular base of solid masonry, 97 feet long, and 54 in width, rising 10 feet above the platform of the hill, and surmounted by 18 lofty, open, equi-distant columns, supporting at each end a magnificent pediment, and on each side a broad, deep entablature, which will serve as a promenade. The edifice will be at least 70 feet in height, and will be visible from a great portion of the surrounding country. The trench for the foundation has been dug down to the solid limestone rock.

**WESTMINSTER IMPROVEMENTS.**—The Lord Mayor and Aldermen, the governors of Emanuel Hospital, have let the extensive gardens at the back of that charity on building leases; and the governors of the Blackcoat School have given notice to the tenants on Palmer's Village estate to quit, with a view to the laying out of new streets there.

A very large quantity of copper coins, of the reign of Elizabeth, amounting to 14 pounds weight, were found lately by a labourer, while digging in a field in the townland of Brigh, barony of Ennismore. The figures 1601 are quite legible upon them.

The total number of schools in France is 40,000, communicating instruction to about 3,000,000 of children and adults.



**EDITORSHIP.**—It is not so easy to write for a newspaper as people suppose. A man may be a good scholar, a profound thinker, and a vigilant observer of passing events, without being able to write for a newspaper. The power of writing a leading article for a newspaper is a *tact* which few possess, and which I have known many, with all their learning and diligence, unable to acquire. It requires a large amount of information on a variety of subjects, and a readiness of application that must never be at fault, or the writer will fail. Few remember that the editor is always writing against time, and the inexorable printer must have his copy, so that there is no time to revise and amend; but as slip after slip is written, the devil snatches it away, and one half is usually set up in print before the other half is written. This exacts a decision of thought and a facility of writing which, like poetry, seems rather a gift of nature than an acquired faculty. And as to brevity, this is the most difficult task of all. Diffuseness in a leading article is like water added to brandy—what it gains in quantity it loses in quality. It is comparatively easy to write a long article; but to be able on the instant, without previous consideration, without having time to consult either books, or dates, or authorities, to concentrate the pith and marrow of an argument in a few sentences: to grasp, as it were intuitively, the real question at issue, and to present in a striking point of view that particular truth or illustration which the public mind is prepared to receive, and would be disappointed to miss,—is, in my opinion, one of the most difficult operations of the human mind.—*Rowcroft's "Man without a Profession."*

**Fossil Remains in Devonshire.**—There has been dug up in Devonshire, near Barnstaple, a fragment remarkable as being, it is said, almost the only instance of antediluvian animal remains having been found in that quarter, in the shape of the tusk of a fossil elephant, or horn of some extinct monster, of that class. It was lying on the lower gravel bed, with a superincumbent stratum of four or five feet of the blue clay; above which is about six feet of the yellow plastic clay, with several feet of coarse gravel and soil above. The tusk must have been of large dimensions, about eighteen inches in circumference, and from four to seven feet in length. It has the shape, grain, and markings of ivory, but the colour and consistence are those of horn, and it contains a considerable degree of elasticity.

**SCOTT MONUMENT.**—Upwards of 2,000*l.* have been contributed by the public since the meeting, three months ago, in the Music-hall; the deficit, therefore, does not now amount to 1,000*l.*, and as sub-crip-tion-lists still lie at the banks, club-houses, and at the Royal Institution, the admirers of the genius of our illustrious countryman now in Edinburgh who have not yet contributed, have still an opportunity afforded them of assisting in completing this national monument to his memory.—*Edinburgh Post.*

**IRON TRADE.**—An enormous furnace has been blown in at Blaensfon. The greatest number of men they have employed are at present fully occupied, with every prospect of a continuance.—*Carmarthen Journal.*—We are most happy to learn that matters proceed very improvingly with our manufacturing neighbours, and that by every calculation we may expect a successful career in the iron trade for three or four years, if parties do not become too inflated with sanguine hope, and put "too many irons in the fire."—*Monmouthshire Merlin.*

The following is a copy of a joiner's bill for jobbing in a Roman Catholic church in Bohemia. "For solidly repairing St. Joseph, 4*s.*; for cleansing and ornamenting the Holy Ghost, 6*d.*; for repairing the Virgin Mary, before and behind, 6*d.*; for turning a nose for the devil, putting a horn upon his head, and gluing a piece to his tail, 4*s.* 3*d.* Total—9*s.* 3*d.*"

**ERECTION OF AN INN AT ALDERLEY.**—The Manchester and Birmingham Railway Company have determined upon building a splendid inn on their line at the Alderley station. The building is to be commenced forthwith, at a cost of nearly 4,000*l.*

## Current Prices of Metals.

June 5, 1844.

	£.	s.	d.	£.	s.	d.
SPELTER.—Foreign ton ..	0	0	0	22	15	0
" For delivery ..	0	0	0	22	0	0
ZINC.—English sheet ...	0	0	0	30	0	0
QUICKSILVER .....	per lb.	0	4	6		
IRON.—English bar, &c. per ton 6	5	0	6	10	0	
" Nail rods .....	0	0	0	7	0	0
" Hoops .....	8	0	0	8	10	0
" Sheets .....	9	5	0	9	10	0
" Cargo in Wales ...	5	10	0	5	15	0
" Pig, No. 1, Wales	0	0	0	4	0	0
" No. 1, Clyde	3	2	6	3	5	0
" For., Swedish ...	9	15	0	10	0	0
" Russian, c&cnd .....				16	10	0
STEEL.—Swedish keg, p. ton 17	0	0	0	18	0	0
" " Faggot .....	0	0	0	18	0	0
COPPER.—English sheathing, per lb.	—	0	0	9	½	
" Old .....				0	0	8
" Cake p. ton .....	0	0	0	83	0	0
" Tile .....	0	0	0	82	0	0
" S. American ...	72	0	0	75	0	0
TIN.—English, blocks, &c. cwt .....				5	13	0
" bars ...	0	0	0	3	14	6
" Foreign, Banca ...	0	0	0	3	8	0
" Straits ...	0	0	0	3	4	0
" Peruvian ...	0	0	0	3	0	0
Tin plates, No. 1 <i>c.</i> p. box	1	8	0	1	12	0
" No. 1 <i>x.</i> .....	1	14	0	1	18	0
" wasters 3 <i>s.</i> p. box less						
LEAD.—Sheet milled .....	per ton	17	15	0		
" Shot, patent ...	0	0	0	19	15	0
" Red .....				21	10	0
" White .....				23	10	0
Pig-LEAD.—English ...	0	0	0	17	0	0
" Spanish ...	0	0	0	16	10	0
" American ...	0	0	0	16	5	0

SHORT and MAHONY, Brokers,  
1, Newman's-court, Cornhill.

## Tenders.

TENDERS delivered for building, in carcass, ten fourth-rate Dwelling-Houses, situate in New West-street, Bermondsey, for Messrs. H. B. Clarke and John Richard Harris.—Mr. G. Allen, Architect, Tooley-street, Southwark. May 24.

Smith .....	£1,796
Tyler .....	1,767
Taylor and Watkins .....	1,737
Sugden .....	1,695
Shoult .....	1,660
Heath .....	1,615
Coleman .....	1,599
Wells .....	1,599
Harnden .....	1,558
Rider .....	1,464

TENDERS delivered for Hotel at the Railway Terminus, Southampton, for G. Radley, Esq.—F. W. Vigers, Esq., Surveyor. May 31.

Roe .....	£2,700 0
Grimon (Southampton) .....	2,480 8
Nicholson (Wandsworth) .....	2,447 0

TENDERS delivered for a new Public House, to be built at Bell Green, Sydenham.—Mr. Wm. Smith, Royal-hill, Greenwich, Surveyor. May 28, 1844.

Livingston .....	£711
Millar .....	564
Major .....	560
Wade .....	550

The latter tender was accepted.

TENDERS delivered for two villas to be erected in the Camden-road.—R. Pulford, architect.

Mr. Coleman .....	£2,130
Messrs. Lawrence .....	2,092
Mr. Hellis .....	2,010
Mr. Lucas .....	1,708
Mr. Nicholls .....	1,637

## TO OUR CORRESPONDENTS.

We have received four letters relative to the drawings of Tudor arches, but have not yet been able to go through their reasoning; we intend to publish such of them as we approve of.

We have received "Remarks on the subject of the stone altar and credence-table recently erected in St. Sepulchre's Church, Cambridge, and resolutely opposed by the Rev. R. R. Faulkner, Incumbent;" also new parts of Knight's London; and Mr. Johns' work on the new church at Jerusalem.

For the names of granite-merchants in London we refer to our advertising columns.

## NOTICES OF CONTRACTS.

For the necessary Iron-work of a Bridge of one arch, 110 feet span, to be built over the river Avon, at Bath.—Drawings, &c., Mr. Manners, Architect, 1, Oxford-row, Bath. June 25.

For building Sewers in Old Fish-street, Trinity-lane, &c.—Plans, &c., Sewers' Office, Guildhall. J. Dear, Prin. Clerk. June 25.

For the excavation, masonry, and rudding of two Gas-holder Tanks, at the Radford Station of the Nottingham Gas-light Company.—Drawings, &c., Messrs Hawkster and Jackson, Nottingham. June 14.

For building a House and Premises suitable for a baking business, for Mr. Hobbs, Woolwich. June 13.

For the executing of certain works for the improvement of Aberdeen Harbour.—Plans, &c., Mr. Abernethy, 69, Waterloo-quay, Aberdeen. June 20.

## COMPETITIONS.

Plans, &c. are wanted for erecting a Church at Southwall, Notts.—Further particulars, Mr. Wm. Shaw, Southwall, Notts. The successful competitor will be employed on the usual terms.

A PREMIUM of 100 guineas will be given by the commissioners appointed to erect a lunatic asylum in the vicinity of the city of Kingston, Jamaica, to the person who shall produce the best plan, accompanied by a specification, of an asylum for the reception of the insane. The institution must accommodate 200 patients of both sexes, with the requisite number of officers and servants, and due attention must be paid in the plan to the proper classification of the patients, and the climate in which the asylum is to be erected. The plan must also show how an addition may be made for the accommodation of 100 patients more, in the event of such being required. The plans must also set forth the probable cost of the building in stone, brick, and iron. The principal portion of the building is to be allotted to paupers, but the commissioners are desirous of setting aside sufficient apartments for the accommodation of about 25 persons in better circumstances of life, and direct the attention of competitors to this arrangement. The plans must be prepared and transmitted to William Burge, Esq., Q.C., 1, Paper-buildings, Temple, on or before the 22nd of August next.—London, May, 1844.

The Committee of the Hardy Testimonial are desirous of receiving designs for a plain and substantial pillar, to be erected on the summit of a high and exposed hill, not far distant from the sea, at an expense of from 500*l.* to 750*l.* A premium of 10 guineas will be given to the architect whose plan shall be adopted. The designs are to be forwarded to the hon. secretary, at Dorchester, on or before the 14th day of June next.

## MEETINGS OF SCIENTIFIC BODIES,

To-day and during the ensuing week.

SATURDAY, JUNE 8.—Royal Botanic, Regent's-park, 4 P.M.

MONDAY, 10.—Geographical, 3, Waterloo-place, 8½ P.M.

TUESDAY, 11.—Medical and Chirurgical, 53, Berners-street, 8½ P.M.; Civil Engineers, 25, Great George-street, 8 P.M.; Zoological, 37, Pall Mall, 8½ P.M.

WEDNESDAY, 12.—Society of Arts, Adelphi, 8 P.M.; Geological, Somerset House, 8½ P.M.; Pharmaceutical, 17, Bloomsbury-square, 9 P.M.

THURSDAY, 13.—Royal, Somerset House, 8½ P.M.; Antiquaries, Somerset House, 8 P.M.; Royal Society of Literature, 4, St. Martin's-place, 4 P.M.; Medico-Botanical, 32, Sackville-street, 8 P.M.

FRIDAY, 14.—Astronomical, Somerset House, 8 P.M.; Philological, 49, Pall Mall, 8 P.M.

SATURDAY, 15.—Asiatic, 14, Grafton-street, 2 P.M.

CIVIL ENGINEERS.—Library open from 9 A.M. to 9 P.M.

ENTOMOLOGICAL SOCIETY.—Museum open every Tuesday from 1 till 7.

SOCIETY OF ARTS.—Open every week-day except Wednesday, between 10 and 2. Admission by members' tickets.

LINNEAN SOCIETY.—Library open on Monday, Tuesday, and Thursday, and the Museum on Wednesday and Friday, from 12 o'clock to 4 in the afternoon.

GEOLOGICAL SOCIETY.—Library and Museums are open every day from 11 till 5.

ROYAL ASIATIC SOCIETY.—Museum is open every Tuesday, Wednesday, and Thursday, from 11 till 4.

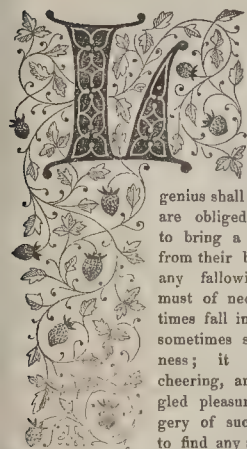
UNITED SERVICE INSTITUTION.—Museum open all the year, from 11 till 5 in summer, and from 11 till 4 in winter. Admission by members' tickets.



# The Builder.

NO. LXXI.

SATURDAY, JUNE 15, 1844.



ITERATURE requires to be constantly stimulated; those who, instead of waiting till

genius shall inspire them, are obliged periodically to bring a literary crop from their brain, without any following interval, must of necessity sometimes fall into repetition, sometimes savor of dryness; it is therefore cheering, amid the mingled pleasure and drudgery of such a pursuit, to find any approval, any

applause; and still more cheering is it to find such labour acknowledged to be useful; it requires a man of some nerve, who, careless of evil advice, while regardful of the truth, remains unbiassed and unquailing; he must expect, indeed as he would were he to found a new college, or any other useful or noble institution, to meet occasionally with a Thersites, a Marplot, who, alike destitute of genius and goodness of disposition, has activity and industry enough to undo the effect of all his ancestors' labours of worth, so that the world would have profited more, except for example's sake (the mere culprit's value), if his whole race had never existed; in the case of a new college or other noble foundation, the offending member may be expelled, as indeed has invariably been found to have been a providential ordinance of fixity before the world began; but in the case of the literary man, the dependence alone is to be had in quietude, keeping from entanglement, taking no revenge but that silence which can alone stop the mouth of such a Thersites—a line of conduct which forms the only punishment which the worthless babillard can feel.

In going through the amended proposed Metropolitan Building-Act, we have, amid such drudgery, received some consolation by finding two-thirds at least of the observations which we published upon the subject have been strictly attended to, and the suggestions which they contained have been embodied in the revised Bill. We this week give quotations from the Bill in its present form, with our own remarks; but as we have as it is, been compelled to go to great length, we are obliged to reserve till next week all observations of a general nature.

To the Bill as amended has been prefixed a copious table of its contents, occupying four pages, under several heads, in which are stated the particulars of each department.

In the preamble, page 1, the words "And forasmuch as many buildings and parts of buildings unfit for dwellings are used for that purpose," are still used, though lame, and would, as Mr. Bartholomew suggested, be improved by being altered to "Buildings unfit

for the purposes of human habitations are used as human dwellings."

Page 2, line 15.—The words "It is expedient to make provision for the adoption of all such expedients" are still retained, and require to be improved in form.

Page 3, line 18.—The words "or place along which carriages are intended to pass," is not sufficiently explicit; the kinds of carriages ought to be stated, and if wheel-barrows or trucks of any kind would be considered as coming within the meaning intended.

The word "floor to mean the horizontal platform," would be of no avail, if the flooring descended, as in the case of a theatre.

Page 4.—The sentence should run, as suggested by Mr. Bartholomew, "or in the occupation of such ground or tenement, other than as a tenant from year to year, or other than as a tenant-at-will."

Page 5.—"And to all places lying within two hundred yards from the exterior boundaries of the district hereby defined." We do not find that any provision is now made for giving the district surveyors power to act over this extra territory.

Power to be given to THE COUNCIL to extend the operation of the proposed Act "TO ANY PLACE WITHIN TWELVE MILES OF CHANCING-CROSS." We must again urge that some clear definition ought to be given how admeasurement would be made, whether by the roads or by the compasses upon a map; also, if this be carried, whether a town or other place, partly within the twelve miles, is to be wholly included or wholly excluded. And we must again state that no provision whatever is made for the counties of Essex and Hertford to bear any portion of the expense of the official referees and registrar of metropolitan-buildings, nor for increasing, according to extent of land, the number of official referees, nor for altering the scale of contribution according to the increase in some counties. We must also again urge we think the council would be so delicate in the use of this power, that the provision would consequently become obsolete; and that we think a matter so strictly penal as a Building-Act should depend alone upon statutory enactment. St. Paul's Cathedral, we again repeat, is nearer the centre of the metropolis and the villages immediately adjacent to it. We therefore think it the vertex from which the admeasurement in question should be taken.

Page 7, line 26, "in accordance to," should be altered to "in accordance with."

The unjust clauses relative to building contracts have been withdrawn, as Mr. Bartholomew suggested, as too arbitrary to form part of an English statute, and the following improved form has been substituted:—

"Provided always, and be it enacted, with regard to any building of whatever class, so far as relates to the modification of any written contract or agreement now in force for erecting or altering such building (other than a contract or agreement in the nature of a building lease), that it shall not be lawful to execute such contract otherwise than in conformity with the provisions of this Act; but it shall be lawful for either party, and he is hereby entitled to deviate from such contract, so far as any part thereof may remain to be executed after this Act shall have come into operation; and the alterations rendered necessary by this Act shall be performed as if this Act had been in force when such contract was entered into; and that if the parties thereto shall disagree about the differ-

ence of the costs and expenses of the works when performed according to the provisions of this Act, and the works as stipulated for in such contract, then upon notice being given in writing by one party to the other, it shall be lawful for either party, and he is hereby entitled, to refer the matter to the surveyor, who shall determine the same, subject to appeal as aforesaid to the official referees; and the award of such official referees shall be final and binding on all the parties, and in all respects as if such award had formed part of the contract; and the costs of the reference shall be borne by all, or any, or either of the parties, in such manner and proportion as the surveyor, or, in case of appeal, as the official referees shall appoint."

"Provided also, and be it enacted, with regard to any building of whatever class, so far as relates to the modification of any lease, or agreement for a lease, being of the nature of a building lease, whereby any person may be bound to erect buildings, that, notwithstanding any thing herein contained, it shall be the duty of such person and he is hereby required to erect every building agreed to be built by such lease or agreement, according to the conditions rendered necessary by this Act, in the same or like manner as if this Act had been passed and in operation at the time of making such lease or agreement; and that on the completion of such work, and on giving fourteen days' notice of his intention to apply to the official referees on this behalf, it shall be lawful for the lessee or tenant, and he is hereby entitled, to require the official referees to ascertain what loss, present and prospective, has been occasioned by the observance of the provisions of this Act, and to determine whether he is entitled to any and what compensation, whether by payment of money or reduction of rent, or both, or otherwise; and that, on the receipt of such requisition, and on proof of due notice thereof having been given to the lessor or owner of the building, it shall be the duty of such official referees, and they are hereby required, to proceed to ascertain if any and what loss has been so occasioned, and to determine if any and what compensation, as aforesaid, be due in respect thereof, and their decision in the matter shall be final."

We must still exercise our fears as to some parts of the working of the following clauses:

"And, for the purpose of preventing the express provisions of this Act from hindering the adoption of improvements, and of providing for the adoption of expedients either better or equally well adapted to accomplish the purposes thereof; be it enacted, with regard to every building, of whatever class, so far as relates to the modification of any rules hereby prescribed, that if, in the opinion of the official referees, the rules by this Act imposed shall be inapplicable, or will defeat the objects of this Act, and that by the adoption of any modification of such rules, such objects will be attained either better or as effectually, it shall be the duty of such official referees to report their opinion thereon, stating the grounds of such their opinion, to the Commissioners of Works and Buildings; and that, if on the investigation thereof it shall appear to the said Commissioners that such opinion is well founded, then it shall be lawful for the said Commissioners, or any two of them, to direct that such modification may be made in such rules as will, in their opinion, give effect to the purposes of this Act; and that, although such official referees shall be of opinion that such modifications are not requisite or admissible, yet if any party interested present to the official referees a representation, setting forth the grounds whereon such modification is claimed, if shall be the duty of the official referees, and they are hereby required to report such representation, as well as their opinion thereon, to the said Commissioners, with the grounds of such their report and opinion; and that thereupon, if the said Commissioners think fit, it shall be lawful for them, or any two of them, to direct the official referees to make such order in the matter, as may appear to them to be requisite."



"And be it enacted, with regard to buildings already built, so far as relates to the building thereof in conformity with this Act, in respect of the required area, or in any other respect than the required height and thickness of walls, that if a full compliance with the provisions of this Act be attended by extreme loss and inconvenience, then, subject to the report of the official-referees, and to the consent of the Commissioners of Works and Buildings, and to such terms as the said Commissioners may impose in that behalf, it shall be lawful for the parties concerned to rebuild such buildings on the site of the old buildings as near as may be practicable, but so that, nevertheless, both the party-walls and the external walls be of the required height and thickness."

Page 10.—And be it enacted, with regard to such buildings and works, so far as relates to the supervision thereof, that if in building, pulling down, rebuilding, cutting into or altering any part of any building, or party-wall or external-wall, or chimney-stack or flue, drains, cess-pools, or any work or other thing be done contrary to or not conformably with the rules and directions of this Act; then forthwith it shall be the duty of the surveyor and he is hereby required to give forty-eight hours' notice, according to the form (No. 4.) in the Schedule of Notices, or to the like effect to the builder, foreman or principal workman on the premises, to amend any such irregularity which he shall deem to have been committed; and forthwith, after the expiration of such notice, to proceed to inspect the work."

It would be preposterous to require forty-eight hours' notice to be given before any drain or cesspool suddenly stopped, or any chimney on fire, could be opened or wrought upon. These words have been added without due consideration.

Page 11.—The words "It shall be the duty of the architect or builder" to give notice to the official-referees, still remain by no means sufficiently definite.

We must again throw out a caution as to the mischief which, for some time to come at least, may occur, from the vast and inquisitorial powers which the exercise of the unconstitutional provisions contained and attempted to be wielded under the 15th and 16th clauses of the proposed Act. Architectural construction is now undergoing a kind of earthquake change which will throw up to view advanced science. It would be against all human probability to suppose that the official-referees should be so far in advance as to the superior economy and development of the true Freemasonry which is working its silent course, to be in justice set over the works of an accomplished architect, his superior, practising within his district. It would indeed be unsafe, for fear of his quiet and reputation, for any officer to annoy such an architect; but we think the exercise of the power still would tend to abuse; and we deem it behoves the profession of architects to think very seriously of the matter. This we know,—often those buildings are the most broken and dangerous which have by unskillful plodders been erected out of a huge mountain of materials; because they are not constructed as Nature ever forms her works.

Our advice has been taken, which recommended a more explicit mention of the nature of the drawings which are proposed to be exhibited to the official-referees.

The 20th clause still requires, for clearness, a portion of it to run thus, viz. "the pulling down of timber partitions which are the property of different owners, or which are occupied by different persons, for the purpose of rebuilding in lieu thereof proper party-walls."

The 21st, 22nd, and 23rd clauses are altered as follows:—

"And be it enacted, with regard to such works, so far as relates to the notice thereof, that unless the adjoining owner consent thereto, it shall not be lawful for the "building-owner" to execute such works, until he have given notice thereof to such "adjoining owner;" and every such notice, with regard to the pulling down, rebuilding, or repairing of party-walls or party fence-walls, must be given one month, at the least, before the survey of the work is to be made, and four months, at the least, before the work is to be commenced; and every such notice, with regard to the pulling down and rebuilding intermixed walls and timber partitions, must be given four months, at the least,

before such work is to be commenced; and every such notice must be in the form or to the effect of the notice (No. 8) for that purpose contained in the Schedule of Notices hereunto annexed."

"And be it enacted, with regard to every such work, so far as relates to the modification thereof, in order to render it suitable to the premises of the adjoining owner or his tenant, that if the adjoining owner, at any time within two months after the receipt of the said notice from the building-owner, give notice of his desire that any modification be made in the work so as to render it suitable to his premises, according to the form (No. 18) in the Schedule of Notices, or to the like effect, then, within seven days after the receipt of such notice, it shall be the duty of the building-owner, and he is hereby required, to signify his consent to, or dissent from, such modification or delay; and that if the building-owner do not within such seven days signify his consent to such modification, then it shall be lawful for the adjoining owner, and he is hereby entitled, to require the building-owner not to commence the work until the official-referees shall have determined thereon; and that if within seven days thereafter application be made in writing to the official-referees, according to the form (No. 19) in the Schedule of Notices, or to the like effect, and notice thereof to be given to the building-owner, according to the other form (No. 20), then, within ten days after such application, it shall be the duty of the official-referees to signify their decision thereon, and it shall be the duty of the building-owner not to commence the work till the decision of such official-referees shall have been given; and that if, within the period of four months from the date of the first notice, such adjoining owner do not make any objection or any requisition in conformity with this enactment, then, subject to the provisions of this Act with regard to such works, it shall be lawful for the building-owner, and he is hereby authorized to proceed to execute the same."

"And be it enacted, with regard to every such work, so far as relates to the modification thereof, in order to render it suitable to the premises, or to the convenience of the adjoining owner or his tenant. That if the adjoining owner at any time within two months after the receipt of the said notice from the building-owner, give notice of his desire that the work be delayed, so as to cause it to be executed at a more seasonable or a more convenient time in reference to the business, or to the family or domestic arrangements of such adjoining owner or his tenants, according to the form (No. 18) in the Schedule of Notices, or to the like effect; then, within seven days after the receipt of the notice thereof, it shall be the duty of the building-owner, and he is hereby required to signify his consent to, or dissent from, such modification or delay; and that, if the building-owner do not within such seven days signify his consent to such modification or delay, then it shall be lawful for the adjoining owner, and he is hereby entitled, to require the building-owner to delay the work until the official-referees shall have determined thereon; and that, if within seven days thereafter application be made in writing to the official-referees, according to the form (No. 19) in the Schedule of Notices, or to the like effect, and notice thereof to be given to the building-owner, according to the form (No. 20), then within ten days after such application it shall be the duty of the official-referees to signify their decision thereon, and it shall be the duty of the building-owner to delay the same till the decision of such official-referees shall have been given; and that if, within the period of four months from the date of the first notice, such adjoining owner do not make any objection or any requisition in conformity with this enactment, then, subject to the provisions of this Act with regard to such works, it shall be lawful for the building-owner, and he is hereby authorized, to proceed to execute the same."

Clause 25.—We must repeat, the terms "the building-owner," are not sufficiently explicit.

Clause 26.—"And be it enacted, with regard to sound party-walls, so far as relates to the rebuilding thereof, at the expense of the building-owner, that if the owner of one of the buildings desire to rebuild such party-wall, then, on giving to the adjoining owner the

required notice of four months, according to the said form (No. 8), it shall be lawful for such building-owner, and he is hereby entitled to pull down and rebuild such party-wall; but upon condition that he do pay all the costs and charges thereof, and also all the expenses incidental to the execution of the work, including therein the fees and expenses of the survey, and the fees of the surveyors, and in respect of any services performed by the official-referees."

We cannot admit the principle, that although a person pay all the expenses of and attendant on rebuilding a party-wall, he should have the unquestioned right of doing so to the annoyance of his neighbour, the ouster of him from occupation, and the destruction of any business which he may carry on.

Clause 28.—According to our suggestion, in the under pinning of party-walls, after the words "with good sound stock-brick and tiles, or slates bedded in cement," have been added the words "or with other proper and sufficient materials."

Clause 29.—We must again put in our attestation of unqualified disapprobation of the imperative condemnation and rebuilding of a party-wall which may be alleged to have been carelessly damaged; sufficient reparation or rebuilding, as the case may need, is all that any sensible man ought to require.

Clause 32.—"And be it enacted, with regard to party fence-walls, so far as relates to the reparation and rebuilding thereof, that if the owner of any of the premises parted thereby give one month's notice of his intention to the adjoining owner to repair, pull down, and rebuild the same, it shall be lawful for him so to do; and if the wall be below the height of nine feet from the ground on either side, then either to raise it to that height, or to pull it down and to rebuild it to that height; but upon condition that he do pay all the expenses thereof; and that if a building be to be erected against such party fence-wall, and such wall be not conformable to the requisites prescribed for a proper party-wall for a building of that class and rate, then it shall be lawful for the building-owner, and he is hereby entitled to pull down such party fence-wall; but upon condition that he do pay all the expenses thereof; and also that he do make good every damage which shall accrue to such adjoining premises by such rebuilding."

To this clause has been added the following:—

"Provided always, with regard to the expense of so pulling down such party fence-wall, and rebuilding the same, that if thereafter the adjoining owner use such party-wall for any purpose to which, if it had not been pulled down and rebuilt, it would not have been applicable, then to such extent as such adjoining owner shall so use such wall, the building-owner shall be entitled to be reimbursed the expenses of so pulling down and rebuilding such wall; provided also, with regard to any such party fence-wall, so far as relates to the limitation of the height thereof, that if any party desire to raise such wall so as to screen from view any offensive object or neighbourhood, then, on application to the official-referees, it shall be lawful for them to authorise such work, but not so as to obstruct the free circulation of the air, or to injure the property adjoining to or in the neighbourhood of such wall."

The latter exception we think very unwise. It is well known that one neighbour annoys another by raising a stack of workshops or other buildings which overlook his premises: we were lately called in to such a case, where the offended neighbour had a family of seven grown-up daughters, and at all times whenever they appeared in the garden they were subject to observation and other annoyance; besides which they could not without offence against decency resort to the water-closet, which lay at the end of the garden.

Clause 33.—"And be it enacted, with regard to the party timber partitions of existing buildings belonging to different owners, so far as relates to the pulling down thereof, and any wall under or over the same, that if one of the buildings be rebuilt, or if one of the fronts of any such buildings be taken down to the height of one story, or for a space equal to one-fourth of such front from the level of the second floor upwards, then, without the con-



sent of the adjoining owner, but upon giving the requisite notice, according to the forms (Nos. 11, 12, 13), in the Schedule of Notices, or to the like effect, it shall be the duty of the building-owner, and he is hereby required to pull down such timber partitions, and the walls under or over the same, and in lieu thereof to build a proper party-wall; and that at the expense of the owners of all the premises parted thereby."

Our suggestion has been followed, except that we think the plural "*buildings*" before the words "be taken down," does not convey the meaning intended, which we suppose to be the front of any one building.

The 36th clause *still* leaves undefined the ultimate fate of goods, &c., removed to safe custody, for the purpose of performing work under the Act.

In clause 37, alteration has been made as we suggested, so that stone-walls having window-lights made improperly in them, are not compelled to be stopped with brick.

In clause 39, relating to building to party-walls chimneys for adjoining owners, according to our suggestion, the following words have been added, after the words "the adjoining owner shall give instructions in writing, or by a plan," the words, "*and elevations or other sufficient drawings.*"

In clauses 41 and 42 provision has been, according to our suggestions, made for determining who shall be paid first any claims upon the proceeds of insufficient sales of the materials of ruinous buildings, and also for payment of the expenses of surveying in case of such insufficiency.

(To be continued in our next.)

#### GRAY'S THURROCK CHURCH, ESSEX.

SOME short time since architects were invited to send in designs for the restoration of Gray's Thurrock Church, Essex, and it seems a great number of designs were received. We have seen one of these, which is by Mr. East, who, we remember, was so highly spoken of in all the Kentish papers some short time since for the alterations then making to churches in that county under his superintendence. The competing architects were requested to attend personally with their designs, which request, we are informed, was complied with, when they were told the committee would meet the following Tuesday, to select designs for the approval of the vestry; on the following Friday these designs were returned to the different competitors, with the information that Mr. Eale's design was accepted. We have ever been of opinion that men who have studied, and are thoroughly acquainted with it, should be employed to make the selection; we have seen Mr. East's drawing which, being made suitable for the very limited sum proposed for the restoration, is, of course, in a simple and church-like style; we shall say nothing of any particular items of freemasonry which it exhibits, intending by and by to take up the subject upon an enlarged scale; but without further remark, we shall conclude by saying we shall rejoice to hear the committee are pleased with their selection.

#### INSTITUTION OF CIVIL ENGINEERS.

June 11.—The President in the chair.

The paper read was by Mr. A. Angus Croll, Assoc. Inst. C. E., on the purifying of coal gas, and the application of the products thereby obtained to agricultural and other purposes. The author commenced by stating that in London alone the rental of the different gas-companies amounted to 600,000*l.* per annum; but it appeared, however, to be capable of much greater extension than it had yet attained, as it might be rendered much purer by the removal of ammonia, which is the origin of the unpleasant odours and unhealthy effluvia exhaled during its combustion. This desirable object was now accomplished by means of Mr. Croll's process, which was simple, efficacious, and highly economical; the process consisted in passing the gas through a solution of sulphuric acid of the strength of two and a half pounds of oil of vitriol to 100 gallons of water, and by a continuous supply

of acid, so that the proper amount of free acid may be always kept in the vessel, the whole of the ammonia in the gas is abstracted, preventing the corrosive effect of this impurity on the fittings and meters through which it was transmitted, and rendering the gas capable of being used in dwelling-houses; and also enabling the companies to use dry lime instead of wet lime purifiers, without producing any nuisance on the opening of the vessels, by which a considerable saving is effected, while, at the same time sulphate of ammonia of great purity is obtained, and of such a strength, that the evaporation of one gallon produces eighty ounces of this valuable salt, instead of fourteen ounces, which was the quantity rendered under the former process. This process has been introduced at the Chartered, the Imperial, and the Phoenix gas establishments, from which several tons are produced weekly, independent of the provincial gas companies. The author concluded his paper by shewing the great advantage to agriculture by the application of this produce to the land, besides its extensive application to the arts and manufactures; he stated that various experiments upon an extensive scale had been tried with this manure, with great success; one example will suffice for giving an idea of its powers. One-half of a wheat-field was manured with sulphate of ammonia, at the rate of 1½ cwt. to the acre, and at a cost of 1*l.* 2*s.*, the other half with the ordinary manure; the latter produced only 23½ bushels of corn, but the former, under the treatment of sulphate of ammonia, produced 32½ bushels, thus shewing the immense advantage derived from its application. The author gave an extract from the "*Mark Lane Express*" of the 27th May last, from which it appeared that seeds of wheat steeped in sulphate of ammonia on the 5th of July had, by the 10th of August, tillered into nine, ten, and eleven stems of nearly equal vigour, while seeds of the same sample unprepared, sown at the same time and in the same soil, had not tillered into more than two, three, and four stems.

In the discussion that ensued, in which Professor Grahame, Mr. Cooper, and many members of the institution took part, the advantages of the system were confirmed, and the necessity for its extension insisted on. The various modes of purifying gas, and the value of the products obtained for agricultural purposes, were canvassed at length. It was stated that seeds steeped for 40 hours in a solution of 1*lb.* of sulphate of ammonia to 1 gallon of water, sown in unmanured land, produced a heavy crop, and remained green during a dry season, when every other kind of vegetation became yellow, and withered. Another remarkable feature was that faded flowers, when plunged in a weak solution of sulphate of ammonia, were in a short time perfectly restored and revived, and that plants watered with it attained extraordinary health and beauty.

The great loss resulting from the leakage of the gas through the joints and the pores of the cast-iron pipes was incidentally mentioned, and it was stated that in some instances it had amounted to from 25 to 75 per cent. of the total quantity produced.

The following papers were announced to be read at the meeting of June 18:—

No. 688. "On the means of rendering large supplies of water available in cases of fire, and on the application of manual labour to the working of fire-engines," by J. Braidwood, Assoc. Inst. C. E.

No. 692. "On the construction and proper proportions of boilers for the generation of steam," by A. Murray, Assoc. Inst. C. E.

#### WATERLOO-BRIDGE.

THE half-yearly general meeting of the Waterloo-bridge Company was held at the Crown and Anchor, in the Strand, on the 6th inst. The Rev. Mr. Rush, the chairman of the committee, was called on to preside. The secretary read the report, which stated that the tolls received during the half-year ending the 23rd of February last, amounted to 9,087*l.* 1*s.* 10*d.*; whilst the tolls of the corresponding period of the preceding year amounted to 6,521*l.* 7*s.* 5*d.*, being an increase of 2,566*l.*, of which increase 2,330*l.* 5*s.* 3*d.* arose from

horses and carriages, and 236*l.* from foot-passengers. The tolls since February last, up to the 5th inst., amounted to 2617*l.* 5*s.* 9*d.*, more than was received in the corresponding period of last year. The last dividend which the managing directors were enabled to make was 1*l.* 4*d.* on each annuity, but, owing to the improved finances of the company, after making a further dividend of 12*s.* on each annuity, there would remain at present a surplus of 1,640*l.* 12*s.* 11*d.*. The company proposed to go to Parliament to obtain a bill to enable them to form an embankment, or public terrace, on the banks of the Thames, by which means their property would be greatly improved. The report was confirmed and adopted. Mr. Romeo Coates then said that he had a motion to make on the subject of the bridge. Waterloo-bridge was the finest structure of the kind in the world. As a specimen of beautiful architecture, it stood unrivalled; but it was similar to the Irishman's benefit, which was all loss and no gain. Twenty years ago the proprietors might have disposed advantageously of the bridge by means of a public lottery, and he did not see why the same course should not be adopted at the present time. This was the age of speculation. The bridge had cost two millions of money. Why not dispose of it, after the example of some west-end shop-keepers, "at a tremendous sacrifice," when they "are selling off at less than prime cost?" This wealthy metropolis contained 2,000,000 inhabitants; he would, therefore, propose that the bridge should be disposed of by means of a public lottery, and his scheme was this—they should issue 1,000,000 of tickets at a guinea each, and the prizes should be limited to 50, the fortunate holders of which should be, by the terms of the lottery, compelled to sell the bridge to government on the best terms they could, on the understanding that it should be thrown open to the public. The chairman asked Mr. Coates if he was really serious in his motion? Mr. Coates—Never more so. (Great laughter.) The chairman reminded Mr. Coates that before they could sell the bridge by lottery as he proposed, they must first procure an Act of Parliament to authorize the lottery. Mr. Coates—Oh, precisely; that is what I mean.—The chairman said the motion of the hon. gentleman came upon the meeting by surprise, and he thought they ought not to discuss it at the present time. It was a very important subject, and in order to entertain the motion, they ought to summon a special general assembly of proprietors for the purpose, and so insure a very full meeting.—Mr. Coates said he entirely agreed with the chairman; and in order to bring the subject fully before the proprietors, he would cause a special meeting to be summoned, and for this purpose would for the present withdraw his motion, which he had no doubt would be carried when brought before a full meeting of proprietors. A vote of thanks having been given to the chairman, the meeting separated.

#### ART AND SCIENCE.

BY JOHN BYRNE, PROFESSOR OF MATHEMATICS.

ART and science are, indeed, words of familiar use and great significance, yet their difference is but little understood. In the present age, notwithstanding its improvements in knowledge, exists the popular prejudice of terming almost every thing a science. It is true, if we consult our best dictionaries for an explanation, we find nothing but an abstract definition, in which one obscure notion is substituted for another, that rather casts obscurity than light on the subject. I have therefore attempted to draw a more visible parallel between art and science. To science belong such things as men may discover by the use of sense and reasoning, such as the laws of nature, the affections of bodies, the rules and criterions of right and wrong, truth and error, the properties of lines and numbers, &c. To art, on the other hand, belong such things as mere reason would not have attained, things which lie out of the direct path of deduction, and which require a peculiar cast, or turn of mind, to see or arrive at. Or a science is a series of deductions or conclusions which every person endued with sound faculties may, with a proper degree of attention, see and draw; and a formed science is no more than a system of such con-



clusions, relating to some one subject, orderly and carefully laid down in words, comprehending the doctrine, reason, and theory of the thing, without any immediate application thereof to the offices of life. Thus, natural philosophy, ethics, logic, pure mathematics, statics, &c., are sciences. An *art* is not founded on self-evident principles or demonstrations, but is a system or collection of rules, precepts, inventions, or experiments, which being duly observed, make the things a man undertakes succeed, and render them advantageous and agreeable. Thus, grammar, painting, poetry, sculpture, music, anatomy, dancing, &c., are arts.

The difference between the two may be illustrated by that between wit and humour: the former is a general faculty of exciting agreeable and surprising pictures in the imagination, and the latter a particular one: the former is pure and absolute in its kind, the latter tinged with something foreign and complexional. In this sense an art and a science only seem to differ as less and more pure; and my parallel becomes more like that species of mathematical lines, which continue to draw nearer and nearer to each other, *ad infinitum*, yet never meet. But a science is a system of deductions, made by reason alone, undetermined by any thing foreign or extrinsic to itself. An *art*, on the contrary, requires a number of data and postulates to be furnished from without; and never goes any length, without, at every turn, needing new ones. Nevertheless, an art appears to be a portion of science or general knowledge; considered, not in itself, as a science, but with relation to its circumstances or appendages. In a science, the mind looks directly backwards and forwards to the premises and conclusions: in an art we look laterally to the concomitant circumstances. A science, in fact, is to an art, what a stream running in a direct channel, without regard to any thing but its own progress, is to the same stream turned out of its proper course, and disposed into cascades, jets, cisterns, ponds, &c., in which case the progress of the stream is not considered in regard to itself, but only as it concerns the works, every one of which modifies the course of the stream and leads it out of its way. It is easy to trace the course of the former from its rise to its issue, as it flows consequently; but a man, ever so well acquainted with this, will not be able to discover that of the latter, as it depends on the genius, humour, and caprice of the engineer who laid the design.

The arts which relate to the sight and hearing, Bacon observes, "are reputed liberal beyond those which regard the other senses, which are chiefly employed in matters of luxury." The mechanical arts are generally practised by means of a machine, and require more the assistance of the hand and body than the mind. However, there is no truth more undeniable than this, that if man were not really and truly a free agent, there would be no such thing as an art, at least in the sense here understood: but art would only be a name given to that system or series of effects to which man is made by nature, and in her hands, subservient; and might, with equal reason, be attributed to such effects as any other natural production is subservient to. But we must not forget those enigmatical theories, visionary speculations, and chimerical inventions, which are never matured into either an art or a science; their novelties often please, but with novelty they pass away, and now ones succeed, "like leaves of trees," though not by a similar order of nature, but because things that become useless soon become contemptible.

Among the scientific vagaries of the present time, we have phrenology, phrenomagnetism, mesmerism, clairvoyance, the homeopathic system, and some others: to say the least of them, they are more adapted to catch and entangle the mind, than to instruct and inform the understanding; and, perhaps, without saying the most of them, the words formerly applied to *alchemy* would define any one of them. "It is an art without sense, the beginning of which is deceit, its middle labour, and its end beggary." But when error has obtained the mastery of our minds during our tender age, we are seldom at pains to shake off its yoke, but rather strive to subject ourselves more to it.

Again, when we hear of a young person knowing a great many sciences and arts, we suspect him of understanding them very imperfectly, or of knowing only the elements at most, which is in fact knowing nothing at all. Some, it is true, have a passion for universal knowledge, and this universal knowledge consists in knowing by memory a few words upon every subject, which convey no kind of ideas. To those that would form a new science, or extend the boundaries of the old, we would suggest the following rules, which are strictly observed by mathematicians:—

1. To offer nothing but what is couched in clear express terms; and to that end, to begin with definitions.
2. To build only on evident and clear principles: hence it is necessary to proceed only from axioms or maxims.
3. To prove demonstratively all the conclusions that are drawn hence; and for this purpose, to make use of no arguments or proofs, but definitions already laid down, axioms already granted, and propositions already proved; which serve as principles to things that follow.

#### ENERGIATYPE.

A NEW PHOTOGRAPHIC PROCESS.

(From the *Athenaeum*.)

WHILE pursuing some investigations, with a view to determine the influence of the solar rays upon precipitation, I have been led to the discovery of a new photographic agent, which can be employed in the preparation of paper with a facility which no other sensitive process possesses. Being desirous of affording all the information I possibly can to those who are anxious to avail themselves of the advantages offered by photography, I solicit a little space in your columns for the purpose of publishing the particulars of this new process. All the photographic processes with which we are at present acquainted, sufficiently sensitive for the fixation of the images of the camera obscura, require the most careful and precise manipulation; consequently, those who are not accustomed to the niceties of experimental pursuits are frequently annoyed by failures. The following statement will at once show the exceeding simplicity of the new discovery.

Good letter-paper is first washed over with the following solution:—

A saturated solution of succinic acid	2 drachms.
Mucilage of gum arabic	1 1/2 "
Water	1 1/2 "

When the paper is dry, it is washed over once with an argentine solution, consisting of one drachm of nitrate of silver to one ounce of distilled water. The paper is allowed to dry in the dark, and it is fit for use; it can be preserved in a portfolio, and at any time employed in the camera. This paper is a pure white, and it retains its colour, which is a great advantage. At present, I find it necessary to expose this prepared paper in the camera obscura for periods, varying with the quantity of sunshine, from two to eight minutes, although from some results which I have obtained, I am satisfied that by a nice adjustment of the proportions of the materials, a much shorter exposure will suffice. When the paper is removed from the camera, no trace of a picture is visible. We have then to mix together one drachm of a saturated solution of *sulphate of iron*, and two or three drachms of the *mucilage of gum arabic*. A wide flat brush saturated with this solution is now swept over the face of the paper rapidly and evenly. In a few seconds, the dormant images are seen to develop themselves, and with great rapidity a pleasing negative photographic picture is produced. The iron solution is to be washed off as soon as the best effect appears, this being done with a soft sponge and clean water. The drawing is then soaked for a short time in water, and may be permanently fixed, by being washed over with ammonia—or perhaps better with a solution of the hyposulphite of soda, care being taken that the salt is afterwards well washed out of the paper. From the pictures thus produced, any number of others, correct in position and in light and shadow, may be produced, by using the same succinated papers in the ordinary way; from five to ten minutes in sunshine producing the desired effect.

The advantages which this process possesses over every other must be, I think, apparent. The papers are prepared in the most simple manner, and may be kept ready by the tourist until required for use; they require no preparation previously to their being placed in the camera, and they can be preserved until a convenient opportunity offers for bringing out the picture, which is done in the most simple manner, with a material which can be anywhere procured.

Anxious to give the public the advantage of this process during the beautiful weather of the present season, I have not waited to perfect the manipulatory details which are necessary for the production of portraits. It is sufficient, however, to say, that experiment has satisfied me of its applicability for this purpose.

Prismatic examination has proved that the rays effecting this chemical change are those which I have elsewhere shown to be perfectly independent of solar light or heat. I therefore propose to distinguish this process by a name which has a general rather than a particular application. Regarding all photographic phenomena as due to the principle *ENERGIA*, I would nevertheless wish to distinguish this very interesting process as the *ENERGIATYPE*.

I enclose you a few specimens of the results already obtained. The exceeding sensibility of the *Energiatype* is best shown by an attempt to copy engravings or leaves by it. The three specimens I enclose were produced by an exposure of considerably less than one second.

ROBERT HUNT.

Falmouth, May 27, 1844.

#### OPEN GRATES AND STOVES.

Few circumstances, perhaps, have tended so much, in modern times, to alter the state of health, as affected by the internal arrangements of dwelling-houses, as the great reduction in the altitude of the chimney-piece, and the more skilful disposition of the fire-place for the economy of fuel. The practical consequence has been, that a less amount of air is necessarily forced through individual apartments, when the coldness of the weather renders it necessary to keep the windows shut; and, above all, that the air which does pass to the fire is, in general, below the level of the head, and exercises, accordingly, little or no purifying influence upon that portion of the atmosphere which is within the zone of respiration. The cottage grate, so very generally introduced of late years, is extremely comfortable, from the low position of the fuel, the comparative absence of iron, and the powerful radiating influence of the fire-bricks that form the backs and sides; but the smaller the apartment, and the more perfect its construction, the less must it alone be trusted to in securing ventilation. A common fire heats an apartment, in general, almost solely by radiation, excepting the influence of the flue upon the wall. In some few cases, fire-places have been constructed so as to partake in part of the character of stoves. The peculiar advantages of a fire-place are not merely its power of warming an apartment, the circulation of air which it induces, its accessibility, and the influence of the light which it evolves; but the very grateful effect which it produces after the body has been chilled by any special cause, whether in doors or out of doors, stimulating it, and exciting the circulation to the greatest degree which may be considered agreeable, and permitting each individual to adjust the distance which is most suitable to his own constitution, and the previous exposure to which he may have been more immediately subject. The light, also, is not to be considered a mere nominal advantage, but a real and positive benefit, affecting the whole system by its physical action, independently of the cheerful impression which its liveliness is calculated to excite, and which, to many, is so engaging, that they feel as if they were not alone when they have the company of a glowing fire. These considerations will probably always sustain the open fire-place, in countries where fuel can be procured with sufficient economy; but its disadvantages, in other respects, compared with the stove, are marked, particularly its expense, its local action, the dust it is apt to produce, and the frequent attendance which it requires.—*Reid on Ventilation*.



## WOOL MOSAIC.

This is the name given to a fabric produced by a process lately invented by Messrs. Lebenheim and Muller. The fabric has somewhat the appearance of printed velvet, but the allocation of the different threads by which the pattern is formed is very similar to that in the manufacture of Florentine mosaic. Pictures can be copied by the ingenious machinery employed, and the most delicate tints of the best German wool-work appear as if interwoven in the pile of the velvet, although the process by which the effect is produced is much more expeditious than that of weaving would be. We cannot of course describe the mode of working the machinery without revealing the inventor's secret; but it may, however, be stated that when once the tedious task of selecting and placing the different shades of threads together has been accomplished so as to complete one subject, be it a flower, a figure, a landscape, or even an historical picture, of each of which the persons selecting the yarns has a copy before him, the ends of these threads are closely placed together and then cut, as the surface of each subject proves. A cotton or woollen cloth, of the same dimension, with a solution of India-rubber, is then pressed upon the surface, and a slice cut off; and by means of a finishing process the wool becomes so embedded on the India-rubber cloth, that the two substances appear like one. The same course of pressing an India-rubber cloth on the surface and slicing it off is gone through till there remains no more to be sliced off. The applicability of the invention may be carried on to various purposes and a vast extent. Palaces or large mansions could be decorated with this beautiful fabric, which for softness of colours could not be equalled by any tapestry, the Gobelins not excepted.

## LECTURES ON ARCHITECTURE AND ANTIQUITIES.\*

## Lecture III.

## ON GRECIAN ARCHITECTURE—THE DORIC STYLE.

UNTIL the time that Stuart and Revett published their valuable work on the Antiquities of Athens, it is surprising how little was known on the subject of Grecian architecture. Their first volume appeared A.D. 1762, and opinions began to waver as to the superiority of the Roman and Italian schools, which had prevailed through the influence of Sir Christopher Wren and Inigo Jones. It was seen that in the examples which in this volume were for the first time presented to the public, the true models of design were to be found, the real proto-types of excellence; that here was the pure fountain-head, whereas they had been accustomed to drink from a polluted stream. Stuart and Revett's succeeding volumes served to heighten the impression which had been made; emulation was excited among travelling artists, who set not up their tent, as formerly, in Rome, as if there were nothing beyond worth knowing, but they journeyed on among the different islands of the Mediterranean, where the Greeks had colonies, and thus by their labours much information has been gained in addition to that previously acquired, so that we may now be said to possess a knowledge of nearly all the existing remains of Greek temples. The many public buildings which have been erected in England of late years in this beautiful style form a convincing proof that it has recovered a place for itself which it is not likely soon to lose, especially when it is found, by a judicious selection of examples, to be quite as tractable as the Roman and Italian styles, and as well adapted to domestic dwellings, as to structures of more pretension to magnificence. Besides deriving information from professional writers, I am not aware that I can do better than quote occasionally the opinions of one profoundly versed in Grecian art, and it will be sufficient to mention the name of Lord Aberdeen, to insure attention to his remarks. "All nations," says that noble author, "in the most advanced state of civilization, have been unanimous in their admiration of Grecian architecture; and, indeed, such admiration appears to have been generally considered as inseparable from the existence of real taste and knowledge in the art."† And again,

"The pleasure which is derived from surveying the ancient models of Grecian architecture is incalculably heightened by ideas connected with learning, with science, and with art, accompanied, as they ever must be, by all the nameless charms which imagination combines with the history of the Greeks, and which it throws over all their productions." (P. 4.)

As the work by Stuart treats chiefly of temples and structures which he found at Athens, we shall commence our inquiries there first, although some older examples are to be found at Corinth and elsewhere; but the rules of the Greek orders are so strict, especially of the Doric, that the general resemblance between the earliest and latest examples of Doric buildings is very striking. It will be necessary to give a hasty sketch of the early history of Athens.

The received opinion among Greek writers of the latest period of their literature, and repeated in modern times, is that Cecrops, an Egyptian, a native of Sais, led a colony into Attica, 1556 years B.C.\* Mr. Mitford, in his History of Greece, thus alludes to his arrival: "He found the inhabitants rude and ignorant, a circumstance far from adverse to his purpose of forming a settlement. The country was well adapted also for this purpose. On the verge of a plain, watered by two small streams, a haven presented itself, commodious for the vessels of the time. Between the streams, near their junction, about three miles from the shore and five from the haven, a rock, rising nearly perpendicular on all sides, had every advantage for a fortified post. This was afterwards the celebrated Acropolis. Cecrops divided the territory into twelve villages, and made this rock his residence and called it Cecropia. It was recommended to the patronage of the Egyptian goddess whom the Greeks worshipped by the name of Athena, and by the Latins of Minerva. Herodotus, Plato, Strabo, and Diodorus, who all travelled into Egypt, agree in representing the Athenian Minerva as the same goddess who was peculiarly worshipped at Sais in Egypt. Cecrops reigned fifty years, and by his moderation and prudence he succeeded in softening the rude manners of the native inhabitants; he gave them laws and regulations, and introduced the worship of those deities which were held in adoration in Egypt. He taught his subjects to cultivate the olive, though the Greeks, not satisfied without procuring for it a divine invention, ascribed its origin to Minerva, who had a contest with Neptune concerning the right of giving a name to the capital of Cecropia. The assembly of the gods settled this dispute by promising the preference to whichever of the two should give the most useful and necessary present to the inhabitants of the earth. Neptune struck the ground with his trident, and immediately a horse sprang forth; Minerva produced the olive, and obtained the victory by the unanimous voice of the gods, who observed that the olive, which is the emblem of peace, is to be preferred to the horse, the symbol of war. The victorious deity called the capital Athens, and became the tutelary goddess of the place." Sixteen kings succeeded Cecrops, among whom was the celebrated Theseus. The adventures of any man of great strength and daring in those days were afterwards magnified into the wonderful, and indeed superhuman; accordingly, much that is recorded of Theseus is so extravagant, that doubts have been entertained whether he was more than a fabulous hero, but the fact of his having really existed and reigned over the Athenians seems to be generally recognized. He appears to have rendered great services to them, made new regulations and enacted new laws; he shewed as much wisdom as valour, and Plutarch says that he built a council-hall and courts of justice. He instituted a great festival, called Panathænea, the feast of all the gods. In memory of his services and great exploits, his countrymen erected in his honour the magnificent temple which bears his name, and of which we shall presently take notice.

The 17th and last king of Athens was Codrus, who generously devoted himself to

death to save his country; this occurred 1070 years B.C. The kingly government had therefore lasted 486 years. On the death of Codrus, the name of king was abolished, and the state was governed by perpetual archons (*ἀρχων*, a chief) for 317 years (that is, from 1070 to 753 B.C.);\* then by archons of ten years, which form of government lasted 69 years; and lastly the archons were chosen yearly. It was under this democracy that the Athenians signalized themselves by their valour in the field, and by their munificence, and their cultivation of the fine arts. They were deemed so powerful by the Persians, that Xerxes, when he invaded Greece, chiefly directed his arms against Athens, which he took and burnt, 480 B.C., after the inhabitants had deserted it. But the Athenians obtained a splendid revenge in the battles of Marathon, Salamis, Platæa, and Mycæe. The city was rebuilt and fortified, 475 B.C., by Themistocles, whose projects were carried into execution by Cimon, and a new magnificent harbour and town were built from the designs of "Hippodamus, a Milesian architect, the first among the ancients who invented designs for new cities." (Thirlwall's Greece, vol. II., ch. 16.)

But it was reserved for the age of PERICLES to adorn the city of the virgin-goddess with the splendid edifices, whose ruins now remain for our admiration and instruction. That great man (whose father was Xanthippus, the conqueror at Mycæe) obtained by his address and talents the principal share in the government of the state for nearly forty years (he died 429 B.C.); and having great taste himself, he was fortunate in being seconded in his efforts to ornament his native city by obtaining the assistance of men of talent and genius, and particularly of the celebrated PAIDIAS, the greatest sculptor that ever lived. The Parthenon, or the temple dedicated to the virgin-goddess Minerva (the Greek word *παρθένος* signifying a virgin), was designed by Ictinus and Callicrates, about the year 438 B.C., whilst Phidias wrought the marble figures into life by his magic touch. This temple, erected upon the site of the old Hecatompodon, destroyed by the Persians, is justly looked upon as the finest example of the Grecian Doric, and has excited for twenty-two centuries the admiration and delight of all who have seen it. With the words of the noble author before quoted all will probably agree. "In the majestic simplicity of its general design, the grandeur of its proportions, and the exquisite taste and skill displayed in the execution of its ornamental parts; it is undoubtedly the most perfect, as well as deservedly the most celebrated production of Grecian art." (Lord Aberdeen's Inquiry, p. 142.) Before we proceed to a description of this and other Doric temples, it may be as well to make a few remarks for the better understanding of the orders.†

## THE DORIC ORDER.‡

THE DORIC, like the other orders, may be said to consist of two great divisions or parts, a supporting, and a supported, mass; the supporting mass is the column, and the part sustained is called the entablature. The Grecian Doric column has no base; it consists, therefore, of but two parts, a shaft and a capital. In the Ionic and the Corinthian, the only other Greek orders, bases are almost invariably added. The entablature in all the three orders is divided into three great leading parts, viz., the architrave, the frieze, and the cornice. A Doric temple is generally placed upon a platform of two or three steps, which gives to the structure a breadth and air of firmness. On the upper step rest the columns; these (as a general rule) are always fluted, the flutes from sixteen to twenty-four

\* Medon, the son of Codrus, was the first archon, and the dignity remained in his family for 200 years.

† As these lectures were originally composed for non-professional persons, the indulgence of the reader is claimed for the insertion of those observations which may seem too much like the mere alphabet of architecture; but it is yet possible that among the patrons of THE BUILDER some may be found, to whom such definitions may be welcome. I propose to give in separate papers, among other illustrations of classical architecture, the derivation and meaning of some of our architectural terms, which are too often alluded to in a very loose and vague manner. Some of these glossarial notes have already appeared.

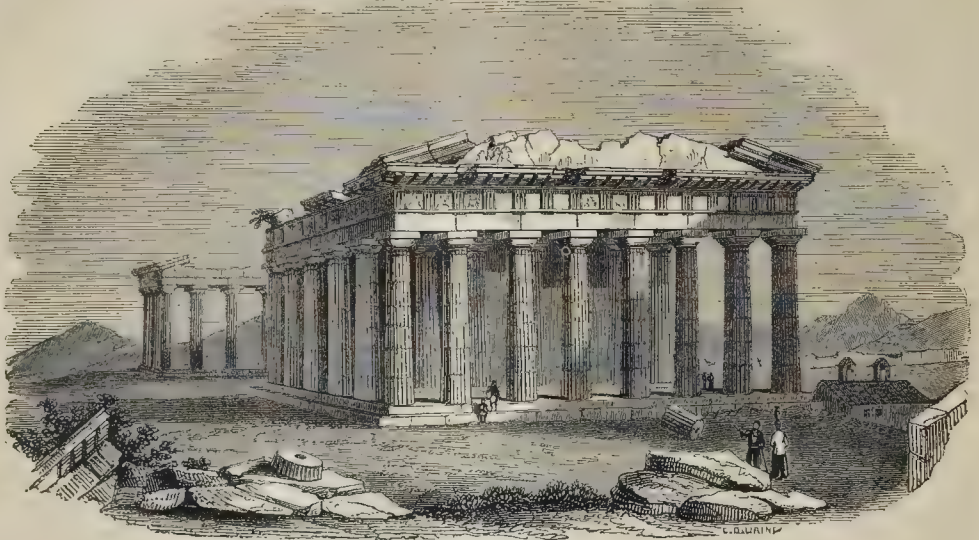
‡ [We have to apologise to our subscribers for the matter upon the orders of architecture, and for some errors in the wood-cutting, which appeared in THE BUILDER at the close of last year, being at that period literally without an editor.—Ed.]

\* Continued from p. 295.

† "An Inquiry into the Principles of Beauty in Grecian Architecture, with an Historical View of the Rise and Progress of the Art in Greece." By George, Earl of Aberdeen, K.T., &c. Murray, 1822. (P. 1.)

\* The latest historian of Greece, the present Bishop of St. David's, better known to the learned world as the profoundest Greek scholar of the day, CONNOR THIRLWALL, considers that "the Egyptian origin of Cecrops is extremely doubtful."—Hist. of Greece, vol. I., p. 67.





VIEW OF THE PARTHENON.

in number [but twenty almost invariably], being segments of circles, which meet in a sharp edge or arris, which is peculiar to this order. In the examples of the Doric at Eleusis, Rhamnus, Sunium, and Thoricos, there is a slight fillet between the flutings, but hardly amounting to more than 1-12th of an inch. The width of a column at bottom, called the diameter, or the measure through, determines the other proportions of the order. The height of Doric columns varies in different examples, from four times the lower diameter at Corinth, to six times and a half, as in the portico of Philip of Macedon. The purest examples are about five diameters and a half in length. The capital, which is usually in height rather less than half a diameter, consists of a necking immediately above the shaft, composed of three or four rings or annulets which follow the shape of the column; above them is the moulding called the echinus, also circular in plan or horizontal section, and above this the crowning member of the capital in the shape of a square flat tile, called the abacus, from the Greek word ἀβάξ, *abax*, signifying a calculating table or board. Some writers consider the hypotrachelium as part of the capital. As the columns would be unsightly if they were of the same thickness all the way up, the shaft is diminished by making the upper diameter about one-sixth less than its lower diameter. In the best ancient examples, the columns do not diminish in a line drawn at once from the top to bottom (although often so represented on paper), but they have a slight curve outwards,\* which is called the *entasis* (from the Greek) or swelling; this method, first observed and verified by Messrs. Cockerell and Allason (it is however mentioned by Vitruvius), should not be imitated in modern times, unless in works on a large scale, and then it should not be thrust upon one's notice, as it too often is a deformity instead of a beauty. The entablature varies in examples from one and three-quarters to two diameters in height, of which about four-fifths are divided in nearly equal proportions between the architrave and frieze, and the cornice occupies the remaining fifth.† The architrave, i.e., chief beam (compounded of the Greek word ἀρχή, *arkhos*, chief, and the Latin word, *trabs*,

a beam), is in the purest Doric always plain, and it consists of but one face; it rests immediately upon the columns, for which reason its Greek name is Epistylum, from ἐπὶ, *upon*, and στῦλος, a column. The architrave is divided from the frieze above it by a projecting continuous fillet, called the *tænia*, which has below it guttae, or drops, whose situations are regulated by the triglyphs above. From the frieze being generally ornamented with a representation of living creatures, it was called by the Greeks the *Zoëphorus*, from Ζῷον, an animal, and φέρω, *fero*, I bear. The triglyphs, composed of two Greek words signifying three channels or glyphs (τρεῖς, pronounced like *trice*, and γλυφή, *gluphe*, a carving or cutting), are the distinguishing features of the Doric order, and, indeed, they determine the length of the front of a building, for a triglyph must be over the centre of a column. A space is then set off equal in height to the triglyph, which is called the metope; another triglyph is drawn, then another metope, and then a second triglyph, the centre of which is the central line of the next column, and so on to the number of columns required; thus there will be always a triglyph over every column and one between. This arrangement is considered to produce perfection in a temple, as in the Parthenon, but it was departed from where greater width was required between the columns to admit chariots, as in the Propylæa. The columns at the angles of porticos are not placed so as that the triglyphs should be over their centres, for the triglyph being at the extreme angle, a line let fall from its outer edge will touch the base of the column; so that there is less space between the angle columns and those next to them, than there is between the centre columns. The spaces between the triglyphs, called the metopes (and originally left open, as the name imports), are generally ornamented with sculptures. The cornice or crowning part of the entablature projects over it, thereby forming a covering and protection to the work beneath. It consists of several members, well adapted to their situations; as it projects considerably, the under part or soffit of the cornice is ornamented with mutules or rectangular blocks, from which depend guttae or drops; there is a mutule over every triglyph, and one between, over every metope. To hide the end of the roof, the front and opposite ends (if there are two porticos) are carried up, and form what is called the pediment, a kind of flat gable, a graceful finish to the temple; the tympanum, or triangular part which is inclosed within the cornices, is ge-

nerally filled with sculptures. Distinguishing names are applied to the Greek temples, according to the manner in which they are disposed. When a portico consists of four columns in front, as in the Ilissus, it is called tetrastyle (from τετρα, *four*, and στῦλος, a column); if there are six columns, as in the Theseum, it is hexastyle (a favourite arrangement with the Greeks); if seven columns, as at Agrigentum, it is termed heptastyle; if there are eight, as in the Parthenon, it is called octastyle; if nine, it is enneastyle, as at Paestum; if ten, as in the temple of Jupiter Olympius at Athens, it is termed decastyle; if there are twelve, as in the temple of Ceres at Eleusis, it is called dodecastyle. When the columns of a temple are placed between antæ or pilasters, it is called a temple in antis; this was probably the earliest form of building temples.\* Other names also apply to various dispositions in the buildings. In general, in the Greek temples the columns on the flanks are double the number of those in the front and one more, counting the columns at the angles twice over: thus, if the front had eight columns, as in the Parthenon, there were seventeen in each flank; if there were six in front, as in the temple of Theseus, there were thirteen on the flank, and so on.† In the temple of Apollo at Bassæ, the portico has six columns and the flanks fifteen, counting both angles.

As the PARTHENON is generally considered to be the most perfect Doric edifice ever designed, of that structure we shall first speak. When Sir George Wheeler and Dr. Spon visited it, A.D. 1676, the temple was entire. In the year 1687 Athens was besieged by the Venetians, when a shell falling on the structure, the Parthenon was reduced to the state in which it was seen by Stuart and Revett. This celebrated temple had at each end a portico of eight columns in front, and on the sides were thirty more, making forty-six to the colonnade which surrounded the cell of the building. The breadth of the front of the

\* [It is dangerous even merely to mention temples which have in their facades an odd number of columns, for fear of drawing out the bad taste of the perverse; the prudent reader will observe this deformity is only to be met with in very early and immature specimens of unknown origin.—Ed.]

† [Mr. Bartholomew notices the same, and adds, the Roman method was to give the flanks twice as many columns as the front, and one less; thus the flanks of the Parthenon would by the Roman method have had fifteen columns instead of seventeen.—Ed.]

\* This principle, which adds strength to the column, is well understood by naval architects, as applied by them to ship-masts of any great size.

Mr. Bartholomew discovers the same symmetry observed by the ancients in entablatures as in Doric capitals; in the finest Doric examples the architrave and frieze are equal in height, and the diagonal breadth of the cornice is of the same dimension.—Ed.]



building is 101 feet,\* the length 227 feet on the upper step, and the height 65 feet. The columns are 6 feet 1 inch in diameter, those at the angles are 2 inches more;† the distance from column to column is 7 feet 11 inches. The sculptures of the Parthenon extended to a range of 1,100 feet, consisting of upwards of 600 figures. Behind the great porticoes there are two of smaller dimensions, which are called the pronaos and posticus; these inner porticoes have in each six columns. The portion of the building inclosed by the columns was divided by a cross wall into two parts, whereof the larger, called the cella or naos (ship), answered to our nave; the smaller part, in which was the public treasury, was called the opisthodomus. In this part, ac-

ording to Wheeler, were six columns, but no vestige remains of them. The cell, where was placed the famous statue of Minerva by Phidias, was open to the sky in the centre\* (whence such a temple was called hypæthral, from the Greek *hypo*, under, and *aitheira*, æther, air), having a colonnade round it supporting a gallery above, in which was a second row of columns. These have all likewise disappeared, but the circles were traced by Stuart on the pavement whereon the lower range of columns had stood. The sculptures in the pediment of the eastern front represented the introduction of Minerva among the assembled gods, giving us an admirable idea of the mythology of the ancients, each of the deities being distinguished by his or her peculiar symbols. The metopes or spaces between the triglyphs recorded the battles between the Centaurs and the Lapithæ, a fruitful subject of illustra-

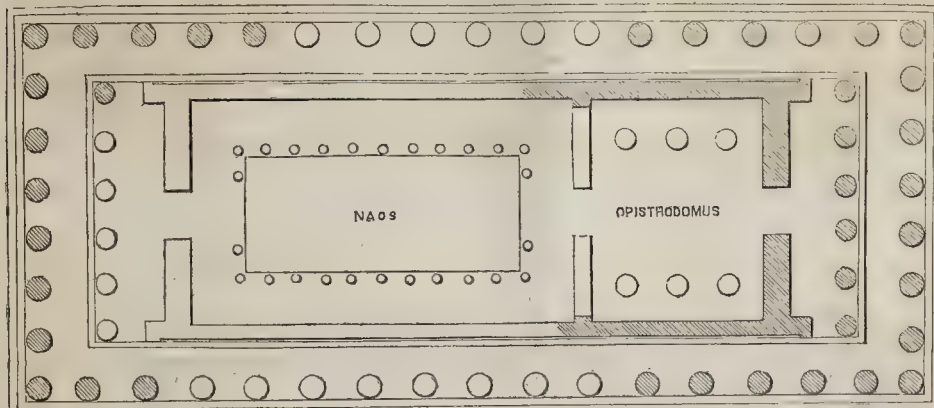
tion among poets as well as sculptors, and a favourite theme with the Greeks, from their famous heroes Hercules and Theseus bearing a prominent part in the contest; fifteen of these metopes are in the British Museum. The western pediment contained a representation of the contest between Minerva and Neptune (in the opinions of Colonel Leake and Mr. Cockerell, this contest was in the eastern pediment); but the most celebrated sculpture is that which represents the Panathænic procession: this composition is 3 feet 4 inches high, and was continued in the frieze quite round on the outside wall of the cell of the temple. The figures in these groups, which occupy a length of 520 feet, are generally allowed to be of finer execution than those in the metopes. "With respect to the beauty of the basso-relievos," says the great Flaxman, "they are as perfect nature as it is possible to put into the compass of the marble in which they are executed, and that of the most elegant kind." Another sculptor, Rossi, calls them "jewels."

G. R. F.

\* The Parthenon was also called Hecatompedon, signifying that its length was 100 feet.

† [To make them appear as large as the others, according to the rule given by Vitruvius, who is esteemed by the wisest modern architects, and deprecated by few besides the ignorant.—Ed.]

‡ The late Professor Wilkins does not admit the probability of the Parthenon having been hypæthral, a mode of construction which he considers contrary to the religious superstitiousness of all nations of antiquity.



PLAN OF THE PARTHENON.

## PETRALOLOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 291.)

THE mountains of porphyry exhibit no stratification, but, in common with the crystalline rocks, the masses, while in their disintegrated state, appear to have been formed by one long uninterrupted sequence of events, the material being chiefly such as is supplied within the ocean waters; consisting of granular particles of sand, intermixed with the resolution of ascendant animals and vegetables belonging to the ocean; and when uniting with these, the animal and vegetable matters of *terra firma* branching forth into varieties, as the accident of combination may determine. But although in mountain masses, it is presented to us only in the compact state, and wholly devoid of stratification; still, under other aspects, we find it, in common with granite and gneiss, occasionally presenting a schistose texture.

Hornstone porphyry is generally red or green, with a splintery fracture, and inclosing crystals of quartz and felspar: this kind of porphyry is very common to the deserts of Africa, and its surface, when cut and polished by art, presents a striking similitude to shell marble, the crystalline change of the organic body in decomposition obliterating the organic figure: there are other varieties which, as Lesk observes, are a kind of mean between siliceous schistus and argillite. Hornstone porphyry is distinguished by its hardness, slight transparency, and want of lustre, and much of it appears to be ill cemented together, like some kinds of breccia. This variety belongs to the siliceous rocks.

Felspar porphyry, the base of which is commonly red, compact felspar, inclosing crystals of felspar and quartz, is analogous in mechanical composition with granite and gneiss, con-

sisting of a silico-aluminous base, uniting compact particles and crystals of granitic character, sometimes containing iron and lime, and where hornblende is added, being known as sienitic porphyry. When the felspar predominates, it is utterly impossible to distinguish this kind of porphyry from granite, and mineralogists are very apt to confound the one with the other. Pitchstone porphyry, as its name implies, has a basis of this material, and is either red, green, brown, grey, black, or yellow, of various shades, having generally many colours at once in the same specimen. These varieties of porphyry are very common to the Egyptian and Arabian deserts, and were much used by the ancient Egyptians for tombs, and also for building and ornamental purposes: they differ from hornstone in texture, being manifestly conglomerate masses of marine earthy bodies, and particles of bodies cemented by silica, and sometimes by silica and alumina conjointly. Clay porphyry, or the argillaceous porphyry of Kirwan, has generally some shade of grey, or greenish grey, or brown, or blackish, or reddish brown, or isabella yellow. This species is allied to the argillaceous rocks, being indurated clay, cementing or uniting in its matrix crystalline felspar, or hornblende, and granular particles. This porphyry is often of very little use for building or other purposes, for the felspar or hornblende soon moulders and loses its lustre. The varieties of this kind are exceedingly numerous, embracing a variety of composition analogous to beds of common clay, or the simplicity of composition of the pure ocean marls. Kirwan distinguishes four sorts of porphyries, viz. the siliceous, argillaceous, muriatic, and calcareous, most of which may be compact, schistose, or slaty. It is certain that in soils of primary and mixed qualities, disposed within tropical regions, porphyry may be observed in all its various shades of induration and composition, and the stones used by the ancients have been invariably quarried

from the oceanic strata, the same rock still exhibiting varying degrees of hardness, according to the extent of exposure of its surface to atmospheric air. Its general composition in the friable state is that of sands, calcareous matter, mollusca, and other oceanic animal and vegetable *reliquæ*; and it is governed in its changes by the same laws that govern the disposition of meane aggregates. For instance, a number of pebbles and sand particles become united with calcareous matter lying, as it were, held together by a portion of dry mortar; in this state they are exposed to unceasing atmospheric heat without moisture; the calcareous matter silicifies, and gradually the whole is united in one inseparable mass; the several pebbles forming its component parts still continuing changing, without regard to each other, until the end to be obtained is effected. The same simplicity of change is observable in vast masses of earth; local change in the disposition and association of the bodies of which it is composed, general change produced necessarily by these local changes, and under the influence of a continuous high degree of atmospheric heat. The same kind of organic matter may undergo many changes and produce many results widely differing from each other; they may silicify as flint, decompose as sands, pass by transition into the mineral state as coal, or become converted into gems. The like versatility in nature's operations is observable in aggregate masses; thus we find the material constituent of many rocks is precisely the same, and, in numerous instances, is so mechanically, nay, in some, mathematically disposed, as to denote beyond the possibility of doubt the one common origin; and yet how different does it appear in the regular sequence of events: on the one hand, we observe it assuming the most elegant and regular crystalline arrangement; on the extreme of the other, it is a mere concrete mass, without form or order in its internal character. Carbonate



of lime is presented to our view in upwards of six hundred different forms, although, on analysis, we find the same simple uncombined material; how much more then must we expect variety in the mechanical and chemical arrangements of structure of bodies containing more numerous compounds and a variety of elementary products. In fact there is an endless variety constituting each division, presenting every shade of combination with each other; this renders a correct classification of rocks an impossibility, and the utmost we are enabled to do is to mark out the type or head of each distinguishing class, and the most commonly known variety of each.

Uniformity of disposition, composition, and character marks many of the sand formations of the earth; when these are united by some one common basis or cement, this uniformity of character is still maintained in sandstone; if further change takes place, and the siliceous particles thus held together assume the crystalline texture, we have still uniformity in the quartz rock; and when, under local circumstances of atmospheric or aqueous action, the quartz decomposes, we have still the same uniform matter constituting marl or clay. It is the same with many calcareous beds; they may consist of finely comminuted particles of mollusca and other *exuvia* of the deep, or they may consist either with these particles and aggregate bodies of myriads of creatures, varying from each other in organic structure and mechanical arrangement of particles, but the same simple elements pervades both, and in the fossil and mineral kingdom we acknowledge the result as one consisting of the same common elements of carbon and lime; but when matters of the earth blend with these primary products of the waters, when the *reliqua* of animals and vegetables containing other earths than lime, other compounds than carbon, enter into and become a portion of their constituent parts, the line of distinction is removed, and variety is characterized by the measure of each compound constituting in unity the one whole.

It requires no very great stretch of learning to discover the characteristic qualities of rock; the experienced architect is guided by practice, by example, as well as by the existing monuments of the past; the conditions of their existence have never hitherto been laid down in writing, and therefore it is that the inexperienced man, rushing to conclusions unaided by science, has erected monuments to his own folly, using the material most easily quarried, without reference to its durability or to the local influences to which it is exposed. But it is not the mere builder alone who generalizes on the uses and disposition of rock; the man of science generalizes also, and, following the vicious example set by Werner, fashionably instructs you that one small portion of the earth, one insignificant locality scarcely perceptible on the map of the globe, is a fair sample of the whole, and that the law of production is in like manner uniform. It is, therefore, the more necessary, that the architect should have scientific knowledge on these matters, that he may be enabled to detect a concealed enemy in the material he is about to employ, because he is told that such material was employed some four or five thousand years since, and is still existing unimpaired, some thousand of miles distant from the spot in which he lives.

Porphyry, under its varied forms and combinations, is very abundantly distributed upon and within the superficial crust of the earth, forming, in many localities, hills and ranges of hills, and sometimes entire mountains. It is very rich in mineral veins, the clay porphyries being the most abundantly supplied with them. The method in use with the Italians, who work up the pieces of the old porphyry columns originally brought by the Romans from Egypt, is with a brass saw without any teeth. With this, together with emery and water, they rub and wear the stone with unwearied patience. Leon Battista Alberti recommends goat's blood to be used for tempering the chisels for working it, but experience has proved its inadequacy, although by this means the sculptors were enabled to make a flat or oval form, but could never attain any thing like a figure. In 1355 Cosmo de Medicis is said to have distilled a water from certain herbs with which his sculptor, Francesco Taddi, gave his tools such an admirable hardness and

temper, as that he performed some fine works with them, particularly Christ's head in demi-relievo, and Cosmo's head and his duchess's. Even the very hair and beard, how difficult soever, are here well conducted; and there is nothing of the kind better in all the works of the ancients. This account is, however, very apocryphal, and it is more than probable that he followed the more certain but prolonged action of gem engraving. The French have discovered another mode of cutting porphyry, viz. with an iron saw without teeth, and with a *grez*, a kind of freestone pulverized, and water.

Porphyry, on account of its hardness, is much valued in chemistry, furnishing mortars, &c.; colourmen also use it as stones on which to grind or levigate their powders, and the same quality renders it applicable to other similar purposes. Its capability of attaining the most beautiful polish has also caused it to be brought into use and employed in architectural ornaments: thus, in a church in Rome, there are two beautiful columns of black porphyry; there are also many monuments still existing in the Eternal City, composed of this material, as well as modern works of art, wrought by the Italians from the broken pillars. The tomb of Constantia is one of the most considerable pieces now remaining entire. Apollo's and the busts of the twelve emperors now in the Tuilleries are all in porphyry. Cleopatra's needle, as it is commonly termed, and the fellow obelisk, as well as another obelisk near Cairo, and numerous figures scattered throughout Egypt, are wrought in this material. In the East Indies, black porphyry was formerly very extensively used in the architecture and architectural ornaments of the temples; and the Chinese are evidently acquainted with some mode by which they can fashion it, as it is reported to be used there in their palaces and temples, and even for domestic ornaments.

Pliny, speaking of the mineral excavations taking place in his days, says, "We hew down mountains, and we drag them from their base in quest of objects which may gratify our luxury. We remove the barriers which nature seemed to have placed between nations, and we construct vessels exclusively adapted to the transportation of marble." In periods still more remote, we find the Egyptians waging the same mighty warfare, penetrating to the very heart of the mountains to form a resting-place for their dead, erecting mighty barriers against the encroachments of the Nile, and building pyramids of brick and stone vieing in size with the mountains surrounding them.

Writers find it difficult to conceive what tools the Egyptians used to fashion those mighty porphyritic monuments, whose gem-like hardness defies the best-tempered steel of our times, and many of them doubt the existence of steel implements at this early epoch; but upon diligently tracing effects to their primary causes, we find a ready solution to the enigma. Egyptian porphyry forms in the same manner as Egyptian jasper, and under precisely the same conditions, being at first simply cohesive, and readily separable in its parts, but gradually acquiring, by long continuous atmospheric heat, a more perfect unity of parts, and, in proportion to its exposed situation, a greater degree of hardness. Upon examining the quarries from whence the obelisks and pillars were taken, we find abundant evidence, in the chisel-marks, of iron implements having been used, and this is also demonstrated by the broken fragments scattered around; these may also be adduced as reasonable proofs of the porphyry having been in those early ages, and while hidden within the earth, or shielded by its position from the direct action of the sun, much softer than it is in the present day. This change in the condition of rock is common to every species; thus, much of the carbonate of lime in the bowels of the mountains is exceedingly soft in the present day; as for instance, the inner chamber of the tomb of the kings discovered by Belzoni; but upon long exposure to the atmospheric action, it becomes highly indurated. Again, some of the huge porphyritic bodies exhibit phases of change in their physical condition, as they have dipped into the earth, and the monument, or other sculptured object, some of which we have in the British Museum, exhibits a party-coloured appearance, as though formed by different kinds of rock. Again, in the gallery of Egyptian antiquities, may be observed figures sculp-

tured in breccia, which is none other than the first passage of nature into the crystalline or semi-crystalline form of rock; and here, it may be observed, cohesion terminates, as the sand and gravel bed dips into the bosom of the earth.

It should be known that all varieties of rock, while existing in their natural state, undergo changes until they have attained perfection according to their nature, passing gradually from their disintegrated form of earth to their matured or indurated state, when they become incapable of further change in atomic structure, and continue to exist in this state, on sufferance of climate, or absence of corroding or destroying causes. As the soft nodules of silica harden into gems upon exposure to tropical heat, so the larger siliceous mass, termed porphyry, progresses towards the like improved condition, the degree of hardness it acquires depending on the nature, union, and disposition of its material. Some of the porphyries are closely allied to breccia, the sands and pebbles being cemented together by clay; and the highly indurated clay porphyry is the hardest of all varieties, being in the topaz-like state; but inasmuch as in many varieties it contains bodies simply siliceous, or of a still softer nature, so is it very often exceedingly variable in this respect, even in the same piece of rock.

The Egyptians were well acquainted with corundum, the sapphire, the ruby, the emerald, the topaz, emery and adamantane spar, and also with the fact, that the pounded material of the porphyry, as well as the sandy particles, partook of the nature of the rock, and I am therefore inclined to suppose that they made free use of bodies of this nature, as the natives of the East do in the present day. Da Costa imagines, that by unwearied diligence and with numbers of common tools, they rudely hewed and broke the stone into the intended figure, and by continued application reduced it into regular designs. The modes of working it into figures were various, for some appear to have been wrought with the chisel, others with the saw, others with wheels, and others have evidently been ground down with emery, or some other very hard substance. There is no doubt that much time and labour were bestowed upon them, and time and labour were of as little value to the rulers of Egypt in those days as they are at present; of this we have evidence in the multitudes employed on the pyramids and other public works, independent of the incessant labour of canal digging.

Wallerius makes porphyry a species of jasper; and, as I have previously observed, there is both an uniformity of composition and character, and both are formed under the same influences; the existing differences arise from the former consisting of large ponderable masses or beds, whereas the jaspers are merely small nodules.

The purple porphyry is extremely hard, compact, and heavy, of a fine strong purple, variegated more or less with pale red and white, and with a small number of little black flaky spots. Its purple is of all degrees, from the deep tinge of the violet to a pure claret colour. It abounds in Egypt; and the smaller masses or nodules concreting together, pass by transition into rose jasper: this is also another striking proof that the one and the other claim the same common origin.

In the above explanations on the origin of porphyry and Egyptian jasper, I have demonstrated the non-volcanic nature of these rocks and stones; in the Egyptian and Nubian deserts, where they abound, and from whence they have been formerly quarried, in order to administer to the grandeur and luxury of the Romans, they are disposed in and among pure and undisturbed oceanic beds, the jaspers forming the surface of the valleys, from the fossilized remains of oceanic bodies, separately, as fossilized fishes, molluscs and crustaceous animals; or united in clumps or small groups by a calcareous cement analogous to their nature; the porphyries, on the other hand, are vast aggregate masses, composed of all these various bodies and fragments of bodies, presenting elevated cliffs and hills of this most beautiful product, in conjunction with many beautiful coloured marbles. Their laws of formation are long continuous atmospheric heat, exercised upon a desert or sterile soil, pregnant with saline matters, acids, and alkalies in their uncombined state, and the absence



of rain or communicating water. The term plutonic rocks is therefore wholly misapplied, so far as regards volcanic influence; that they bear some resemblance to lavas is very natural to suppose, for analogous lavas are of analogous formation; and the action of the fire, although it causes a displacement and eruption of the material, and more finely levigates the organic remains of which it is composed, cannot alter the character of its earths; still, there is no instance on record of lava passing into the state of porphyry, and therefore no foundation for the geological speculations of the present day, built upon these supposed plutonic rocks. On the other hand, considered as one of the first-formed rocks after limestone, and when of purely oceanic materials, it may be considered *primary*; but considered in common with others, as even now forming in those hot distant climates, it is equally reasonable to term it *secondary* and *recent*: the reader will therefore bear in view these distinctions, carefully avoiding the common vulgar error of generalizing on particular phenomena, for the operations of nature, camelion-like, indefinitely vary.

#### CHURCH-BUILDING INTELLIGENCE, &c.

*Church of England School at Overbury, Gloucestershire.*—It is intended to erect a school-house in the above parish, for educating the children of the poor. A very convenient site for the building has been promised on purchase.

An additional donation of 500*l.* from the Rev. Dr. Warneford has been announced subsequently to laying the foundation-stone of the chapel attached to Queen's College, Birmingham.

The Bill prepared by the vicar for the new arrangement of the parish of Leeds has received the final consent of the Ecclesiastical Commissioners, and will be cordially supported by her Majesty's Government.

#### RAILWAY INTELLIGENCE.

*Atmospheric Railway to Halifax.*—Mr. G. Buckston Browne, a civil engineer, sets forth in a local paper, a scheme for an Atmospheric Railway from Halifax to Bradford. It appears that the line would be about 7½ miles in length, and that it is peculiarly adapted for the application to the Atmospheric principle, having a short summit level about half-way between the two termini, at which point the entire stationary engine establishment would be concentrated. The trains (adds Mr. Browne) will thus be drawn up to the summit, and the remainder of the journey be performed by gravity alone; a single line of rails will be quite sufficient for double the amount of traffic that can be brought upon it. He proposes to apply also Messrs. Cooke and Wheatstone's electrical telegraph, in connection with which, says Mr. Browne, the Atmospheric Railway "combines a degree of safety, with speed, unattainable by the locomotive; it admits also of being worked in a great variety of ways; the trains may traverse the whole distance without stoppage, or they may stop at any point, either ascending or descending, where it may be found profitable to do so; and further, one very important advantage which this system has over the locomotive consists in the facts, that while the locomotive, to be worked economically, requires a maximum load, and of course a limited number of trains, the Atmospheric system admits of an unlimited number of trains, with very little increased cost.

*Ecceter and Crediton Railway.*—We understand that for the twelve hundred shares in this undertaking there have been applications to the amount of five thousand. Nothing can more forcibly display the public confidence in this species of investment.—*Ecceter Gazette.*

*German Railways.*—The *Wurzburg Gazette* informs us, from Breslau, that the treaty for the construction of the Thuringen railroad has been signed by the governments interested in it, viz., Prussia, Saxe-Weimer, and Saxe-Coburg-Gotha.

The York and Scarborough Railway Bill was read a third time, in the House of Lords, on Tuesday evening week, and passed. The length of the line is about forty-two miles, with a branch of rather more than six miles; the estimated cost is 260,000*l.*

#### PATENTS RELATING TO ARCHITECTURE, ENGINEERING, &c.

Granted between 27th April and 23rd of May, 1844.

##### [SIX MONTHS FOR ENROLMENT.]

Pierre Armand Lecomte de Fontaine-neau, of Skinner's-place, Size-lane, merchant, for a new mode of constructing barometers and other pneumatic instruments, being a communication. April 27.

John Dixon, of Wolverhampton, iron-master, for improvements in heating air for blast furnaces, and for other uses. April 27.

Arthur Wall, of Bisterne-place, Poplar, surgeon, for certain improvements in the manufacture of steel, copper, and other metals. April 27.

Isaiah Davies, of Birmingham, engineer, for certain improvements in steam-engines, part of which improvements are applicable to impelling wheel carriages. April 27.

Edward Cobbold, of Melford, Suffolk, master of arts, clerk, for improvements in the preparation of peat, rendering it applicable to several useful purposes, particularly for fuel. April 27.

William Jeffries, of Little Sussex-place, Hyde Park-gardens, for improvements in sweeping chimneys, and in apparatus to prevent chimneys from smoking. April 30.

Robert Gordon, of Heaton Foundry, Stockport, millwright and engineer, for improvements in grinding wheat and other grain, and in dressing flour or meal, which improvements in grinding are also applicable to grinding cements and other substances. April 30.

William Fairbairn and John Hethrington, of Manchester, engineers, for certain improvements in stationary steam-boilers, and in the furnaces and flues connected therewith. April 30.

Jacob Samuda, of Southwark iron works, engineer, and Joseph D'Agular Samuda, of the same place, engineer, for certain improvements in the manufacture and arrangement of parts and apparatus for the construction and working of atmospheric railways. April 30.

John Melville, of Upper Harley-street, Esq., for improvements in the construction and modes of working railroads. April 30.

James Hayman, of Mount-street, Lambeth, corn-dealer, for an improved construction and arrangement of certain parts of omnibuses and other vehicles. April 30.

Robert Corden, of Nottingham, tobacco-manufacturer, and Sidney Smith, of the same place, engineer, for improved economical apparatus for making gas for illuminations. April 30.

William Colborne Cambridge, of Market Lavington, Wilts, agricultural machine maker, for certain improvements, first, in machinery for rolling or crushing ground; second, for cutting and threshing agricultural products; and, third, an improved adaptation of horse power to threshing-machinery, which may also be applied to other purposes. April 30.

Charles Watterson, of the firm of Macguire, Watterson, and Co., Manchester, soap manufacturers, for certain improvements in the manufacture of soap. May 8.

Joseph Wright, of Gough-street, Gray's-inn-lane, coach-builder, for certain improvements in railway and other carriages. (Being a communication.) May 8.

James Grant, of Vine-street, Westminster, gas-fitter, for improvements in the means of ventilating buildings and other places where a change of air is required. May 8.

William Vose Pickett, of Tottenham, Esq., for certain methods of preparing in metal, or other substances, the parts and features of architectural construction and decoration, and for applying the same in the construction and arrangement of houses and other buildings. May 8.

Thomas Grimsley, of Oxford, sculptor, for a new method of constructing a self-supporting fire-proof roof, and other parts of buildings, with bricks and tiles formed from an improved machine. May 14. Two months.

Edward Hill, of Hart's Hill, Worcester, iron manufacturer, for improvements in the manufacture of railway and other axles, shafts, and bars. May 14.

William Walker, jun., of Brown-street, Manchester, hydraulic engineer, for improvements in warming and ventilating apartments and buildings. May 14.

Peter Armand Lecomte de Fontaine-neau, of Skinner's-place, Size-lane, London, for a new and improved mode or method of paving and covering roads and other ways or surfaces, being a communication. May 15.

Henry Holmes, of Derby, cutler, for improvements in the manufacture of bricks, tiles, and other plastic substances. May 15.

John M'Intosh, of Glasgow, gentleman, for certain improvements in revolving engines, and an improved method of producing motive power, and of propelling vessels. May 17.

James Pilbrow, of Tottenham, civil engineer, for certain improvements in the machinery for, or a new method of propelling carriages on railways and common roads, and vessels on rivers and canals, &c. May 17.

Thomas Martin, of Withybusch, Havford-west, Pembroke, for certain improvements in the construction of slated roofs, flats or floors, tanks, or cisterns, or reservoirs for water, and in pipes, tubes, or channels of the same material, for the conveyance of water. May 22.

James Petrie, of Rochdale, Lancaster, engineer, for certain improvements in steam engines. May 22.

James Bremner, of Pulteney Town, Caithness, civil engineer, for certain arrangements for constructing harbours, piers, and buildings in water, for cleansing harbours, and for raising sunken vessels. May 22.

John Henry Moor, of Lincoln's-inn-fields, gent., for certain improvements in the construction of carriages generally. May 23.

Richard Wilson, of Newcastle, builder, for improvements in the manufacture of tiles. May 23.

John Wilkie, of Glasgow, mechanic, for improvements in machinery or apparatus for working wood into the various forms required for making doors, window-shutters, window-sashes, mouldings, flooring, and other purposes. May 23.

John Taylor, of Duke-street, Adelphi, gent., for certain new mechanical combinations, by means of which economy of power and of fuel are obtained in the use of the steam-engine. May 23.

#### SCOTCH PATENTS.

William Henry Barlow, of Leicester, civil engineer, for improvements in the construction of keys, wedges, or fastenings for engineering purposes. April 24.

John Dixon, of Wolverhampton, ironmaster, for improvements in heating air for blast furnaces, and for other uses. April 24.

John M'Intosh, of Glasgow, for certain improvements in revolving machines, and an improved method of producing motive power, and of propelling vessels. April 30.

William Irving, of 102, Regent-street, Lambeth, Surrey, for improved machinery and apparatus for cutting and carving substances to be applied for inlaying and other purposes. May 3.

James Murray, of the Garnkirk Coal Company, in the parish of Cadder, of Lanark, Scotland, for a new method of using and applying artificial gas made from coal, oil, or other substances for lighting and ventilating caverns, pits, or mines, or other pits, where minerals or metals are worked or extracted. May 3.

James Bremner, residing at Pulteney Town, Caithness, civil-engineer, for certain arrangements for constructing harbours, piers, and buildings in water, for cleansing harbours, and for raising sunken vessels. May 9.

John Wilkie, of Glasgow, mechanic, for improvements in machinery or apparatus for working wood into the various forms for making doors, window-shutters, window-sashes, mouldings, flooring, and other purposes. May 16.

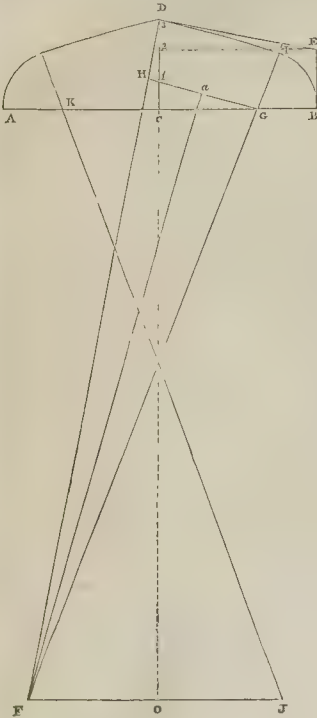
**BRISTOL DOCKS.**—The Dock Company have requested the advice and assistance of Mr. Brunel, respecting the extensive repairs necessary to be effected to the narrow lock o Cumberland Basin.



ARCHITECTURAL GEOMETRY, No. II.—  
TUDOR ARCHES.

TO THE EDITOR OF THE BUILDER.

SIR,—Beneath is a method of finding the centres for describing the Tudor arch to any width and height: it is not a solution of the proposition given by a "Subscriber from the Beginning;" it may, however, be of service.

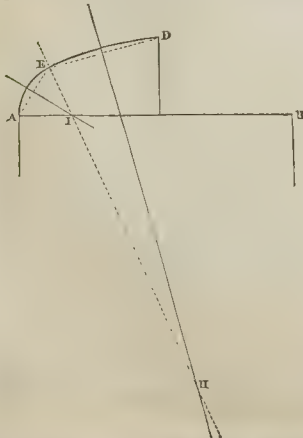


Let  $A B$  be the springing line, and  $C D$  the height of the arch; draw  $B E$  perpendicular to  $A B$ , and make it equal to two-thirds of the height  $C D$ ; join  $E D$ , and draw  $D F$  perpendicular to  $E D$ ; make  $B G$  and  $D H$  each equal to  $B E$ ; join  $G H$ , and from the middle of  $G H$  draw  $a F$  perpendicular to  $G H$ , meeting  $D F$  in  $F$ ; then  $F$  and  $G$  are the centres for describing the curves, and the two arcs will meet in the line  $F G I$ , which passes through their centres. By drawing  $F J$  parallel to  $A B$ , and producing  $O C$  to  $O$ , the centres for the other side of the arch will be found by making  $J O$  equal to  $F O$ , and  $A K$  equal to  $B C$ .—I am, Sir, yours, &c.,

Liverpool, June, 1844. H. W.

## ARCHITECTURAL GEOMETRY.—No. III.

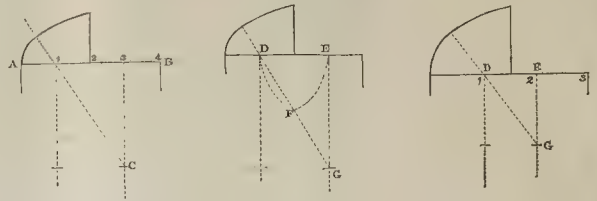
SIR,—The centres of the Tudor arch required by your correspondent will be found



as follows. Join A E and E D, and bisect them; the intersection of the bisecting line of A E with the base A B will give the centre, I, of the arc A E. Through E I draw the indefinite line E H, and the intersection of the bisecting line of E D with this indefinite line will give the centre, H, of the arc E D.

I believe, however, the ancient Freemasons did not work on this principle; they did not fix by arbitrary choice the width and height

of their arches. By a careful study of the existing arches, it will be found that the central points are determined by geometrical proportions. The base was divided into a certain number of parts, three, four, five, or six, or more, the first division of which gives the centre of the springing of the arch. The other centres are formed on lines let fall perpendicularly on these points from the base line in some definite proportion, as follows:—



In the first figure the base is divided into four parts, and the second centre, C, is three parts distant from the base line.

In the second example, the second centre is found by drawing the line  $DG$  through the apex of the equilateral triangle  $D F E$ .

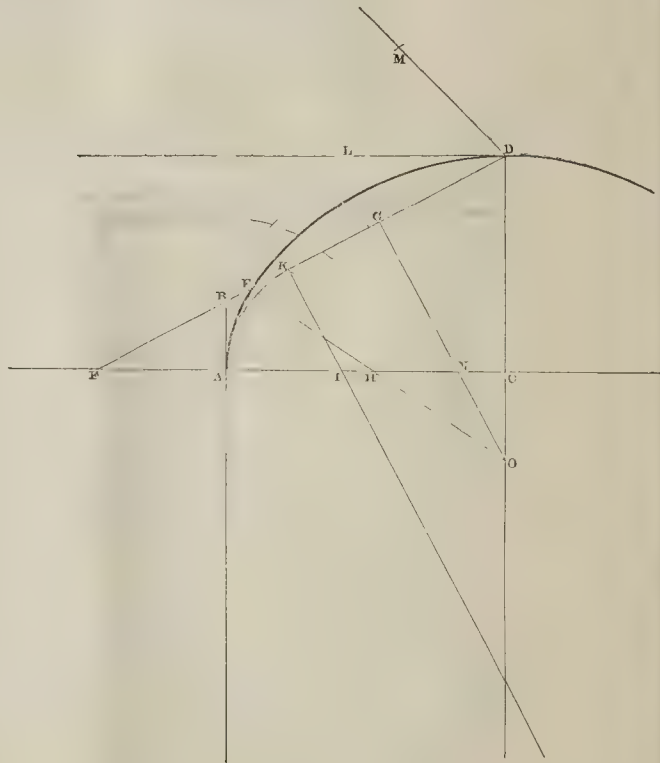
In the third, the distance  $E G$  is the diagonal

of the square D E: this I found from a doorway at Croydon Palace.

The above will be sufficient to shew to students the infinite variety of form which may be obtained by geometrical proportion. The old architects did not trust to the "rule of thumb."—I am, Sir, yours, &c., T. L.

## ARCHITECTURAL GEOMETRY.—No. IV.

SIR,—In your last number a correspondent requests the solution of a problem on the Tudor arch. The following is a method of drawing Tudor arches from similar data.



A C half the width of the arch, C D height,  
D F direction of the chord of the upper arch.

Produce CA indefinitely to the left, produce DF till it meets the horizontal line CA in F. Draw AB perpendicularly to CA, make  $BK=AB$ . Draw KI perpendicular to DF, then will I be the centre of a circle to which DF forms a tangent, and the half arc AKD is one of the limits of the problem, the radius of the upper part KD being infinite, and therefore the curvature is nothing measurable.

Again, draw  $DL$  parallel to  $FC$ , and make the angle to  $DM = \text{half a right angle}$ . Draw  $AE$ , making an angle with  $CA = GDM$ , bisect  $ED$  in  $G$ . Draw  $GO$  perpendi-

cular to FD, cutting DC produced in O. Join EO, cutting HC in H, thus will H and O be the centres of an arch which is the other limit of the problem, between which limits an infinite number of Tudor arches may be described, which will answer the conditions of the problem, so that any radius less than AH and greater than AI will be the radius of the lower part of the Tudor arch agreeing with the *data*. The arch will be more or less pointed as the centre of the lower portion is chosen near to or remote from I.

The demonstration of the first limit is apparent, but the last is not so, and it therefore remains to be proved that the angle  $A E H$  is isocetes or the side  $H A =$  to the side  $H E$ .



Because the angles EGO and DCF are similar.

∴ the angle GOE = to DFC.

∴ the angles FEH and HNO are similar.

Hence, the angle FEH = EGO + GOE.

∴ EGO + 2GOE = HNO + NOH = A + HEA.

∴  $\frac{1}{2}(EGO + 2GOE) = \frac{1}{2}(HAE + HEA) = HAE = GDM.$

∴ HAE = HEA, which proves HA equal to HE.

There are other properties, not altogether without interest, connected with the problem, but I dare say the figures will satisfy your querist. I am, Sir, your obedient servant,

J. BURLISON.

## Correspondence.

### COMPETITION IN BUILDING.

SIR,—As there never was a measure proposed in the legislature that did not meet with opposition from some quarter or other, no matter how advantageous it might prove to the community at large, so it would appear that the measure I had the honour of proposing, through the medium of your valuable publication has been opposed. I allude to the policy of builders making their contracts by schedule instead of by estimate.

Your correspondent, L.O.G., appears to treat the matter truly very summarily. Yet, I would venture, with your permission, to ask him a few questions upon the point, and first, is he a private individual requiring the services of a contractor, or builder? if so, let him act upon the broad principle of uprightness, and render to the individual he employs full value for value received. *Nothing less*; otherwise the "insatiable desire for gain" must rest at his own door, and not at that of his contractor. Second, is he a contractor? if so, whether had he better work for the sake of working, without profit, and of course to the injury of his brethren in the business (to use a coarse phrase, by helping to cut their throats), which is the end of estimating, or does he desire a remunerative rate of pay for the work he performs? If the former be the case, the "insatiable desire for gaining," the ruin of his business, rests at his own door, to the loss of his capital, the waste of his time, and the consequent injury of his family. If the latter be his desire, then he surely cannot be in earnest in his remarks published in your last.

I am willing to admit that the sins of our grandfathers in the business have done much to reduce the profits of the builders, but surely their misdeeds should not be visited upon the third and fourth generations, which have profited by the experience, dearly purchased, of such mistaken policy.

It is my firm conviction, that if the old system of prices by schedule were re-established, no such complaints as that named by L.O.G. would be found. I make no doubt he pays his grocer, having first carefully scrutinized his account; upon that a reasonable degree of profit is laid on each article, and so with most other branches of the trade, and yet I doubt or other trader could stare as much at a grocer were he to say, "Will you supply to me an estimate of what groceries my family requires by the year?" without first delivering a schedule of prices for each article that might by probability be required.

If L.O.G. be a contractor, let me earnestly, and with a friendly spirit, recommend him to turn these matters carefully in his mind, and use his abilities in forwarding those objects which would prove a permanent benefit to his children's children, instead of having a hostile effect.

I am, Sir, yours, &c,  
Brecon, 10th June, 1844. STABILITAS.

### CLIMBING-BOYS.

SIR,—I have, as a regular subscriber to your journal, read with much pleasure some able remarks in your leading article of last week relative to the proposed new Building Act, in the "re-institution of the use of climbing-boys," and beg to direct the attention of the Committee of Master Carpenters, to the fact of Mr. Seth Smith, the eminent builder of Waton-square, so far back as the year 1830, having most effectually accomplished a me-

tallic lining for flues, which has been to my knowledge successfully applied to new and old buildings, wherein the emission of smoke through the joints of the brick-work was completely prevented, the draught of the flue adjusted, and the use of climbing-boys totally superseded; and perhaps, Sir, in justification of these remarks, I cannot do better than quote from a work written by Mr. Smith, at the above period (published by Carpenter and Son, Old Bond Street), where the author, with great truth, stated, "Besides the application of the metallic tubes to chimneys in new houses, they may also be introduced into, and form perfect linings to the flues of old and imperfect chimneys in any other buildings;" and again Mr. Smith observes, that in "forming a complete fire-proof lining to chimneys, the 'METALLIC LINING' has the additional advantage of suppressing the odious, painful, and sometimes fatal practice of climbing-boys." I am, Sir, yours obediently,

EDWARD NANGLE.

Knightbridge Green, June 12.

### LONG'S PATENT ORNAMENTAL GLASS.

SIR,—I expected to have seen in THE BUILDER, with your remarks upon the works of art sent in for the Parliament Houses, some account of Long's patent glass. Having a mansion in the country near completion, where I had some thoughts of adopting the article in question, I should feel obliged by your giving me your opinion.

I am, Sir, your humble servant,

FABRICATOR.

[We refer our correspondent to an article upon the subject which appeared in THE BUILDER last year. Long's glass is appropriate for such a purpose, for superseding window-blinds, for lights in doors, which through bad planning are often rendered necessary in buildings, and for a variety of other purposes; the patterns are numerous; many people admire the engine-turned specimens, though for ourselves we prefer the less formal patterns.—Ed.]

## Miscellanea.

PUBLIC WORKS AND BUILDINGS.—A parliamentary paper, under the head of "Miscellaneous Estimates," was issued on Saturday. Its title is "Public Works and Buildings." It appears from it that for public buildings and royal palaces the estimate was, in 1842, 106,085*l.*; in 1843, 105,636*l.*; and in 1844, 112,190*l.* For Houses of Parliament (temporary), in 1842, 5,395*l.*; in 1843, 9,590*l.*; and in 1844, 5,420*l.* For new Houses of Parliament, in 1842, 105,000*l.*; in 1843, 140,000*l.*, and in 1844, 60,000*l.* For Trafalgar-square, in 1843, 12,000*l.*, and in 1844, 7,000*l.* For Holyhead Roads Harbour, &c., in 1842, 4,753*l.*; in 1843, 4,169*l.*, and in 1844, 4,164*l.* For Caledonian Canal, in 1842, 50,000*l.*; in 1843, 5,000*l.*, and in 1844, 50,000*l.* For parks, buildings, &c., in Ireland, in 1842, 17,659*l.*; in 1843, 25,376*l.*, and in 1844, 26,871*l.* For Kingstown Harbour, in 1842, 10,000*l.*; in 1843, 10,000*l.*, and in 1844, 8,000*l.* For Port Patrick Harbour, in 1843, 4,500*l.* For the Hall of General Assembly of the Church of Scotland, Edinburgh, in 1842, 1,936*l.* This table of expenditure exhibits an increase in the estimates for the present year as compared with 1842, of 22,342*l.*, and a decrease of 49,525*l.*, shewing a net decrease of 27,183*l.* It also exhibits an increase, in relation to the past year, of 53,049*l.*, and a decrease of 95,675*l.*, shewing a net decrease of 42,626*l.* It will be seen from this return that the sums estimated for expenditure upon public buildings in Ireland, have, during the last two years, considerably exceeded the estimates of the year 1842.

THE NELSON TESTIMONIAL.—The Emperor having ascertained that the funds for the erection of this national tribute to our greatest naval hero were inadequate to its completion, immediately directed Count Orloff to enclose a draught for 500*l.* to the Duke of Wellington, the draught was accompanied by a letter from the Count, written by command of his Majesty, and expressive of the pleasure the Emperor felt in contributing towards the erection of a testimonial to so great a warrior.—Times.

BYRON'S STATUE BY THORWALDSEN.—A case of an extraordinary nature, and in which the names of two of the greatest characters of the age will figure, is about to be brought before the London tribunals. Thorwaldsen, as is it well known, had executed a colossal statue of Lord Byron, which he considered as one of his best works, and presented it to the chapter of Westminster, on condition of its being placed in that cathedral, beside the monuments of other poets. The chapter at first accepted the offer; but it is equally well known that some scruples were raised afterwards against placing the author of "Don Juan" in this national mausoleum; and the case containing the marble was never claimed by the chapter. The testamentary executor of Thorwaldsen being informed of this state of things, made some inquiries, and the master-piece of Thorwaldsen was found lying on the floor of a cellar in a state of extreme deterioration, amongst the fragments of the case, which the humidity of the place had reduced to a state of perfect rottenness. Consequently, a person duly authorized by the executor addressed a formal reclamation to the authorities, but when the Custom-house officers went with him to the cellar, it was found that the statue had disappeared, and nothing but fragments of the case remained behind. The executors then addressed to the Custom-house a demand for indemnity. This, however, was refused, under the plea that it cannot be answerable for goods refused by the parties to whom they are addressed, and that such goods remain in their stores solely at the expense and risk of those to whom they belong. At this stage, in fine, the executors have resolved on bringing an action for damages against the Custom-house of London. The sum claimed is 30,000*l.* (750,000*fr.*), at which the statue was valued by the artists of Rome on its being shipped to London.

VISIT OF THE EMPEROR OF RUSSIA TO THE NEW HOUSES OF PARLIAMENT.—His Imperial Majesty the Emperor of Russia, accompanied by Baron Brunow and suite, arrived as early as a quarter before 11 o'clock, and were shortly afterwards joined by His Royal Highness Prince Albert and the Earl of Lincoln. His Majesty took the highest interest in the progress of the works, minutely examining the quality of the stone and its workmanship, and was much pleased with the regularity and orderly procedure of the immense body of masons and other workmen, as well as with the ingenuity displayed in moving the various materials. The Emperor and His Royal Highness having taken a view of the river front, ascended the temporary staircase at the Victoria Tower, and having walked for a considerable distance upon the top of the unprotected walls of the Victoria Gallery, proceeded to examine the interior of the new House of Lords (which is now just ready to receive the roof), passing over the ordinary scaffolding to the house lobby and the central hall, whence the Royal and distinguished visitors proceeded to the model and sculpture rooms. His Imperial Majesty evinced the liveliest interest in the whole of the works, and it was exceedingly gratifying to observe the freedom and condescension with which His Majesty conversed with Mr. Barry upon the design and arrangements of the various parts. Mr. Barry had the honour of escorting the Royal party, attended by Mr. Grissell.

THE NEW COMMERCIAL BANKING OFFICE.—On Tuesday, the foundation-stone of the building about to be erected in George-street by the Commercial Bank of Scotland, was laid in presence of the directors and office-bearers of the bank, by James Wyld, Esq., of Gilston, one of the original directors. The various coins now in use, with some documents, were deposited in the centre of the stone. The plan of this building is by Mr. David Rhind, and reflects the greatest credit on the genius and taste of the architect. It is in the Grecian style of architecture; and will add another striking and graceful feature to George-street, where so many of our public institutions are now concentrating.—Edinburgh Paper.

It is the intention of the Earl of Carlisle to rebuild Naworth Castle in a style of princely magnificence.



**THE METROPOLITAN IMPROVEMENTS.**—The greater portion of the houses between Charlotte-street, Bloomsbury, and Oxford-street—to be removed for the formation of the new street—have been taken down to the foundation. Among the number is the Hare and Hounds public-house, situate near the station-house of the E division, which was formerly a celebrated resort of the Londoners in the 16th and 17th centuries. Till the reign of Charles II. it was known by the sign of the Beggars' Bush, when the name became altered in consequence of a hare having been hunted and caught there, where it was afterwards cooked and eaten. This locality has undergone many changes. There was during the reign of Henry I. an hospital for lepers, which was founded by Matilda, the wife of that king; and subsequently the scaffold was removed to that spot from Smithfield, upon which the first victim was Lord Cobham, the friend of Henry V., who was hung in chains, and burnt by a slow fire, and which scaffold was afterwards taken to Tyburn. In a few days the site of the above public-house will be lost, as it will be nearly in the centre of the new street. Between Bedford Chapel and High-street, St. Giles's,—which was a short time ago the parish stone-yard—poles are erected to form the line of the new houses, the cellars of which are now being formed. In Belton-street, leading from High-street to Long Acre, the new church of Christ Church, the foundation-stone of which was laid a few weeks ago on the east side of the street, is in a state of great forwardness, and but few houses remain between there and Long Acre to be demolished. In Cranborn-street, an entirely new pavement has been laid down, giving the public thoroughfare all the appearance of a street; and in a short time houses will be erected on the opposite side, for which the various cellars are formed.

**THE NEW ROYAL EXCHANGE.**—On Saturday afternoon much interest and curiosity were excited in Cheapside on observing a vehicle proceeding slowly along, with a partially covered colossal figure in it, from the studio of Westmacott, the sculptor. Many persons, believing it to be the celebrated statue of the Duke of Wellington intended to be raised in front of the new Exchange, followed it to the spot, when it proved to be one of the figures for ornamenting the pediment of that edifice, many of which were already within the inclosure, and some of them elevated to their places. They are all colossal, of Carrara marble, and emblematic of British industry and enterprise.

**ROYAL INSTITUTE OF ARCHITECTS.**—The following are the office bearers for the ensuing year:—President, Earl de Grey; Vice-presidents, Messrs. H. E. Kendall, J. B. Papworth, and George Smith; Members of Council, Messrs. W. Booth, Foxhall, George Godwin, W. Grellier, S. Beazley, James Noble, C. Parker, W. F. Pocock, H. Roberts, and James Thompson; Hon. Secretaries, Messrs. A. Poynter, and G. Bailey; Foreign Secretary, T. L. Donaldson.

**GOETHE.**—The statue of Goethe meets in Frankfurt with a fate to similar that of Byron in London, which has lain in the Custom-House for several years. The magistrates of Frankfurt did not appoint any place within the town to erect Goethe's statue; it will be placed in a lonely alley, without the gates of the city of his birth.

**WOOLWICH.**—Under the superintendence of Capt. Denson, civil engineer, of her Majesty's dock-yard, Woolwich, a considerable enlargement of that establishment is about to take place. For some time past much inconvenience has been felt in consequence of want of room by the boiler-makers belonging to the yard.

**CORNISH ENGINES.**—The number of pumping-engines reported for the month of April is 37—the quantity of coals consumed being 3,380 tons, lifting, in the aggregate, 31,000,000 tons of water 10 fathoms high. The average duty of the whole is, therefore, 57,000,000lbs. lifted 1 foot high by the consumption of a bushel of coal.—*Mining Journal.*

The beautiful New-road, from the High-street, Cheltenham, to the back of the College, formed at the expense and under the direction of the late Sir Matthew Wood, was thrown open to the public on Thursday week.

**ARCHDEACON ONSLOW ON PEWS.**—The venerable archdeacon next alluded to the subject of selling, letting, and disposing of pews in parish churches. He had understood that this practice still obtained within his archdeaconry. In addition to buying and selling, he was informed that in some instances persons had claimed certain pews as their own property, who had not even a residence in the parish, or were absolutely separatists! He thought this irregularity arose from ignorance of the law rather than from an intentional infraction thereof. He was aware that in these days the existence of pews was condemned, and the restoration of open seats recommended; but he did not entirely concur in the sentiment. Pews were useful, as private accommodation for families, who necessarily felt a greater comfort in worshipping together and being united in the house of God. Pews were also conducive to a more undivided attention to the services. Nevertheless, he did not approve of them when not in keeping with the style of the building, or when they were unsightly, or obstructed the view of the pulpit. But to return to the question of right. It might be laid down as a general rule that all pews were the property of the parish: but the disposal of them was left to the ordinary, that is, the bishop, and to the churchwarden under him. They were to be allotted to the inhabitants according to rank and station, and in proportion to the extent of their families. It was also recommended that the churchwarden should be guided by the advice of the minister. The bishop's authority in the disposal of pews could only be superseded by faculty or prescription. Prescription could only be maintained by immemorial usage, and constant repairs by the claimant; for if proof of repair by the parish were adduced, the prescription would end. A faculty appropriated a pew in respect of a house, the occupier of which, as long as he remained in the house, and was a member of the church, was entitled to the pew; but on the house being re-let, the former tenant could have no further right. Claims were sometimes made on the plea of long possession, without disturbance; but this could not be maintained. Even the erection of a seat would not convey a permanent right; nor would the grant of a seat to any person and his heirs be legal. Now, if such was the law, it followed that the letting and selling of pews must be a violation thereof. Such things could only be done by Act of Parliament. Thus, in new churches, where large spaces were usually set apart for the poor, the pews were permitted to be let, in order to provide an income for the clergyman. Churchwardens had also been empowered to let the pews and apply the rents for repairs in certain instances. In proprietary chapels, which, as partaking of the nature of private property, did not come within the range of ecclesiastical laws, pews were legally let and sold.—*Address at Pershore, 21st May.*

**THE PLYMOUTH BREAKWATER LIGHTHOUSE** is completed. The light is at an elevation of 63 feet above the level of high-water spring tides, and appears red in all directions seaward, and white within the line of the breakwater. A bell is attached to the lighthouse, which is to be rung at intervals in foggy weather.

The Earl of Aberdeen has purchased Sir William Allan's picture of "Sir Walter Scott dictating to his daughter in the study at Abbotsford," now in the exhibition of the Royal Academy.

### Tenders.

TENDERS delivered for alterations &c., to the Salisbury Vicarage.—Alfred Ainger, Esq., Architect. May 21.

Woolcott and Son.....	£925
Locke and Nesham .....	893
Burton and Sons .....	813
Piper and Sons .....	796

### TO OUR CORRESPONDENTS.

The oak chest paneling is received and ordered to be engraved. We should like to be favoured also with sketches to a larger scale, of the bosses, crockets, spandrels, and other carving.

### Current Prices of Metals.

June 11, 1844.

	£. s. d.	£. s. d.
SPELTER.—Foreign ton ..	0 0 0 to 22 0 0	
" For delivery ..	21 10 0—21 15 0	
ZINC.—English sheet ....	0 0 0—30 0 0	
QUICKSILVER .....	per lb. 0 4 6	
IRON.—English bar, &c. per ton	6 5 0—6 10 0	
" Nail rods .....	0 0 0—7 0 0	
" Hoops .....	0 0 0—8 0 0	
" Sheets .....	0 0 0—9 0 0	
" Cargo in Wales ..	0 0 0—5 15 0	
" Pig, No. 1, Wales	3 15 0—4 0 0	
" No. 1, Clyde	0 0 0—3 5 0	
" For, Swedish ....	9 5 0—9 10 0	
" Russian, COND. ....	16 10 0	
STEEL.—Swedish keg, p. ton	0 0 0—17 0 0	
" Faggot ..	0 0 0—17 10 0	
COPPER.—English sheathing, per lb.	0 0 0—0 9½	
" Old .....	ditto. 0 0 8½	
" Cake p. ton ..	82 0 0—83 0 0	
" Tile .....	80 0 0—81 0 0	
" S. American ..	72 0 0—74 0 0	
TIN.—English, blocks, &c. cwt. ....	3 13 0	
" bars ....	0 0 0—3 14 6	
" Foreign, Banca ....	0 0 0—3 7 0	
" Straits ..	0 0 0—3 4 0	
" Peruvian ..	0 0 0—3 0 0	
Tin plates, No. 1C. p. box	1 8 0—1 13 0	
" No. 1X .....	1 14 0—1 19 0	
" wasters 3s. p. box less		
LEAD.—Sheet milled .....	per ton 17 15 0	
" Shot, patent ....	0 0 0—19 15 0	
" Red .....	21 10 0	
" White .....	23 10 0	
PIG-LEAD.—English ....	16 15 0—17 0 0	
" Spanish ....	0 0 0—16 10 0	
" American ..	0 0 0—15 10 0	

SHORT and MAHONY, Brokers,  
1, Newman's-court, Cornhill.

### NOTICES OF CONTRACTS.

For Masonry and all other work (except Iron-work) to be done in building a Bridge across the river Avon, at Bath.—Mr. Manners, City Architect, Bath. June 25.

For the erection of National Schools, with a residence for the master and mistress, at St. Ives, Hunts.—J. D. Hopkins, Esq., Architect, 25, Bedford-square, London. June 20.

For building a Lock-up House, at St. Ives, Hunts.—J. D. Hopkins, Esq., Architect, 25, Bedford-square, London. June 20.

For certain alterations and additions in the Parish Church of Melkham, in the county of Wilts.—Messrs. Wyatt and Brandon, Architects, 75, Great Russell-street, Bloomsbury. June 21.

For the additions and alterations to the County Gaol, at Nottingham; and the Nisi Prius Court, at the Shire Hall. (Separate Tenders.)—Messrs. Hawley and Jalland, Architects, Nottingham. June 26.

For building Sewers in Old Fish-street, Trinity-lane, and several other streets and places adjacent thereto.—Jos. Daw, Esq., Guildhall. June 25.

For the alterations, improvements, and repairs to the School House in Hutton Garden.—Mr. Cooper, Architect, 1, Verulam-buildings, Gray's Inn. June 29.

For the necessary Iron-work of a Bridge of one arch, 110 feet span, to be built over the river Avon, at Bath.—Drawings, &c., Mr. Manners, Architect, 1, Oxford-row, Bath. June 25.

For the executing of certain works for the improvement of Aberdeen Harbour.—Plans, &c., Mr. Abernethy, 69, Waterloo-quay, Aberdeen. June 20.

### COMPETITIONS.

Plans, &c. are wanted for erecting a Church at Southwall, Notts.—Further particulars, Mr. Wm. Shaw, Southwall, Notts. The successful competitor will be employed on the usual terms.

A PREMIUM of 100 guineas will be given by the commissioners appointed to erect a lunatic asylum in the vicinity of the city of Kingston, Jamaica, to the person who shall produce the best plan, accompanied by a specification, of an asylum for the reception of the insane. The institution must accommodate 200 patients of both sexes, with the requi-



# The Builder.

NO. LXXII.

SATURDAY, JUNE 22, 1844.



OLLOWING this week our assigned course of proceeding, we again take up the subject of our commentary upon the proposed new Metropolitan Building-Act. We have this moment received a copy of the report of the Builders' Society, but regret that from our late reception of it we have as yet been unable to profit by any suggestions which it may contain; at the same time we may say that from the temperate and proper mode in which that society's

former report was worded, we have confident hope not only that it may contain valuable suggestions, but that their tone is such as to give them the greater likelihood of being complied with: though we have gone through the schedules of the Bill as amended, we think it better to postpone till next week the publication of our remarks on that part of the measure taking, in the mean while, the opportunity for making another review of them, so that we may speak with still greater confidence as to their correctness, policy, and profitable working; till then we invite all suggestions from those who understand sufficiently practical building, and the legal working of Acts of Parliament, and who have a general acquaintance with the subject; for that which one or two eyes may fail of discovering after a strict search, often even a casual observer fortuitously discovers at once; one thing, indeed, has somewhat surprised us, which is, that out of the multitude of letters sent to us, so very few relate to a measure so important as the one in question, as though it were generally imagined that any change in so vital a statute must be for the better; whereas the reverse is the case, as is most amply attested by the many unsuccessful attempts to produce a really good statute. We are confident in stating that by far the greater part of the evils complained of under the present Act are purely imaginary, arising from ignorance of its nature and provisions on the part of those who make such assertions. The chief requirements under a new statute are suitability to the altered times, extended operation, oblivion of the obsolete restrictions of the present Act, improvement where experience has shewn defects, the preventing of abuses, and a courting of good building by wise ameliorations of those stringent bars in the present statute which almost compel a resort to technical evasions in some cases, in order to carry forward building at all.

Clause 43 ought to contain summary power for the instant removal of chimney-pots, tiles, and other loose matters, which commonly after storms, and on many other occasions, are loose, and frequently merely lie upon the roofs

of buildings, ready with the next gust of wind to be blown down upon passengers.

The words "required to require" are still inelegantly retained in this clause.

Clause 44, for the reimbursement of the expense of making good damage caused by the fall of chimneys, should contain, in addition to recovery of the value of the building and furniture, provision for the recovery of the value of goods or merchandize, or other property so damaged.

The 46th clause provides for the recovery of the reasonable expenses of shoring up adjoining buildings, but does not render such shoring up imperative upon the party building; so that as by common law no man is obliged to shore up his neighbour's building, or even to give him notice to do so, the party building (if he doubt the likelihood of repayment, or fear allegation, that through unskilful shoring he has suffered the adjoining building to fall) may decline to shore up such building.

We think the 47th clause should not declare it the duty of the party building to make his claim WITHIN TWENTY-ONE DAYS for any portion of work to repayment for which he may be entitled.

The wording of clause 49 has been corrected as we suggested.

Clause 50.—"And be it enacted, with regard to such costs and expenses of works executed under this Act, so far as relates to contribution thereto by persons bound or liable to make contribution, that for the purpose of enabling the party upon whom the payment of such costs and expenses shall fall, either in the first instance or subsequently, to obtain contribution from other persons, being part owners IN LIKE DEGREE, it shall be lawful for every such first-mentioned person, whether he be freeholder, copyholder, leaseholder, mortgagee in possession, and whatever may be his interest or the nature and extent of such his interest, and whether he hold in his own right, or in right of others, and whatever may be the kinds and degrees of their respective interests, and he is hereby entitled to a contribution from every other person having as owner an interest in the premises of whatever kind or degree; which contribution is to be computed, according to the amount of his interest, in proportion to that of other persons interested, so far as such persons may be known, or can be reached by process of law or equity; and that it shall be lawful for any party so interested, and he is hereby entitled, to require the official-referees to settle and determine the same by their award, and their decision shall be final; and that if the person upon whom the payment of such costs and expenses shall have fallen, have paid, in respect of the interest of another or others, either unknown or who could not be reached by process of any court of law or equity, more than his own just proportion, then, on the production of such award, duly made, signed, and sealed, it shall be lawful for such person to have and exercise against other parties against whom such award shall be made, and he is hereby entitled to the like remedies, to compel payment of money, as are hereby given for compelling the first payment of such costs and charges of such expenses."

This clause (in the Bill before amended numbered 49) still contains the incongruity of setting out by laying expenses upon *part owners IN LIKE DEGREE*, and then providing for all manner of interests; we think it not improbable that excessive litigation would arise from acting under this clause; in very many cases no two persons would have interest in *like degree*. We must refer again to Mr. Bartholomew's observations upon the subject. We think this part of the Bill would "water-log" itself.

From clause 53 the minimum dimension of inhabited rooms of *one square* has been expunged. The forbidding rooms to be occupied as dog-kennels requires explanation; is it intended that no dog may be kept within a house?

Clause 54.—We think among the dangerous businesses, floor-cloth manufactories should be clearly expressed; most of those established have been burnt, and some twice within a very few years; wadding factories have all been burnt; the cotton-wool spread on strings throughout every part of such buildings in a few seconds, involving the whole in flame.

We must again refer strongly to Mr. Bartholomew's observations relative to the 55th and 56th clauses.

Clause 66. And be it enacted, with regard to such surveyors to be hereafter appointed under this Act, except district surveyors appointed to new districts, so far as relates to the ensuring the possession of due scientific and practical qualifications, that it shall be the duty of the official referees, and of the president and vice-presidents for the time being of the Royal Institute of British Architects, and of the president and vice-presidents for the time being of the Institution of Civil Engineers, and they are hereby authorized to examine any persons who may present themselves to be examined for the purpose of obtaining a certificate of qualification, with the view of becoming candidates for the office of surveyors of metropolitan buildings of any district within the limits of this Act, and that for that purpose it shall be lawful for such examiners from time to time to appoint such times as to them may seem fit, and from time to time to prescribe such course of examination as to them may seem fit, and that when such rules shall have been registered by the registrar of metropolitan buildings, they shall continue to be in force until they shall be amended, altered or rescinded by other rules to be made by such examiners and so registered; and that unless one week before the election of a surveyor for any district created by this Act, or for any district in respect of which the office of surveyor may become vacant, there be produced by or on the part of any person being candidate for the said office, a certificate of such examiners, certifying that he has been examined, and that he was thereby found to be duly qualified for such office, it shall not be lawful for any justices, by this Act empowered to appoint surveyors, to appoint such person to be such surveyor, and that if such person be so appointed, his election to such office shall be void."

We hardly know what benefit could possibly result from the president of the Royal Institute of British Architects being an examiner, he being neither an architect nor a surveyor; we happen to know that with the "Institute" a knowledge of the technical niceties of the present Building-Act does not flourish; and we believe a worse choice of examiners could not be made. We have all respect for the scientific knowledge of the president and vice-presidents of the Institution of Civil Engineers; but there again we must say their practice leads them to any thing but a mature knowledge of metropolitan building-jurisprudence. As none but a madman would choose judges from any but those who practise at the bar, so prudence and decency require that the examiners should be those who practise in the department of the Building-Act. The examiners, therefore, should be the registrar, official referees, and district-surveyors, and no others. After the publication of the two pamphlets, called "Transactions of the Royal Institute of British Architects," in which are promulgated roofings and foundation-works, which have entirely broken up and gone to utter ruin, no confidence whatever can be placed in the astuteness of that institution. While bearing every respect for its individual members, we are compelled to say that it would be an insult to the profession at large, which it by no means represents, and the confidence of which it most undoubtedly does not possess, to give it any corporate power over that profession. It is formed on no broad basis, except that of a fortunate, extravagant expenditure; for these reasons we have resisted all importunities to membership with it. And there is an extensive belief that the "Institute" will in seven years be no longer in existence; there is indeed no other instance of a body with similar funds, and professing so much, which has in a similar way misconducted itself. Its proceedings and published transactions form a bitter contrast with those of the Institution of Civil Engineers and of the Royal Corps of Engineers, and have humiliated English architecture in the face of all Europe; it has been thought *respectable* to join that society, but we never thought so.

In clause 71 and elsewhere our suggestion has been followed, in so changing the words "her present Majesty," that if the Act endure, the phraseology may still be appropriate.



Clause 77.—We must again state that we think this clause requires some restriction relative to the non-payment of fees to the district surveyor, in case work be not in all respects according to Act. We are convinced that the worthless part of the building class will evade the Act, continue to let the time for remedy elapse, and then evade payment of the fees. The parties who evade the fees are always those who cause the district-surveyor most trouble; some of the inferior class of builders are desperate characters; we know a case in which the offender stood pistol in hand, and threatened to shoot the district-surveyor if he did not go away.

The 78th clause, relating to the district-surveyors' return, is still defective and contradictory: first, it is to contain an account of all works executed within the previous month; secondly, it is to be deemed to be a certificate that all the works enumerated therein have been done in all respects lawfully; and thirdly, it is not to protect offenders from proceedings for matters done before the making such return. Thus the surveyor is literally to return works improperly done, and then an indemnity is provided for enabling prosecution.

We repeat Mr. Bartholomew's suggestion, that the return "be deemed to be a certificate of all works enumerated therein, done in all respects agreeably to this Act, and of such works as have been done contrary thereto, and of the proceedings which have been taken thereon."

Clause 78.—We must again urge the utter impossibility of two official referees performing the multitudinous offices proposed to be thrown upon them; we are convinced that if power to appoint more be not reserved, a new statute must be made.

In clause 89 the words should for clearness run, "he is hereby required to report to the said commission the matter and the particular grounds and reasons for his refusal."

#### ROYAL INSTITUTION.

MAY 31.—Professor Daubeny gave a lecture "On the Provisions for the Subsistence of Living Beings evinced in the Structure of the older Rocks, and in the phenomena which they exhibit."—He began by observing, that as the attention of philosophers was that evening directed to the moon by the eclipse, he thought it might not be inappropriate to illustrate the line of his argument by reference to the supposed structure and condition of that satellite. Supposing then a human being to be transported to the surface of the moon, and to contemplate her in that condition in which astronomers represent her to us as existing—namely, as destitute both of seas and of an atmosphere, with vast cup-shaped mountains, the craters of volcanoes, vomiting forth steam and smoke, and emitting volumes of noxious gases, would he not conceive the globe in question abandoned to those destructive agencies which he saw in such intense activity, rather than that it was in a state of preparation for the abode of beings constituted like himself? Yet what the moon now is, geology leads us to infer that the earth has formerly been; and from the phenomena now presented to us by it, we may infer a train of events to have occurred which, whilst they must have been at the time utterly destructive to all kinds of life, nevertheless prepared the earth for the reception of living beings, and rendered it a more agreeable abode to those which, like man, possessed a feeling of the sublime and beautiful. The Professor then proceeded to point out the provisions for the future existence of living beings which were made in those earlier stages of the history of our globe, when it appears to have been in a condition as chaotic as that of the moon at present. Those ingredients of the crust of the earth which seem designed more especially for the purposes of living beings may be distinguished into such as minister to some object of utility for man in particular, and such as are essential to animals and vegetables in general. The former class, being commonly more or less poisonous, occurs in veins for the most part existing in the older rocks, being stored, as it were, out of the way, before living beings were created. Such are copper, tin, lead, mercury, and other of the metals. The latter, on the contrary,

are more generally diffused through the strata of the globe, although, for the most part, in comparatively minute proportions. Amongst the latter are the fixed alkalis, which are present in all felspathic and other rocks of igneous origin, from which they are slowly disengaged by the action of air and water, in proportion as they are required for the necessities of living beings; whereas if they had been present in a readily soluble form in the earth, they would have been washed into the sea before they could have been made available for such purposes. Another essential ingredient in the structure of animals is phosphoric acid, which appears peculiarly suited for entering into the organization of a living body, by the readiness with which it undergoes changes in its properties, by the character of its crystallization, and (in the case of the bone-earth phosphate) by the association of the *bibasic* with the *tribasic* salt, in equal proportions, which causes each to counteract the tendency to crystallize in the other, and thus renders it more capable of accommodating itself to the delicate texture of the animal fibre. The question then is, whence do animals and vegetables obtain this necessary ingredient? Professor Daubeny and others have detected minute proportions of it in many of the secondary rocks, but as these are derived from more ancient ones, it ought to be present likewise in them. Now we know at least of one instance in which this material occurs in considerable abundance in a rock which, so far as our observations at present extend, seems to have been formed antecedently to animal life. This is the slate rock of Estremadura, in Spain, where, near the village of Logrosan, it had been pointed out as existing many years ago. Exaggerated reports had, however, been spread as to its extent, for Professor Daubeny, in a visit he paid last year to the locality, found that it formed only one solitary vein, generally about ten feet wide, and extending along the surface for about two miles. It also contains a considerable per-centage of fluete of lime, and as this ingredient appears, from recent experiments of the author of this paper, to be present generally in bones both recent and fossil, it would seem that it was treasured up by nature as one of the requisite materials for the bony skeletons of animals. Provision seems to have been also made for supplying living beings with their volatilizable, as well as with their fixed ingredients. The attraction of all porous and pulverulent bodies for gases may explain the manner in which the latter are brought into contact with the secreting surfaces of plants; but it must be remembered, that of the four elements which together constitute those parts of a living body which are dissipated by heat, oxygen alone can be directly absorbed. Of the three remaining, hydrogen must be presented in the form of water, nitrogen in that of ammonia, and carbon in that of carbonic acid. Now volcanoes appear to have been the appointed means of providing both of the two latter in quantities sufficient for the food of living beings, for both ammonia and carbonic acid are evolved in immense quantities from all volcanoes, as the Professor shewed by appealing to the case of Vesuvius and its neighbourhood, as well as to that of other volcanic vents. The production of ammonia in the interior of the earth might, he contended, be readily explained upon the principles of that theory of volcanoes which he had for many years adopted, and which was founded on the great discovery of the metallic bases of the earths and alkalis, which we owe to the genius of Sir Humphrey Davy. Once admit that those substances which we see brought up to the surface, in the shape of lavas and of ejected masses, exist in the interior of the globe, wholly or partially, in an unoxidized condition, and that first sea-water, and afterwards atmospheric air, gradually find access to them through certain crevices, and all the phenomena of a volcanic eruption may be shewn to follow; namely, the intense heat, the escape of muriatic acid, the copious deposits of sulphur, the volumes of carbonic acid, and, lastly, the salts containing ammonia; for if nascent hydrogen, disengaged from water decomposed by meeting with the alkaline metals, were brought in contact with nitrogen under a high pressure, there is every reason to believe that ammonia would be the result. Thus, the very agents of destruction,

which seem at first sight to be antagonist forces to every kind of creative energy, have been, in fact, the appointed means of supplying the materials out of which all organized beings are fashioned. But though the materials for our subsistence are thus provided, it does not follow that man is not to exert himself in order to obtain larger supplies than are naturally placed before him. On the contrary, his business is to husband his resources, and to apply them to the best account. Alluding to a late work of Professor Liebig's, he contended that this eminent chemist could not have meant to discourage the preservation of the volatile ingredients of our manure-heaps, whilst insisting on the paramount importance of supplying those which are fixed. It is true that nothing is lost, for the excrementitious matters which are washed into the sea increase the luxuriance of the marine vegetation, which affords food for a larger number of fishes, which again encourage a greater amount of sea-fowl, which finally deposit, what had been originally derived from the depths of the sea, on the islands of the Pacific, as guano. Thus England contrives, by means of her navies, to bring back from the opposite extremity of the globe, the very material which she originally wasted by the defective arrangements of her large towns. This, however, is a very circuitous mode of proceeding, and the true secret of all agricultural improvement is, to apply the means at our disposal, so as to produce a return for the toil expended in the shortest possible space of time.

JUNE 7.—Right Hon. Sturges Bourne, V. P., in the chair.

Mr. Faraday, "On recent Improvements in the Manufacture and Silvering of Mirrors."—Mr. Faraday's subjects were: 1. The manufacture of plate-glass. 2. The *ordinary* mode of silvering mirrors. 3. The *new* method of producing this result, lately invented and patented by Mr. Drayton.—1. Mirrors are made with plate-glass. Mr. Faraday described glass generally as being essentially a combination of silica with an alkaline oxide. The combination, however, presents the character of a solution rather than of a definite chemical compound, only it is difficult to affirm whether it is the silica or the oxide which is the solvent or the body dissolved. From this mutual condition of the ingredients, it follows that their product is held together by very feeble affinities, and hence, as was afterwards shewn, chemical re-agents will act upon these ingredients with a power which they would not have were glass a definite compound. Mr. Faraday noticed, that as glass is not the result of definite proportions, there are many combinations of materials capable of producing a more or less perfect result. Each manufacturer, therefore, has his own recipe and process, which he considers the most valuable secret of his trade. It is, however, well known that the flint-glass maker uses the oxides of lead and of sodium, the bottle-glass maker lime (an oxide of calcium), and the plate-glass maker, in addition to soda, has recourse to arsenic. Mr. Faraday then adverted to the corrosion which takes place in the inferior qualities of glass, owing to the feeble affinity with which their ingredients are held together. He stated, that from the surface of flint-glass a very thin film of soluble alkali was washed off by the first contact of liquid, leaving a fine lamina of silica, the hard dissoluble quality of which protected the surface which it covered. If, however, this crust of silica chanced to be mechanically removed, the whole of the glass became liable to corrosion, as in ancient lachrymatories and other glass vessels. Mr. Faraday illustrated this by the corroded surfaces of two bottles, one obtained from a cellar in Threadneedle-street, where it had probably remained from the period of the great fire of London, another from the wreck of the *Royal George*. A still more striking instance of the instability of glass as a compound was exhibited by formations in the interior of a champagne bottle, which had been filled with diluted sulphuric acid. In this case the acid had separated the silica from the inner surface of the glass, and formed a sulphate with its ingredient, lime. The result was, that the bottle became incrustated internally with cones of silica and sulphate of lime, the bases of which, extending from within outwards, had perforated the sides of the bottle so as to cause the escape of the liquor it contained.



Mr. Faraday referred to the long period of annealing (gradual cooling) which glass had to undergo as a necessary consequence of glass wanting the fixity of a definite compound. He concluded this part of his subject by describing the mode of casting plates, and the successive processes which gradually produce the perfect polish of their surface. 2. Mr. Faraday next exhibited to the audience the mode of silvering glass plates as commonly practised. He bade them observe that a surface of tinfoil was first bathed with mercury, and then flooded with it. That on this tinfoil the plate of glass, having been previously cleansed with extreme care, was so floated as to exclude all dust or dirt; that this was accomplished by the intervention of  $\frac{1}{4}$  in. of mercury (afterwards pressed out by heavy weights) between the reflecting surface of the amalgam of the mercury and the glass; and that when the glass and amalgam are closely brought together by the exclusion of the intervening fluid metal, the operation is completed. 3. The great subject of the evening was the invention of Mr. Drayton, which entirely dispenses with the mercury and the tin. By than gentleman's process, the mirror is, for the first time, literally speaking, *silvered*, inasmuch as silver is precipitated on it from its nitrate (lunar caustic) in the form of a brilliant lamina. The process is this: on a plate of glass, surrounded with an edge of putty, is poured a solution of nitrate of silver in water and spirit, mixed with ammonia and the oils of cassia and of cloves. These oils precipitate the metal in somewhat the same manner as vegetable fibre does in the case of marking ink—the quantity of oil influencing the rapidity of the precipitation. Mr. Faraday here referred to Dr. Wollaston's method of precipitating the phosphate of ammonia and magnesia on the surface of a vessel containing its solution, in order to make intelligible how the deposit of silver was determined on the surface of clean glass, not (as in Dr. W.'s experiment) by mechanical causes, but by a sort of electric affinity. This part of Mr. Faraday's discourse was illustrated by three highly striking adaptations of Mr. Drayton's process. He first silvered a glass plate, the surface of which was cut in a ray-like pattern. 2nd. A bottle was filled with Mr. Drayton's transparent solution, which afterwards exhibited a cylindrical reflecting surface. And 3rd. A large cell, made of two glass plates, was placed erect on the table, and filled with the same clear solution. This, though perfectly translucent in the first instance, gradually became opaque and reflecting; so that, before Mr. Faraday concluded, those of his auditors who were placed within view of it saw their own faces, or that of their near neighbours, gradually substituted for the faces of those who were seated opposite to them.

#### INSTITUTE OF BRITISH ARCHITECTS.

JUNE 3.—T. B. Papworth, V.P., in the chair.

Mr. C. H. Smith resumed the subject commenced on the 29th of April "On the Magnesian Limestones, especially with reference to those employed in the New Houses of Parliament." Previously to the Commission appointed to investigate the choice of a material for the Houses of Parliament, the proper selection of stone for building purposes with regard to its quality had been strangely neglected. Public attention was first called to this subject by Mr. (now Sir H.) De la Beche in 1835, and the inquiries originated by that gentleman resulted in the establishment of the Museum of Economic Geology and the Commission of which Mr. Smith was a member. On the first preparations for rebuilding the Houses of Parliament, efforts were made by our neighbours in Normandy for the introduction of Caen stone, and a great number of specimens were sent, comprising stone of every quality, from the best to the worst, all passing under the same name. In selecting the stone for the Houses of Parliament, the Commissioners had to take into consideration a variety of circumstances, independent of the mere quality; as the situation of the quarries, the facility of water-carriage, and the assurance that the supply of stone would not fail during the progress of the work, and that the cost of labour upon it should not greatly differ from that upon the building stones in general use. Upon comparing the produce of many quarries,

the Bolsover Moor stone appeared to the Commission to be the best adapted; and as beds of stone of nearly the same quality extend over a tract of about fifteen miles from north to south, the quarries of North Anston were finally selected, as uniting in the greatest degree all the conditions demanded. In this locality an ample supply of stone lies at a depth of from ten to fifteen feet. Eight beds of stone, of the best quality, are found lying nearly level, the uppermost affording blocks of four feet thick, and the remainder from two feet and a half to eighteen inches. The quantity of stone supplied from the Norfol Quarry at North Anston, between February 1840, and April 1844, amounted to 726,893 cubic feet. Mr. Smith made some remarks on the effect of lichen on the surface of stone, which has been supposed favourable to its preservation. His own observation had led him to a different conclusion, as he had found stone covered with lichen reduced to powder to the depth of a sixteenth of an inch on its removal; and he suggested that the lichen had had the effect of absorbing some of the elements of the stone. In some specimens of magnesian limestone the lichen appeared to have taken up the lime, and left the magnesia. A model was exhibited, and a description read, of M. P. Journet's system of scaffolding for high chimneys and columns; also of his machine for raising bricks and other materials.

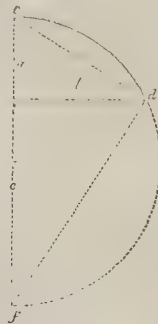
#### CHURCH EXTENSION.

The meeting of the Incorporated Society for promoting the Enlargement, Building, and Repairing of Churches and Chapels, for the present month, was held at St. Martin's-place, Trafalgar-square, on Monday last; his Grace the Archbishop of Canterbury in the chair. There were also present the Bishops of London, Durham, Winchester, Lincoln, Gloucester, and Bristol; Bangor, Norwich, Ripon, and Lichfield; Sir R. H. Inglis, Bart., M.P.; Revs. H. H. Norris, B. Harrison, and C. B. Dalton; Messrs. J. S. Salt, H. J. Barchard, N. Connop, W. Davis, Arthur Powell, &c. The committee ordered the payment of several grants to parishes where the works have been completed, and, among other business transacted at the meeting, voted new grants of money towards building eight additional churches or chapels, re-building one, and enlarging or otherwise increasing the accommodation in fourteen existing churches or chapels; making twenty-three grants in all. The new places of worship are to be erected for districts in the parishes of St. Michael, Lichfield; St. Clement, Truro; Kingsclere, near Newbury, Berks; Barnstable; Wookey, near Wells; Godalming, Surrey; Windsor, Berks; and St. Lawrence, Kent. The churches to be enlarged, &c., are situated in the parishes of Castle Church, Staffordshire; Bromsgrove, Worcester; Wormley, near Waltham Cross, Herts; Beoley, Worcester; Coombe Bisset, Wilts; Ilkeston, Derby; Uppington, near Shrewsbury; Buckfastleigh, Devon; Cheetham Chapelry, in the parish of Manchester; All Saints, Hereford; Penn, near Wolverhampton; Llanwddyn, Montgomeryshire; Jevington, Sussex; Duke's-place, London; and Worcester (Block-house Church). Four of the districts in which new churches are to be erected are situate from two to two and a half miles from the nearest church; and in all the districts assisted, the bulk of the population consists of the poorer classes of society, for whom no provision of church accommodation now exists. The twenty-three parishes above referred to contain a population of 420,394 souls; they have at present church accommodation for 58,429 persons in sixty-seven churches and chapels, or less than one-seventh of the whole number; and of that provision only 18,460 sittings are free, being one free seat for twenty-three persons; by the erection of the eight additional churches, and the enlargement, &c., of the existing buildings, 6,679 seats will be added to the present insufficient provision of church room, 5,604 of which will be free; raising the proportion of free sittings to one seat for seventeen persons. The importance of providing the means of attending public worship for the poorer classes is every day becoming more apparent; it will be seen by the above statement that more than two-thirds of the whole additional accommodation is to be free

and unappropriated, and in several instances the whole of the church will be thrown open without reserve. The deficiency of church accommodation in particular parishes as it now exists will be better understood when it is stated that Ilkeston, near Nottingham, contains 5,329 inhabitants, and one church with 448 seats, or for about one-thirtieth of the population, not one of which is free. St. Clement's parish, Truro, has a population of 3,436 souls, and sittings for one person in eleven, with only ninety free seats. St. Michael and St. Chad, Lichfield, contain together 5,359 inhabitants, with 950 seats in the two present churches, 200 of which are free. Bromsgrove has a population of nearly 10,000 persons, with accommodation for one-seventh of that number, including only 268 free sittings; and Barnstable, with nearly 8,000 inhabitants, possesses church room for 1,453 persons, including only 100 free seats. In these six parishes, containing together more than 31,000 souls, upwards of 27,000 persons have been hitherto unprovided with the means of attending public worship, while the free accommodation in the present churches is only 658 seats.

#### ARCHITECTURAL GEOMETRY, No. V.—

TO FIND THE CENTRE FOR STRIKING ANY SEGMENTAL ARCH.



The rule is founded on the principle that, *As the versed sine (a) is to the half chord (b), or the right sine of half the arc, so is b to the complement (c) of the diameter; therefore c added to a is the whole diameter, half of which is the radius of the curve; thus, if the rise of an arch be 2 ft., and its half span 6 ft., its radius will be 10 ft. Example—*

ft. ft. ft.  
As 2 : 6 :: 6 : 18

6

2)36

18 ft. complement of the diameter.

2 ft. rise of arch.

2)20 ft. whole diameter.

10 ft. radius.

or—  
 $\frac{b^2}{a} + a$   
2 = radius.

Wherever in the semicircle the angle  $d$  is placed, the angle  $dfe$  is right or of  $90^\circ$ ; hence the rule by which in fluting columns, if the flutes are of a semicircular plan, the angle of a builder's square moved round in them will touch in succession every part of their concave. *b.*

**SOCIETY OF ARTS.**—At the fifty-seventh anniversary held in the great room of the society, John-street, Adepthi, on Monday week, the silver medal was presented by his Royal Highness Prince Albert, president to the society, to A. E. Brae, Esq., of Leeds, for his improved chimneys for house clocks.

His Royal Highness Prince Albert laid the foundation-stone of the new Hospital for consumption and diseases of the chest on Wednesday week, at one o'clock, on a spot at the north side of the Fulham-road, a little west of Pelham-crescent, Brompton.



SOMATOLOGY, OR THE ESSENTIAL AND  
CONTINGENT PROPERTIES OF MATTER.  
BY ALEXANDER JAMIESON, LL.D.

THE Greek and Roman languages furnish us with many of the terms or words which we employ in scientific discourse. Among these may be classed the word that we have written as the title of this essay: it is a word purely Greek, and signifies a discourse about matter or bodily substance. The Saxon language has furnished the word body which originally signifies stature, and our old writers define it as implying a compound of matter and form, but in their application of the term, they restrict its signification to any substance possessing a definite form, as an animal.

The word *matter*, on the other hand, both anciently and now, comprehends, in common parlance, any thing in which extension predominates, together with a capability of resistance, without any regard being had to external figure. And the epithet *substance* assimilates all the objects to which it is applied to particular portions of matter presented to our senses, under various appearances and forms.

Hence, the terms *body*, *matter*, *substance*, though usually employed as synonymous, have, in reality, different significations: the first implying figure; the second, gross mass; and the third any thing not aeriform; yet air or gas, or vapour is a substance, and therefore matter, as much as a piece of coal or a bronze statue. Thus, a pint of water driven off as steam from the boiler of a low-pressure engine, fills a space capable of holding two thousand pints, and raises the piston through this with a force of many thousand pounds; and immediately afterward re-appears in the cold condenser as a pint of water which is doubtless substance.

But it will suffice for our purpose to observe that the words now under consideration, like a great many others employed in treating upon scientific subjects, are rarely confounded by their use and application. All men speak of bricks, lime, timber, iron, slates, stones, marble, &c., as the materials out of which houses are built. And we talk of the finest pieces of sculpture that represent the figures of men and women, as marbles. No one mistakes these marbles for the spherules of baked clay that children play with. So also by the term *materials* we understand rough, misshapen, uncemented, unconstructed masses; but whatever has order and symmetrical arrangement, that we call *body*; and the noun *substance* will indicate any thing palpably gross in opposition to such things as are fluid or aeriform; yet we have shewn that water and vapour or the clouds of the sky, have substance as well as the rocky mountains, or the people who throng the crowded city.

We are never misunderstood when we say, the wind blows, the rain patters, the river rolls its waters along, the smoke rises, the clock strikes, the engine works, the ship sails; yet all these phrases are as metaphorical as they are literal. Who does not know that the blowing is the wind, else whence the exclamation, "it blows hard?" That the pattering is the rain falling? That the declivity in its channel causes the water in the river to roll? That the air raises the smoke? That the hammer strikes the bell of the clock? That the engine is put in motion by some agent foreign to itself? That the ship is borne along on the bosom of the deep by the wind which fills her sails?

OF BODY, THAT IS, MATTER OR SUBSTANCE.

To illustrate our notion of body, that is to say, of matter, which is something that possesses qualities or properties discernable to our senses, let us take a billiard ball which has figure and colour; and which may be put in motion; but the ball is not figure, nor is it colour, and it is not motion, though it may be made to move. It is none of these individually, and collectively they do not constitute the matter out of which the ball was made. The ball has something that has figure and colour, and that may be put in motion. This is a dictate of nature and the belief of all mankind. But the ball is ivory; and ivory is the tooth of an elephant, or the tooth of an elephant is ivory. And what is ivory? Matter; the essence of which is totally unknown to us, but we have the infor-

mation of nature for the existence of those properties in matter which our senses enable us to discover, and upon which it is our province to reason and speculate. The essence, like the origin of matter, is impetuously hid from our view.

"IN THE BEGINNING GOD CREATED THE  
HEAVEN AND THE EARTH."

Here all our boasted knowledge ends, and here our faith dates its origin. The heaven studded with innumerable stars, each of which we may consider the centre of a system as vast as that to which our earth belongs! And the earth! the habitation of rational, accountable beings, created in the image of God, who has assigned it to man with all that it possesses and all that it can produce. It is, then, with that heaven and with this earth that natural philosophy professes to make us better acquainted, and in proportion as it augments our stock of knowledge, it is calculated to increase our faith in that sublime truth which could only be revealed of old by the Creator and Governor of the Universe, and who alone knoweth the essence of which matter hath been formed.

From an object so familiar to our view as a billiard-ball, let us now turn our attention to the materials composing the earth that we inhabit, and inquire whether they have always existed as we find them, or whether they have undergone changes as wonderful as the ivory ball made out of the tusk of an elephant.

Our earth has undergone vast changes on its surface as well as in its interior mass. If the ocean once stood at the height of fifteen thousand feet above its present level, a quantity equal in bulk to a four hundred and fortieth part of the whole earth must have passed from being above the level of the present sea to be under it. And these changes may have produced great variations in the position of the earth's axis, which may have gone through a long series of changes, and may have carried the equator, and the accumulation of waters which accompanied it, over regions from which they are now far distant. Many facts in the natural history of the earth and of its mineral kingdom give countenance to these suppositions; and if it be true that the more ancient strata have been set on edge, and that the continents have been raised up by the action of an expansive force in the interior of the earth, we shall be compelled to admit the existence of numerous agents or laws employed by the Creator of the World in regulating the varied phenomena of matter, as the action of impulse, cohesion, elasticity, chemical affinity, crystallization, heat, light, magnetism, electricity, galvanism, with the existence of a principle more general than any of these, and connecting all of them with that of gravitation.\* Let us call that indescribable principle the essence of matter. We are as far from defining what matter actually is, as we are from accounting for Saturn's ring, or the belts that skirt the planet Jupiter. In fact, we know nothing of matter but what concerns its various properties. But we have made prodigious advances upon the scanty knowledge of the ancients, who regarded air, fire, water, and earth as the four primary elements of which all things were composed, and each of which was separate and for ever distinct from the others.

The fire burns before me; it is nourished by fuel; that fuel is coal, which takes its origin from the vegetable kingdom. We found this conclusion upon experiment. By distillation coal yields a watery phlegm, volatile oil, volatile alkali, and thick oil, which last, on being rectified, produces a thin oil; but it is remarkable that this last, by exposure to the air, becomes black like animal oil. Besides, we find traces of vegetables very abundant in the strata of coal-fields. And it is no argument against our theory that many of the vegetable remains found in the coal-strata of Great Britain belong to classes of plants which are now found only to exist in the equatorial regions. Thus, the Grampian Hills had formerly spices waving on their tops, while at their bases the crocodile swam† but at the great and universal deluge, convulsions and dislocations changed the exterior surface of our globe, and deposited in its bowels vast forests of antediluvian growth, which have become those great magazines of fuel, so con-

venient for the use of man, and in the application of which he finds such ample scope for the exercise of his industry and ingenuity.

Moreover, we convert coal into gas, which is merely an accidental state of existence in which any body may exist, according to the degree of heat which it can imbibe. How much further the ingenuity of man may change the matter we call coal, it is quite impossible to foretell; because in coal, as in all matter, there is the existence of a principle more general than any which chemistry hath yet discovered, namely its essence, and which will for ever prevent it from annihilation. But though we cannot divine this essence or principle of matter, for we may extend it to all bodies, there are some kinds of matter that we can bruise, others we can cut and divide, some we can dissolve, and the appearance of all may be changed in many ways; yet reduce them as we may by divisions, subdivisions, by chemical experiments and mechanical contrivances, the particles, how minute soever, are indestructible atoms, which occupy some space to the exclusion of all other matter from that individual space; and this occupancy of space is the simplest and most complete idea we can have of material existence.‡

The most perfect idea we can form of atoms is by viewing the tumultuous motion or agitation of the celestial fluid, which we call air, while the sun is above the horizon. The sky may seem transparent and undisturbed to the naked eye, but a good telescope will shew us what a tumult arises in the atmosphere from the agitation of the sun's beams in the heat of noon-day—not unlike what is raised in the waters of the sea by the impetuosity of the wind. It increases with the altitude of the sun, and when the evening comes on, it subsides almost into a calm.§ It may be pertinent to our present idea of atomic existence to observe that the Hebrew word *day* is derived from a root signifying *tumult, tumultuous motion*; and from the same root is derived the word *sea*, evidently from its being the submissive patient of winds, tides, currents, and caloric action. But that the reader may not fancy we have pressed this idea into our service, we refer him to Parkhurst's Hebrew Lexicon,|| in which he will find this thought handled in a very masterly style. Not that the learned lexicographer introduces the various etymons of the Hebrew word *day* to prove the signification that Moses attached to the root, but to give a true and faithful exposition of its various imports as diversified by prefixed particles and terminal adjuncts. Moses writes that "God said, Let there be light, and there was light, and the light he called 'day';" Genesis, ch. i. vv. 3, 4, 5.

Though the ancients made no experiments to prove the relation of the atmosphere to other matter in the universe, the definition which Moses, guided by the spirit of inspiration, gives of light being called day, and day signifying in the Hebrew tongue the tumultuous motion of the celestial fluid, plainly informs us that he understood how its two great and constituent ingredients existed as distinct substances. Modern experiments squeeze out the heat, make its particles collapse from their aeriform distances, and assume the state of a tranquil fluid; which may then be retained as such for ever, or may be decomposed and rendered solid in combination with other bodies;¶ or it may be again set at liberty as a light, invisible, impalpable fluid, such as mankind breathe, and which envelops the earth all around to the height of many thousand feet. Such is the effect of heat, that flame and smoke are merely hotter air rising in the midst of colder. Flame is coal in the form of gas, or mineral ingredients in combustion combined with the oxygen of the atmosphere. And smoke consists of all the dust and visible particles which are separated from the fuel, without being burned. These minute particles are light enough to be borne aloft in a current of heated air; but all that is visible of smoke is in reality heavier than air, and presently falls again, as the ashes of a volcano fall upon the sea, or the surrounding country.

The subject in hand is finely illustrated by viewing the clouds that float along the sides

\* Arnot's Elements of Physics, vol. i. p. 12, 5th edition.

† Rev. Wm. Jones's Essay on the First Principles of Natural Philosophy, p. 241.

‡ Quarto edition, 1792, pp. 312 and 313.

§ Arnot's Physics, v. i. p. 323.

\* Playfair's Outlines of Natural Philosophy, vol. ii., p. 341.

† Dr. Buckland's speech at the British Association held at Edinburgh, September, 1834.



of high mountains in horizontal strata. At a certain temperature the water is separated from the air, which is then too dry to have clouds. It then becomes fog, or mist, which when further condensed, by groups of the moist particles uniting, forms rain; and rain greatly cooled becomes snow, and at its maximum of condensation it is hard ice. Thus we see how the atmosphere, which is often charged with noxious exhalations from unhealthy marshes and stagnant pools, may, in certain regions, be too pure to admit of these admixtures; yet in all its purity be as much a subject of philosophical speculation as a mass of ice and a stream of water.

(To be continued.)

#### THE WELLINGTON STATUE.

THE Lord Mayor having invited the King of Saxony on the occasion of his Majesty's contemplated visit to the public buildings of the city, and his Majesty having appointed yesterday, and at the same time expressed his wish that ceremony should be dispensed with as much as possible, the necessary preparations were made in accordance with that request. The Lord Mayor received the King, who arrived at a little after 1 o'clock, at the great gate of the Mansion-house, in the neighbourhood of which immense crowds were assembled, partly congregated in consequence of the report of his Majesty's entrance into the city, and partly on account of the expected opening of the statue of the Duke of Wellington in front of the Royal Exchange.

His Majesty having viewed the principal rooms in the Mansion-house, and expressed his admiration of the Egyptian-hall, the lobby, and the far-famed convivial apartments on the same floor, proceeded, accompanied by the Lord Mayor and the Sheriffs, to the Old Bailey, where he sat for a considerable time, most attentively listening to the trial of a prisoner for housebreaking, and seemed particularly struck with the mode in which the business was conducted by the learned gentlemen of the Central Criminal Court. The length of time the King remained in the court, which was until the conclusion of a long case, prevented his Majesty from paying a visit to the interior of the gaol, but he expressed great interest in all that he witnessed.

His Majesty then returned with the Lord Mayor to the Mansion-house, where a most splendid *dejeuner à la fourchette* was prepared in the long parlour, consisting of the richest delicacies and wines of the highest order. As his Majesty had expressed his wish that his visit should be treated in an unceremonious and private manner, the Lord Mayor limited his invitations to about thirty ladies and gentlemen.

While the King was at breakfast at the Mansion-house, Mr. John Masterman, M.P. for the city of London, and Sir Peter Laurie, suddenly and most unexpectedly appeared as a deputation from the Royal Exchange and Gresham Trust Committee, to notify that they were about to open the statue of the Duke of Wellington, and to beg that his lordship would signify to the Royal guest that they hoped his Majesty would honour them by witnessing the ceremony. The King upon hearing the Duke of Wellington's name, expressed the most anxious desire to be present upon an occasion of doing honour to so illustrious a man, and proposed to the Lord Mayor, the Lady Mayoress, and the ladies and gentlemen at the table to proceed immediately to the spot on which the statue of the Duke was to be unfolded to the public gaze.

At this moment the streets of the immediate neighbourhood were not only densely crowded, but the windows and the very tops of the houses in the adjoining parts of Cornhill, Mansion-house-street, the Poultry, King William-street, and Prince's-street, were occupied by shouting multitudes. The King walked arm in arm with the Lord Mayor, followed by his lordship's guests, through masses of people from the gates of the Mansion-house to the entrance to the space assigned for the chairman and committee, and was most warmly received.

The band struck up the national anthem as the King of Saxony and the Lord Mayor entered the space before the statue, and the committee received his Majesty with acclamations. The King appeared to be overwhelmed with astonishment at the scene which pre-

sented itself, and declared that he never beheld such an extraordinary multitude. The committee having walked twice round the statue, the covering of which was removed instantaneously amidst cheers from all around.

His Majesty then proceeded to take a view of the interior of the Royal Exchange, and we confess with regret that we never saw any place so unfit for public exhibition. A building which under other circumstances would deservedly have attracted admiration was hurried through almost without notice, every one being glad to escape with safety from the confusion of bricks and poles, and planks and lime-dust with which all the avenues were plentifully strewn.

On the return of his Majesty and the Lord Mayor towards the statue, a circle was formed around it, and

Mr. L. Jones said he thought it necessary, as it naturally might be expected, that he should state to his Majesty on behalf of the trustees and committee why they were assembled on that day on that spot. They met to pay a grateful tribute to one of the greatest men ever produced by this or any other country. It was needless for him to say that he meant the Duke of Wellington. (Immense cheering.) It would ill become him to say one word about the transcendent merits of that great man, because those merits were known to, and acknowledged by the whole civilized world. The citizens of London felt it particularly incumbent upon them to erect a statue to that illustrious person by subscription; and with the aid of the government, who had supplied the metal from the guns which Wellington himself had taken from the enemy, they had succeeded in thus proving their gratitude. This monument of a living warrior had been framed by the hand of a great artist, now no more; and it was a gratifying fact that it was the first equestrian bronze statue which ever had been raised during the life of the person represented. Never had either king or subject the opportunity of seeing himself so represented before. (Loud cheers.) Independently of the vast military renown of the Duke of Wellington, the claim of his Grace upon the gratitude of the citizens of London, for advancing its interests by promoting the improvements and embellishments which the visitors to this great city looked at with wonder, was such that they were determined to give effect to that feeling in a way which posterity would be well able to appreciate, and would leave an example worthy of imitation.

Three cheers were then given for the Duke of Wellington, and the King pulled off his hat, and joined as heartily in the cheering as any one in the assembled multitude.

A hearty cheer was then given for the King of Saxony, and his Majesty returned with the Lord Mayor, cheered all the way, to the Mansion-house, where he sat down and finished the repast, which had been thus rudely interrupted.

His Majesty afterwards accompanied the Lord Mayor to the Temple, and visited the ancient church, the hall, and the library; and at 6 o'clock the King took his leave of the Lord Mayor, having expressed the greatest delight at all he had witnessed in the ancient and hospitable city of London.—*Times*.

#### LECTURES ON ARCHITECTURE AND ANTIQUITIES.

##### Lecture III.

ON GRECIAN ARCHITECTURE—THE DORIC STYLE.

(Continued from p. 301.)

THE Panathenæan procession, which, with fifteen\* of the metopes likewise belonging to the Parthenon, now adorns the British Museum, under the name of the Elgin marbles, consists, as before observed, of many hundred figures. Among them are several equestrian figures, which are designed in the most admirable manner, and are remarkable for the varied attitudes of the horses, and for the ease and grace of the riders. Other figures in the procession are charioteers in their cars, one of whom is supposed to be the victor in a chariot-race, as a man is about to crown him. Then follow men carrying trays, then the sacrificers and the oxen, each Athenian colony sending an ox to this great festival; females are also present, some carrying dishes or

\* The sixteenth metope in the British Museum is a cast in plaster, taken from the original, which is in the Royal Museum at Paris; it is marked in red No. 9.

pataras, others bearing pitchers of water; two of the young females had situations of great importance, their office being to carry the sacred baskets. Several gods and goddesses are likewise introduced; they are seated, to denote their dignity. These figures are all in high relief, so that they were visible at some distance; and although it is impossible now to decide how much was the actual work of Phidias himself, it is highly probable that they, as well as the other sculptured decorations of the temple, were all designed by the great master. (It is known that he practised the art of painting previously to that of sculpture.) It has been ascertained that they are as carefully finished behind as before, and in places which could not be visible when once they had reached their destination; hence it is justly inferred that all these sculptures had to undergo the ordeal of a searching criticism of the public eye before they left the artist's studio.

In addition to the embellishments already described which adorned the temple, Phidias made the celebrated statue of Minerva, which stood in the cell or open part of the building. This figure, formed of ivory and gold, was thirty-seven feet high. Pausanias says that it stood erect; the goddess was represented with her garments reaching to her feet, helmeted, and with a Medusa's head on her breast; in one hand she held a spear, and on the other stood a Victory of about four cubits high. Monsieur Quatremère de Quincy, who bestowed great pains in investigating the subject of ancient sculpture, has calculated that the value of the gold employed on this famous statue was equal to 130,000*l.* sterling. "When the question was agitated in the assembly, whether marble or ivory should be employed in the statue of the goddess, and Phidias the sculptor recommended marble as the cheaper material, the assembly on that very ground unanimously decided for ivory." (Bishop Thirlwall's *Greece*, vol. iii., p. 68.) This majestic statue was in existence in the time of Julian the Apostate, a period of 800 years after its erection; after that date its fate is unknown. The indefatigable sculptor made five other statues of the same goddess, all colossal, one of which, the Minerva Polias, fifty feet high, was placed in the Acropolis, whence the crest and helmet could be perceived at sea at the distance of twenty-five miles, serving as a guide to the homeward-bound mariner as he rounded the promontory of Sunium. The great artist and his patron were assailed by the shafts of satire and calumny. "To ruin Phidias was one of the readiest means both of hurting the feelings and of shaking the credit of Pericles. If Phidias could be convicted of a fraud on the public, it would seem an unavoidable inference that Pericles had shared the profit. The ivory statue of the goddess in the Parthenon, which was enriched with massy ornaments of pure gold, appeared to offer a ground-work for a charge which could not easily be refuted. To give it the greater weight, a man named Meno, who had been employed by Phidias in some of the details of the work, was induced to seat himself in the agora, with the ensigns of a supplicant, and to implore pardon of the people as the condition of revealing an offence in which he had been an accomplice with Phidias. He accused Phidias of having embezzled part of the gold which he had received from the treasury. But this charge immediately fell to the ground through a contrivance which Pericles had adopted for a different end. The golden ornaments had been fixed on the statue in such a manner that they could be taken off without doing it any injury, and thus afforded the means of ascertaining their exact weight." (Thirlwall's *Greece*, vol. iii., p. 36.) Another accusation was more successful in accomplishing the sculptor's disgrace. "Some keen eye had observed two figures among those with which Phidias had represented the battle between Theseus and the Amazons on the shield of the goddess, in which it detected the portraits of the artist himself, as a bald old man, and that of Pericles in all the comeliness of his graceful person. To the religious feelings of the Athenians this mode of perpetuating the memory of individuals, by connecting their portraits with an object of public worship, appeared to violate the sanctity of the place; and it was probably also viewed as an arrogant intrusion, no less offensive to the majesty of the commonwealth. Phidias was committed





VIEW OF THE TEMPLE OF THESEUS.

to prison, and died there." (*Ibid.*) From the very high estimation in which the figures called the Theseus and Ilissus, now in the British Museum, are held by artists, it is fair to conclude that in them we behold two of the actual productions of Phidias, and the thirteenth metope in particular has been suggested to be by his hand. To protect the statue of Minerva in the Parthenon from the effects of sun and rain, a veil, called the peplos, was spread over the open part of the building. It was placed there with great solemnity at the time of the Panathenaic festival, and was the work of young virgins selected from the best families of Athens, having on it embroidered the battle of the gods and giants. In the "Ion" of Euripides allusion is made to the custom of spreading the peplos as an awning. Ion erects a tent 100 feet square,

— "in which to feast  
All Delphi, he prepares the genial board.  
Then from the treasury of the God he takes  
The consecrated tapestry, splendid woof,  
To close with graceful shade the wondrous scene,  
First o'er the roof he spreads the skirted Peplos."

ACT IV.

The poet then describes the embroidery to represent

"The heav'ns, within whose spacious azure round  
The num'rous host of stars collective shine."

A fac-simile of the Parthenon, as far as the architecture is concerned, has been erected at Edinburgh, on the Calton-hill, in a situation resembling the Athenian Acropolis. Mr. Banks proposed it as the model for the Fitzwilliam Museum, at Cambridge. The proportions of its Doric order are imitated in the portico of Covent Garden Theatre.

THE TEMPLE OF THESEUS, which is generally reckoned to belong to the age of Pericles, and earlier in date than the Parthenon, is one of the noblest monuments of Athenian magnificence, and in the time of Stuart was one of the most perfect. "The sanctuary of Theseus was raised by the Athenians after the Medes were at Marathon, when Cimon, the son of Miltiades, expelled the people of Scyros, a retribution for the death of Theseus, and carried his bones to Athens." (Pausanias.) "The situation is admirable, and the building is of pure white marble." (Woods.) "The Athenians imagined at the battle of Marathon that they saw the apparition of Theseus in complete armour rushing before them on the enemy. "To this day the field of Marathon is said to be haunted, as in the time of Pausanias, with spectral warriors, and the shepherds are alarmed in the night by their shouts and by the neighing of their steeds." (Whirlwall's Greece, vol. ii.,

p. 243.) After the Median war was concluded, the oracle advised that the bones of Theseus, who had been banished, should be brought back and deposited honourably in the city. Accordingly, when Cimon, the son of Miltiades, had conquered Scyros, after a diligent search, he there found the remains of the hero, of superior stature, with the brazen point of a spear and a sword lying by him; and having embarked them on board his ship, he carried them to Athens, where they were received with splendid processions and sacrifices. Festivals were instituted and games were celebrated in honour of the event, and on this occasion, it is supposed, happened the contest between Æschylus and the youthful Sophocles for the dramatic prize. Plutarch places this event at a date which is generally considered equivalent to the year 467 B.C. The Parthenon is, by some writers, believed to have been commenced about 448 B.C. (the year in which Cimon died), and to have occupied sixteen years in its erection. In the opinion of Lord Aberdeen, "the temple of Theseus may be considered as nearly coeval with the buildings of the Acropolis, or perhaps of an origin somewhat earlier." (Inquiry, p. 143.) The Theseum is built of Pentelic marble, and is raised upon two steps, being peculiar in this respect. The portico at each end consists of six columns in front; at each side are eleven columns, not counting the angle columns of the porticoes, so that the building is surrounded by thirty-four columns. Behind the porticoes are others, consisting of only two columns between antæ; there are three deep recesses which lead to the cell. There is here no division in the internal part, where it is presumed that the remains of Theseus were buried. This temple is 104 feet long, 45 feet wide, both dimensions being taken on the upper step, and 25 feet 2 inches high; the diameter of the columns is 3 feet 3 inches. The sculptures in the metopes were representations of the exploits of Theseus and of the labours of Hercules, who appears to have been honoured in this temple, as well as Theseus his kinsman and friend. The frieze of the wall behind the eastern portico was adorned with a representation of a battle and victory, in which six of the divinities are present, three of whom are Jupiter, Juno, and Minerva; among the combatants is one of superior stature and dignity, hurling at his assailants a stone of prodigious size; he is supposed to be Theseus in the act of overthrowing the Persians at Marathon. The battle between the Centaurs and Lapithæ was sculptured on the wall behind the western portico. The sculptures, of which there are casts in the British Museum, are, according to

Pausanias, supposed to be the work of the famous Micon.

It has been discovered of late years, that the Parthenon, and nearly all the buildings at Athens, had colours applied to their different enrichments, but it does not appear that the advocates of Greek polychromy have clearly made out that this practice belongs to the pure age of Pericles and Phidias. It is much more likely to have been introduced long after their time.

THE TEMPLE AT CORINTH is probably the most ancient specimen of the Doric order in existence. It is built of a rough, porous stone, and is supposed to have had porticoes of six columns, five of which remain in the western front, and six are seen on one flank; its arrangement perhaps was similar to that of the temple of Theseus; the columns are 5 feet 10 inches in diameter, and their shafts, 21 feet in height, are composed each of a single stone. There is no sculpture upon the temple, as all above the architrave has long since disappeared. Since Stuart's time, five of the columns which appear in the flank in his work have been blown into fragments by gunpowder to assist in building the house of a governor of Corinth. Lord Aberdeen observes, "It has been said that this temple was dedicated to Venus, but in fact no information is to be obtained respecting its origin. Whatever may have been its destination, no one can doubt, from the appearance of the ruins alone, that they formed part of a structure of the most remote antiquity." (Inquiry, p. 131.) In fact, Lord Byron's description almost suffices:—

"There is a temple in ruins stands,  
Fashion'd by long forgotten hands;  
Two or three columns and many a stone,  
Marble and granite with grass o'ergrown."

SIEGE OF CORINTH, ST. XVIII.

By some writers the date of the building has been ascribed to the eighth century B.C.

"One of the noblest efforts of the genius of Ictinus is to be seen in the temple of Apollo Epicurius, in Arcadia. It offers many architectural peculiarities, and exhibits a greater variety of details than are usually met with in the Grecian temples." (Lord Aberdeen's Inquiry, p. 143.) "It is situated on an elevated part of Mount Cotylus, three or four miles from the ruins of Phigalia, and commands one of the most enchanting prospects which it is possible to conceive;—woods, hills, and valleys, lie before it in wild confusion; the distance is determined by the sea, and the venerable oaks with which the temple itself is surrounded confer an additional solemnity and grandeur on the scene." (*Ibid.* p. 145.)



Pausanias, speaking of this building, which is at Bassæ, near Phigalia, states that "the temple of Apollo Epicurius (the deliverer), which, together with its roof, is of stone, surpasses all the temples which are in Peloponnesus, with the exception of that in Tegea, in the beauty of the stone, and harmony of the proportions." "The earliest modern notice we have found of this monument," says Mr. T. L. Donaldson, who has delineated this temple with great pains in the fourth volume (supplemental) of Stuart's Athens, "is in the work of Mons. Pouqueville, who describes the temple as having been sought for about the year 1770, by a Mons. Bocher, an enterprising French architect, proceeding from Caritena, during a second visit to the Morea, who fell a sacrifice to his professional zeal, being murdered by the barbarous Moreotes, near the ruins of the temple. Our countryman Sir William Gell, who believe, was the first who procured any detailed account of the temple, which was found to resemble in magnitude, and to class with the temple of Theseus, at Athens, but to differ from it in the proportions and number of columns on the flanks, and in the singular arrangement of the cella." Attention being thus turned towards a monument of the age of Pericles, erected by one of the architects of the Parthenon, architectural travellers were induced to investigate the structure more narrowly, and in 1812 a party was formed for the purpose of excavating, consisting of Baron Haller, Mr. C. R. Cockerell, Mr. J. Foster, of Liverpool, Mons. Jacques Linkh, of Stutgard, architects, Baron Stackelberg, a superior amateur draughtsman, Thomas Legh, Esq., M.P., and Mons. Gropius, Austrian vice-consul and banker at Athens. Having first conciliated Veli Pacha, son of the noted Ali Pacha, of Jannina, by agreeing to pay him half the value of the marbles, the expedition proceeded to the ruins, where they encamped and employed upwards of one hundred labourers to clear out the interior of the temple, and after three months' exertion they were rewarded by bringing to light the beautiful frieze in high relief that surrounded the interior of the cell, upwards of 100 feet long and 2 feet 1½ inch in height; it was in numerous fragments, which were carefully reunited, representing the battles of the Centaurs and Lapithæ, and of the Greeks and Amazons, the favourite subjects of the early Grecian artists." This frieze is now in the British Museum, and is known as the Phigaleian Marbles; they were procured for the sum of 15,000*l.*, through the intervention of Mr. Hamilton. The entrance to the temple was facing the north, contrary to the usual practice. The temple was 47 feet broad, 125 feet long, and ascended by three steps. There were six columns in each front, and fifteen on each flank, all 3 feet 7 inches in diameter, and 19 feet 6 inches high. In the interior of the cell were attached columns of the Ionic order, of a very ancient character, (together with a single insulated column of the Corinthian order,) over which, on the four sides of the cell, ranged the sculptured frieze. The columns and walls are constructed of the hard and beautiful limestone of the country, but the sculpture and roof are of marble. It would not appear from Mr. Donaldson's description that any decorations existed in the pediments or metopes. "The arrangement of the engaged columns of the cella is very peculiar. A similar disposition has never hitherto been found, though, perhaps, in the temple of Apollo Didymæus, at Branchidæ, near Miletus, the projecting pilasters conveyed the same effect less distinctly expressed. The spaces between the Ionic columns seem to afford admirable situations for statues, as they would be secured by the columns on each side, and by the soffits above, from the occasional inclemency of even that mild atmosphere."

THE PROPYLÆA, a Doric structure, forms the only entrance to the Acropolis of Athens. Pausanias says, "There is only one entrance to the Acropolis, it being in every remaining part of its circuit a precipice, fortified with strong walls. This entrance was fronted by a magnificent building, called the Propylæa, covered with roofs of white marble, which surpassed for beauty all that he had before seen." This was begun during the administration of Pericles, B.C. 437, and was finished in five years,

Mnesicles being the architect, at an expense equivalent to 464,000*l.* The front of the Propylæa consisted of six columns, and at the back of the building was a similar portico; between the two was the wall, in which were five gates: the centre reached from the platform to the height of the entablature; it was 13 feet wide, and was used on solemn occasions for the chariots: the road-way was between two rows of Ionic columns; a gate, 9 feet wide and of less height than the centre, occupied each side, and beyond them were two smaller doorways, which were used for ordinary passage. On the right of the Propylæa was a building called the Temple of Victory-without-wings. On the left was an edifice adorned with paintings, the work of Polygnotus, the subjects chiefly from Homer, and it is supposed that herein stood a group of the Graces draped, the performance of the celebrated Socrates, who pursued his father's profession of a sculptor, until he devoted the energies of his wonderful mind to the study of philosophy.

Plutarch and Diogenes Laertius allude to this performance. The latter says, "Moreover, Duris says that he laboured, and that he carved statues; others assert that the figures of the Graces in the Acropolis, which are clothed, are by him." The bas-reliefs, which were on the frieze of the Temple of Victory, were brought to England by Lord Elgin's agents, and are now in the British Museum. They are brilliant specimens of the design and execution of the best epoch of Grecian art; some of which represent contests between the Athenians and other Greeks during the Peloponnesian war, and others the combats between the Athenians and the Persians. In the British Museum the former are marked Nos. 160 and 161, and the latter are figured Nos. 158 and 159.

Similar in plan to the building at Athens is the Propylæa at Eleusis, and in design little inferior to its Athenian prototype. It was

erected, together with the Temple of Ceres, to which it served as a vestibule, and the connected Temple of Diana-Propylæa, by Pericles, for the solemnization of the Mysteries of Ceres, the most sacred among the religious rites of Greece. Ancient authors appear to have been prevented from mentioning the building by the deep mystery which was cast over the rites. Thus Pausanias pretended that he was deterred by a vision he saw in his sleep from disclosing any particulars concerning the Eleusinium at Athens, and the superhuman interposition forbade him to notice any object contained within the sacred precinct of the temple at Eleusis. The multitudes who resorted to Eleusis to be initiated so contributed to enrich the spot favoured by Ceres, that it began to vie with Athens in splendour and extent, and the Athenians, jealous of its rising greatness, reduced it to the rank of one of their *demi*, or borough-towns. A road, called the Sacred Way, which can be still traced, led from Athens to Eleusis. The Propylæa bears a striking resemblance to that at Athens, having at each end a portico of six columns, five gates, and two rows of Ionic columns within. To make the central opening large enough to admit chariots, the usual arrangement is departed from by the addition of a triglyph in the frieze over the space between the central columns. The pavement, the steps, and every part of the superstructure, were of fine Pentelic marble; the roof also was covered with marble slabs, worked into the shape of tiles; the joints of these tiles were covered with others which follow the slope of the roof, to prevent the admission of water. This ingenious contrivance was the invention of Byzes of Naxos, and it was so highly appreciated by the Greeks, that they honoured the inventor with a statue. The termination of the joint-tiles was formed by an upright tile, on which was painted the lotus. Byzes lived 580 years before the Christian era.

G. R. F.

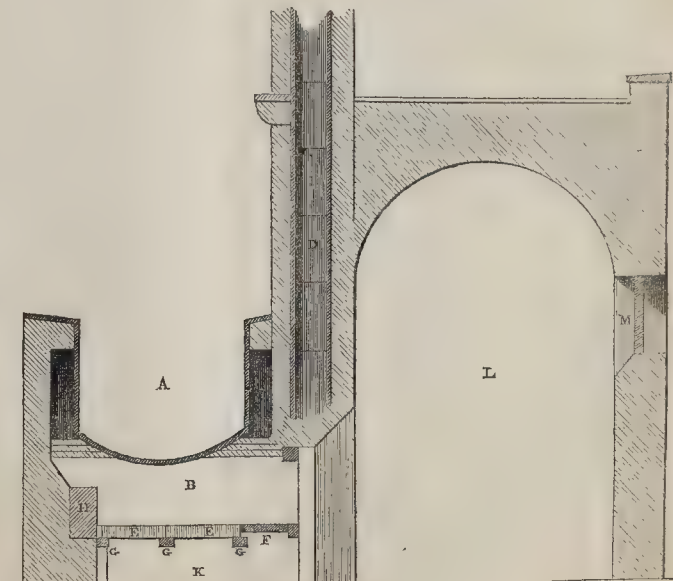
#### DETACHED FURNACES.

TO THE EDITOR OF THE BUILDER.

SIR,—From the very many fires which have happened (with loss of valuable property) from the boiling over of melting-pans or pots, containing combustible matter, I beg leave most respectfully to lay before the numerous readers of your valuable paper a plan, which I feel assured will prevent all danger if carried into

effect. All stoke-holes should be kept distant from melting or boiling-houses by party-walls; if this were done, no danger could exist, for the boiling-matter would not communicate with the furnace.

I am, Sir, your humble servant,  
W. DENLEY, Patentes of the  
Fire-proof Tubular Flues.



#### REFERENCES.

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|--|-----------------------------|--|
| A. Melting-pan or pot.                     | H. Butting-lump, or bridge. | K. Ash-pit.                                |
| B. Furnace.                                | C. Flue.                    | L. Stoke-hole, with iron or slate doors;   |
| D. Patent tubes in the perpendicular flue. |                             | which may be either arched over or covered |
| E. E. Furnace-bars.                        |                             | with iron rafters and slate slabs.         |
| F. Dead plate.                             | G. G. G. Bearing-bars.      | M. Iron-grating for light.                 |



## FIRST LECTURE ON ARCHITECTURE,

BY J. L. THOMAS,

*Delivered at the Literary, Scientific, and Mechanics' Institute, Brecon.*

THE following is an outline report of the lecture on architecture, delivered before the members of the institute, by Mr. J. L. Thomas, on Tuesday.

Mr. Thomas having introduced the interesting subject of his lecture by remarking upon its connection with the liberal arts, and its being the only record and chronicle connecting the infancy of the world with its present state of adolescence, eulogised the spirit of inquiry which seemed to pervade all classes of society, and that it would, ultimately, be productive of the argest and most extended benefit. He then alluded to the origin of building, which he thought little posterior to the creation of mankind, and that man soon found it necessary, in his naked and defenceless state, to erect some habitation which, however rude and inartificial in appearance, would serve the purposes of shelter and defence. He thought it probable, that if these inherent wants and his own natural ingenuity were not sufficient to instruct him, he might learn from the irrational creation; and the swallow's nest or the bee's hive may have suggested hints that were by him adopted or improved, but being destitute of all elegance and proportions, could not merit the appellation of architecture, but are yet worthy of observation as the embryo of the noble edifices which have since adorned the civilized nations of the world. As wealth accumulated, decoration was added to the original objects of building, convenience and safety; for, when the few wants of nature are satisfied, and the dangers of a savage state removed, the restless mind of man creates artificial objects of desire, and no sooner are the cravings of necessity silenced, than the calls of imagination gain attention, and taste becomes importunate when the animal appetites are at rest. He then proceeded to shew that the first great efforts of the art were devoted to religion, and that it seemed to be the prevailing opinion of the earliest, and all other nations, that the greatest human skill and industry could not be more properly exerted than to display the glory of the Omnipotence! He then attempted to give an idea of the size of Egyptian architecture, as the most ancient examples of the art extant, and described the Temple of Ammon, and the enthusiasm of Champollion and Belzoni on discovering the colossal wonders of Carnac. After mentioning many other of the grand productions of Egypt, and shewing that they excited rather the astonishment arising from magnificence of design than the delight from delicacy of execution, he glanced at the remains of Babylon, built by Queen Semiramis around the remains of the famous Tower of Babel, and enumerated her many gorgeous works, as described by historians, which appeared more the ideal fancy of a fairy tale than a stern reality. Then Nineveh, whose greatness no city has ever equalled; and proceeded with a slight sketch of Biblical architecture. Its first rude efforts exhibited in altars sacred to the Deity, and monuments commemorative of the dead, until Solomon came and reared the temple so famous and beautiful. The lecturer then arrived at a period, the most interesting in the history of art, when Cecrops emigrated from Egypt and settled in Attica, and laid the foundation of those arts which soon, under the fostering hand of the Grecians, eclipsed their origin, and assumed that symmetry and form of beauty which excite lofty and pleasing sensations in the beholders. He then compared the remains of Athens with the other great existing monuments of antiquity—Thebes, Babylon, Persopolis, and Rome—and proved the superiority, not only in form and beauty, but in memories and associations, of those master-works of the city of Minerva, which still attract the attention of the scholar and the artist of every other nation. He thought that, although men have sometimes ventured, from motives of vanity and caprice, to deviate from those models, they have commonly returned to them with the clear conviction of having lost sight of excellence in the pursuit of innovation; for the orders of architecture by the Greeks were advanced to that degree of perfection which the united intellect of all the civilized world

have not since been able to surpass. He proceeded for some time with the progress of the art in Greece, and expatiated upon the soothing and elevated effect of its general characteristics; yet, although it originally displayed that kind of beauty which, from the universality of its influence, appeared congenial with the human mind, it has at various times been lost by disuse, corrupted by vicious taste, and mutilated by ignorance. He then touched slightly upon the long train of disastrous casualties, which befel the works of the great Athenian architects, the Persian invasion under Xerxes, and its ravaging effects, their sanguinary domestic wars, the Roman conquest, and the destructive barbarity of some of the Christian emperors who imagined they were doing a service to the Deity by destroying the noblest productions of his creatures. Next, the formidable and barbaric inroads of the northern savages under Alaric the Goth and Genseric the Vandal, the irregularities committed during the crusades and the Turkish conquests. He mentioned this catalogue of disasters with the idea that it may excite those feelings of astonishment and gratitude, which all the lovers of the noble art ought to feel, in the almost miraculous preservation of its models—for the Parthenon still remains though in ruins as a guide to the admirers of the Doric. The Erechtheum, to those of the Ionic and the Monument of Lysicrates in all its faultless elaboration of style to those of the Corinthian.

He then alluded to the great encouragement given to the arts even in little republics, as well as in the great ruling states of Greece, and instance the temple of Selinus, in Sicily, as an example, and minutely described this magnificent building. He thought he should be invading the province of the historian by tracing the revolutions of the progress of the art through several centuries; he therefore rapidly glanced at a few of the great Roman structures, and thought they invariably partook more of the gorgeousness of the many nations she was mistress of mingled together, than the simple and severe forms of the early efforts of Greece. Yet he did not for a moment mean to fix the merits of one style over that of another, as both had their own peculiar excellences.

The Romans excelled in luxuriance of fancy, and richness of style; but in a perfect combination throughout of the highest and purest elements of taste, the Grecians bear away the palm. He then went through a clear and distinct analysis of the three Grecian and two Italian orders, commencing with the Tuscan, as the simplest, and that generally noticed first by all architectural writers; and after giving its general proportions, and the characteristic features by which it may be distinguished, by pointing to large well-shaded drawings representing the principal proportions of each order, he alluded to the Trajan Pillar as the best ancient example, and the Church of St. Paul's, Covent Garden, by Inigo Jones, as the best modern, and described the interior and exterior effect of that church. He then proceeded in the same manner with the Grecian and Roman-Doric orders; he noticed, as an example of the order, the great temple of Minerva Parthenus, and called our attention to a beautiful drawing of the front elevation restored. In giving a minute description of the sculptures of this sumptuous edifice, Mr. Thomas lamented the great deficiency of our modern Grecian buildings in this particular, so different from its primary practice, when the two arts always accompanied each other. But in these days of calculating utility, that which contributes more than any thing else to dignify the science of architecture, to raise it above mere necessity, and rank it with that of the imagination, to indicate at once the purposes of the structure, and appear in the most lively manner to the passions of the spectator, is generally entirely omitted, or if introduced at all, on such a petty scale, and distributed here and there with such a miserly hand, that it cannot tell decidedly of itself, or its true impressions be properly tested. In noticing the Roman-Doric, he mentioned the monument commemorating the great fire of London, by Sir Christopher Wren, and afterwards entered in a similar manner into the details of the Ionic order, and described the Small Temple on the Ilissus as a chaste and beautiful speci-

men, contrasting admirably with the richer example of the Erechtheum, of which temple he drew an interesting picture, alluding to the many holy objects of Athenian veneration inclosed therein.

He next passed on to a review of the Composite order, and exhibited a large drawing of the Arch of Titus, in which structures the Romans generally introduced the order. He thought the subject of the drawing a most interesting object, as connected with one of the greatest events in history—the destruction of Jerusalem and the dispersion of the Jews. But important as these associations are, it is not these alone which give to this work the interest and importance with which the professional man views it, but because it forms in itself a relic of a new and important epoch, by the introduction of the Arch in architecture, which, although it may have been practised by some of the primitive nations, was unknown in ancient Greece. And if the Romans could boast of no other inventions; if the origin of all that was beautiful and excellent in many other arts could not be traced to them; if their poets, orators, statesmen, and soldiers were not the greatest ever in existence; if they had not by their own glorious achievements made themselves masters of the whole habitable globe, this one discovery in itself would be sufficient to stamp an immortality on their name, as it in fact forms the true basis of the science of architecture, admitting of the extension and adaptation of its principles to works which the Greeks, with all their genius and taste, could not have executed. He next adverted to the Corinthian order, its supposed origin, characteristic distinctions and proportions, which were clearly exemplified by a drawing on a very large scale of the base, the capital, and the entablature, copied from the remains in the Campo Vaccino, at Rome, after Sir William Chambers. The graceful and elegant proportions of the order had a wonderfully fine effect, and the frieze was beautifully enriched with a classic design by Mr. Thomas. He then compared the Grecian and Roman practices of this order, and minutely described the elegant monument of Lysicrates, as one of the finest Grecian productions, but proved the superiority of the example from the Campo Vaccino in many minute particulars. He concluded his analysis of the orders by eulogising the liberality of the nation in procuring the inestimable treasures of the Elgin Collection. Mr. Thomas then apologized for the unavoidable technicalities of the description of his discourse; but his object was to excite a thirst in the workman after greater research into the minutiae of the science, until he is enabled to execute the component parts with truth, taste, and delicacy, without which the finest designs will be very deficient in beauty. He encouraged them to surmount all difficulties in the acquirement of such knowledge, by persevering assiduity, for they were not only increasing the power of the head to contrive as well as the hand to execute, but elevating themselves from mere mechanical drudges to somewhat of the dignity of an artist. He then descended upon the merits and advantages of the institutions which have been formed in almost every town in the United Kingdom for the encouragement and enlightenment of mechanics, and strongly urged all who were in any way connected with the building crafts—all who were desirous of distinguishing themselves—of raising the character of their respective employments—of emulating the glorious works of their predecessors—of rearing the prostrate column, and reconstructing the shivered arch, which had been so long a ruined mass, on the pure and firm basis of science; of acquiring those intellectual qualifications, which are as indispensable to the working mason as to the carpenter or any other artisan; of depending on their own resources for the proper carrying out of their different occupations—of restoring the dignity attached to the "masons of the olden time"—all who wish to gain the true ascendancy and superiority assuredly flowing from knowledge, he entreated to join the Mechanics' Institution of this town, which, if supported by the hundreds for whose welfare it was chiefly founded, will be enabled to carry out those principles of teaching with a spirit and energy that will be nobly beneficial in its results. The lecturer, in concluding his discourse, sincerely hoped that the patrons of the art would more extensively



use the means so largely in their power, that the barbaric mixtures which now so generally reign may be entirely discarded, and some styles adopted congenial to the history, the climate, the habits, and surrounding aspect of our country; for why should a science so eminently adapted to continue the pride of man's reason, and leave indelible marks of an enlightened and civilized age, even "to the wreck of matter"—why should a science capable of such noble and extended results be perverted by ignorance, and made by false and erroneous ideas of economy, merely a monument of our folly. He then went on to shew how architecture always flourished during this encouragement of literature, and what an active engine it was to promote tranquillity and civilization; and instanced the restoration of the beautiful models of classic celebrity during the revival of letters under Pope Leo X., and Francis I. The erection of the sublime structures of Rome when Augustus could call around those bright spirits whose genius and learning have since been translated into every tongue. The building of the famous and astonishing edifices which still adorn the Athenian Acropolis, when Socrates and Plato and a whole host of immortal names were protected and encouraged by Pericles. The rearing those mighty monuments of Luxor and Carnac, when Sesostris, although the greatest conqueror of the age, seemed to soar above the prejudices of the times and to devote himself to the enlightenment of his people, by collecting his wonderful library and transcribing over its entrance "*The health of the soul*." It was this love of learning which was the chief incentive to the erection of those grandest works of human power, and which are now invariably the only record of these remote periods. "Surely then, this establishes the fact that although empires may decay, and the manners and customs of their people be buried in the impenetrable gloom of ages, that although literature be lost, and languages become unknown; yet the language of architecture will never die."

#### CHURCH-BUILDING INTELLIGENCE, &c.

*Restoration of Louth Church and Spire.*—This splendid fabric, which for exquisite symmetry and beauty has been pronounced by persons of the best taste and judgment to be one of the finest specimens of its character and style in the kingdom is, we are glad to find, to be restored to a state of security and perfection. The spire (288 feet high) is at present in a very dangerous state, and unless immediately repaired, is likely to fall into ruins. Mr. Cottingham (so well known for his judicious restoration of several cathedral and parish churches) is of opinion that if steps be promptly taken, by a moderate outlay the ravages of time may be effectually arrested, and a rate has been laid for that purpose. But the entire restoration of so fine a specimen of British ecclesiastical architecture is really an object not merely of local but of national interest; and on this ground it is satisfactory to find that a public subscription is set on foot in order to provide the requisite funds, which the vicar of Louth has undertaken to receive.—*Hull Packet*.

*New Church at Swanmore, Droxford.*—On Tuesday week the first stone of a new church at Swanmore, in the parish of Droxford, was laid by the Rev. John Haygarth, rector of Upham and Dursley. The building is to be erected in the Anglo-Norman style, by Benjamin Ferrey, Esq., of London, the architect, the carrying out of which is intrusted to Mr. Charles Pink, of Hambledon. The church is to be dedicated to St. Barnabas, and will afford accommodation for 300 sittings, 276 of which number are to be free and unappropriated for ever.

*Chigwell.*—On Sunday week last, this church was re-opened for divine service, after having undergone some most important repairs and alterations. The venerable structure may now fairly be classed as one of the greatest ornaments in this delightful county. The beautiful and newly-painted window erected over the altar is much admired, and reflects the highest credit upon the taste and liberality of Jas. Weddell Bridger, Esq., of Belmont, to whom the parish is indebted for this munificent gift, as well as for many other valuable donations.—*Chelmsford Chronicle*.

*Balsham.*—A telegraph has recently been erected on the steeple of Balsham church, near Linton. For some time a surveyor has been examining the different eminences in this part of the country, and the above is the spot selected.

The inhabitants of St. James's parish, Bury, have come to a resolution to raise 800*l.* by rate, to defray the expense of the restoration of the ancient bell tower of their parish.

It is said to be in contemplation to rebuild on the same site, the chapel of Sedghill, near Shaftesbury.

The interesting parish church of Codford, St. Mary, Wilts (which has been enlarged by the addition of a south aisle, and nearly rebuilt), is now rapidly approaching completion.

#### RAILWAY INTELLIGENCE.

*South-Eastern Railway.—Dover Terminus.*—We visited the other day the various works and buildings connected with this terminus, which is now opened; and must say that there seems a disposition on the part of the Company to finish them in a manner scarcely inferior to any on the most important lines. The architectural character of this structure, like all the minor stations on the line, is strictly Italian; and we cannot but look upon the general arrangement as affording every desirable accommodation and convenience which the public can expect. The completion of the various apartments for the reception of royalty, directors' rooms, &c., comprising the loftiest or eastern end of the establishment, is, we understand, to be delayed for a short period. The whole extent of the works when completed, we understand, will cover upwards of three and a half acres of ground, the greater portion of which is surmounted by a skillfully-constructed iron-roofed shed, covering the area, designed for the departure of the trains. This roof we admired very much, from its simplicity of construction and extreme lightness, considering it embraces, in two 40-foot spans, an area of upwards of 200 yards long, by 17 yards wide. We also inspected, with surprise and satisfaction, the application of the Seyssel Asphalt (Claridge's patent)—a bituminous limestone from the Jura mountains—for the various platforms. On the departure platform, we find a solid continuous foot pavement, upwards of 10,000 superficial feet in extent, as smooth and even as polished slate, which it much resembles in appearance, though it is as warm and yielding to the foot as a flooring of timber. In the rooms and offices this asphalt has been used; and our examination of it has convinced us that it is an excellent material for various purposes, especially as its quality as a non-absorbent ensures perfect cleanliness, freedom from damp and smells, and also secures an agreeable temperature. We invite all those who are desirous of having a beautiful, economical, and imperishable pavement, to view this. The various offices, retiring and waiting rooms, at this station, are large, lofty, and well-proportioned, and command every convenience. The finishings and furnishings are very substantially, though chastely, executed. As the eastern portion of the station (on which the tower is to be placed) is not completed, we are unable to form an opinion of its entire exterior effect.—*Dover Chronicle*.

*Railway to Rugby.*—It is intended to bring forward in the next session of Parliament the project of a line in continuation of the Great Western Railway, passing through Banbury to Rugby, which for a distance of about thirty miles from Oxford will be identical with the line now suggested; and it is thereupon proposed that if such a project be brought forward and should succeed, the line from Wolverhampton shall merge into that line about eight miles north-west of the town of Banbury. The rough estimated cost of the work from Wolverhampton to this latter point, including the branches to Stoke Works and the river Severn, is 100,000*l.*, and the rough estimated cost of the work from the point of junction to Oxford is 500,000*l.*

*The Midland Railway.*—The union of the North Midland, the Midland Counties, and the Birmingham and Derby Railway Companies having been just completed by act of Parliament, the first meeting of the board of the consolidated company, now called "The Midland Railway Company," was held at Derby last week, when Mr. Alderman George Hudson, of York, was elected chairman, and John Ellis, Esq., of Beaumont Leys, Leicester, deputy-chairman. Mr. Hudson's election is a well-earned acknowledgment of the great and unwearied exertions of that gentleman in promoting the amalgamation of the three companies, a union of vital importance to their future prosperity, and which has already improved the value of the shares between forty and fifty per cent. Mr. Hudson now holds the very first place amongst the long list of railway chairmen and directors—a body of gentlemen, it may be remarked, second to none in the United Kingdom for enterprise and talents—as Mr. McAdam obtained the cognomen of the "Colossus of Railroads," holding under his sway as chairman, in addition to the Midland Railway, the York and North Midland, the Leeds and Selby, the Newcastle and Darlington, the York and Scarborough, and the Leeds and Bradford Railways, a length of upwards of 300 miles. The accounts of the North Midland, the Midland Counties, and the Birmingham and Derby Railways, will each be kept separate to the end of the present half-year, after which they will be thrown together. A meeting was held on the 13th June, at Derby, to consider the propriety of converting the shares into stock, thus getting rid of the halves, thirds, quarters, and other fractional parts of a share, which embarrass the shareholders, and increase the labour of registration. Should the proposed plan be carried out, any amount of stock can in future be transferred in the same manner as in the government funds.—*Leamington Courier*.

*The London and York Railway.*—A general meeting of the provisional committee of this scheme was held on Friday week, at the Hall of Commerce, Threadneedle-street, the Right Hon. the Earl of Winchelsea presided. J. H. Astell, Esq., the chairman of the acting committee, opened the business of the meeting by stating that the committee having been appointed upon the 17th ult., with the view of amalgamating the companies then before the public—one styled the Great Northern Company, and the other, the London and York *via* Lincoln—having the same object in contemplation, viz. of connecting the metropolis with the city of York, and ultimately with Edinburgh, had so far succeeded in amalgamating the two committees, as that henceforward they would work together in a harmonious spirit. Mr. Pitman, the secretary, then read the report of the committee. At the conclusion of the report, the noble chairman stated that he was highly satisfied with the plans of the committee, and declared it to be his determination, notwithstanding that one line would be much better suited for his own private interest, to sacrifice every personal motive, and to give his cordial support to the line which the engineers should recommend. Upon the motion of Lord Howick, who took occasion to refer to the atmospheric principle, the report was unanimously adopted. Upon the motion of Lord Worsley, a committee of direction was appointed, with full power to take all the necessary measures to carry out the undertaking. On the motion of Colonel Polleston, a committee of management was also appointed; and after some further business, the meeting separated.

*York and Scarborough Railway.*—This railway is to be constructed immediately. The York and North Midland Company are already advertising for tenders for the execution of the works. The line is to be divided into four contracts, which will be decided upon the first week in July, and operations commenced as soon afterwards as possible.

*Rye.*—Mr. Cubitt, the engineer, has, during the week, gone over the line of road originally contemplated by him for connecting Rye and Hastings with the South-Eastern Railway.—*Dover Chronicle*.

*Eastern Counties Railway.*—On Thursday evening, 6th inst., in the House of Lords, the Royal assent was given by commission to the Eastern Counties Railway Bill.



**Hull and Beverley Railway.**—We believe we may state that this project, so important both to Hull and Beverley, is now determined upon. The following memorial from the latter town to the Directors of the Hull and Selby Railway Company is at present in course of signature, and has already received one hundred names, including the principal tradesmen and capitalists in the place:—

TO THE DIRECTORS OF THE HULL AND SELBY RAILWAY COMPANY.

The memorial of the undersigned Gentry, Bankers, Merchants, Tradesmen, and other Inhabitants of Beverley and its neighbourhood.

Sheweth,—That in the opinion of your memorialists, it would be a great advantage to them and to the public generally, if a communication were effected by a branch railway, from a point near the Minster at Beverley, to join the line of the Hull and Selby Railway in the neighbourhood of Hull.

That it is the opinion of your memorialists that the undertaking of a railway could only be made so as to yield a remunerating return for the capital required for its construction by being made as a branch of the Hull and Selby Railway, so as to be worked by their engines and carriages, without the necessity of incurring the great expense of a separate establishment and station at Hull.

Your memorialists, therefore, earnestly request you as the directors of the Hull and Selby Railway to recommend to your shareholders to undertake, without loss of time, the making of such branch railway from Beverley, to join the Hull and Selby line near Hull, and to which undertaking your memorialists hereby pledge themselves to give their hearty concurrence and support.

**Cambridge Railway.**—The committee assembled on Tuesday week, when the mayor read communications from the London and Birmingham Company, from the Eastern Counties Company, from the Dean of Ely, the High Sheriff, the Mayor of Wisbech, &c., expressive of their readiness to give every support to the Eastern Counties extension line through Cambridge. The committee adopted resolutions to the effect that the communications from the London and Birmingham and the Eastern Counties Railway Companies having been laid before them, the mayor be requested to acknowledge the receipt thereof, and he intimated that the committee would hold themselves in readiness to meet from time to time for the purpose of co-operating in any measures calculated to promote the object expressed in the former resolution of the committee.—*Cambridge Advertiser.*

**Hydraulic Railway.**—A company is in course of formation to construct a railway according to Mr. Shuttleworth's invention. The line from Dublin to Salins, being the first great artery of the Dublin and Cork Railway, is about to be established as the "Grand Hydraulic Propulsion Railway;" it is 18 miles 850 yards in length, and will be completed for 99,900*l.*, being at the rate of 5,400*l.* per mile, including purchase of land, 900*l.*, and patent right 200*l.* per mile.

**The Leeds and Thirsk Railway.**—In the committee on the Harrogate and Knaresbro' Railway Bill, Mr. Locke, C. E., proved that the tunnel, a mile and an eighth long, which is proposed to be made on the Leeds and Thirsk line, would cost more than the entire construction of the Harrogate and Knaresbro' line.

**Witham and Braintree Railway.**—A preliminary survey has been made by Mr. Braithwaite for a branch railway from Witham to Braintree, and the undertaking receives already the cordial support of the most influential parties locally interested.

**Another Contemplated Railroad.**—It is in contemplation to lay down a railroad from Bath to Weymouth; the projected line to be connected with the principal intermediate towns, and to be designated the "South Union Railroad."

A railway from London to Richmond is projected, to start from Waterloo-bridge. The length of the line is to be ten miles; the capital about half a million.

The Eastern Union Railway Bill was read a third time and passed by the Commons on Monday.

**Splendid Railway Carriage.**—The Gondola, a most commodious and elegantly fitted-up vehicle belonging to the Leeds and Manchester Company, which arrived at Hull terminus on Friday, with, as was understood, a party of directors, excited much admiration at the costly manner in which it is fitted up, and the facility for comfort presented to those who can afford to travel by such superior accommodation. The body of the vehicle is divided into two compartments, each capable of receiving ten or a dozen persons, comfortably seated on elegant sofas, covered, as is also the sides, &c. of the compartments, with crimson silk plush, the upper parts having curtains to match, suspended over the plate-glass by which the whole, including the partition and the doors of communication, are surrounded. The interior is six feet six inches in height, and in the ceiling four lamps are placed, which, lighted curiously from the roof, must contribute to render the Gondola the most luxurious of travelling machines. The entrances are by open platforms at each end of the carriage, where the occupants can at their pleasure enjoy all the outdoor independence of a third-class carriage.—*Hull Packet.*

**Railway Station.**—The station at Peterborough will be on the premises of Messrs. Weston and Pinkney, for the erection of which arrangements are being made. The works throughout the line are progressing, and it is thought the rail will be opened to the public for travelling in less than twelve months from this time.

**Tours and Nantes Railway.**—The report of the committee on the Tours and Nantes Railroad Bill has been distributed among the members of the Chamber of Deputies. The report approves of the credit of 28,800,000*fr.* demanded by the government, and recommends the immediate execution of the measure.

**Russian Railway.**—The Emperor of Russia has it in contemplation to construct a railway a thousand miles in length, thus connecting St. Petersburg with Odessa and the shores of the Black Sea. It is proposed to raise the sum required by means of a foreign loan, the guaranteed interest on which is not to exceed five per cent.

A beginning has been made in the formation of the line of railway between Newport and Ely. At Newport the making of bricks is going on with all necessary expedition.

The works on the Norwich and Brandon Railway were commenced on the 6th inst.

The railroad from Karlsruhe to Strasburg was opened on the 28th of May.

#### CHANTREY'S EQUESTRIAN STATUE OF THE DUKE OF WELLINGTON.

THIS bronze work of art commemorative of the illustrious warrior, was, to use the French modern term "inaugurated," or set on its pedestal, on Tuesday, the 18th inst. It is a very fine production; the horse, which is perhaps a little too passive in effect, is beyond comparison superior to the tame one by the same artist upon which the statue of George IV. rests in Trafalgar-square. The figure of Wellington is a master-piece, and rests in its seat with a dignity which will hand down to posterity with the perfection of art the effigy of that great and simple-minded man, who is in manner himself so unaffected. The artist of the statue in Trafalgar-square would have remained unknown, if not previously celebrated; this work of the immortal Wellington would at once have raised to immortality the name of its artist, if he had been previously never so obscure. This fine production is also fortunate in being raised upon a magnificent pedestal, consisting apparently of only nine pieces of granite; the pedestals of many of our modern statues consist merely of an ignorant and coarse display of pretended architectural mouldings, which form a libel in contrast with the works of art which they support.

#### Correspondence.

##### THE NEW BUILDING-ACT.

SIR,—You having taken so much interest, devoted so much space in your journal to the consideration of the new Building-Act, being I believe anxious to make it as complete as possible, and really a practical man, form my excuse for troubling you with the following few observations, hoping that you will forgive me thus trespassing on your valuable time.

In the new Act every precaution is taken to make drains perfect and air-tight, but not a word is mentioned as to trapping the sink-stones, and other necessary openings which must be made in them, in the houses and yards; consequently all this care and expense will be useless if the stench be allowed to escape from these places. This nuisance has been found at times quite intolerable, and has produced fevers. (*vide* Mr. Chadwick's Sanitary Reports.) I beg also to suggest that privies should not be erected within at least 10 feet of any dwelling.

It would be a great advantage in the smaller classed houses if two entrances be allowed, with separate staircases, so that the tenants could let off three rooms and part of the yard quite distinct from the other three rooms, as they would get a better class of lodgers, and thus enable them to pay the additional rent which houses must fetch erected under the Act, in consequence of their extra cost; and would also enable them to easily purchase by means of the building societies, as shown in a paper, "Small Street Houses," which appeared in THE BUILDER last year.

Have you noticed the new clause E (Mr. Donaldson's) inserted as to the qualifications of district-surveyors. If I read it correctly, the new district surveyors are to slip in without any examination; only those who come in afterwards are to undergo that process. Surely, the first lot should be well-qualified, so that their decisions and practice may be a good guide to those who may follow them. Are those members of the Institute who have already "advertised for situations" under the new Act afraid to stand their own test? Why should the Institute of British Architects have the power of giving certificates? What have they to recommend them? They refuse to admit surveyors amongst them, consequently cannot be the best judges of the qualifications for a district-surveyor; besides they would always give the preference to one of their own body. No doubt but district surveyors should be well-qualified, and should pass an examination as proposed in this clause, but a more permanent and impartial court should be established, for who can tell how long the Institute may exist, as it only embraces a portion of the architects, and no surveyors. I should suggest that a board be appointed by the government, paid by the successful candidate, of an architect, a surveyor, and a builder, all eminent in their several professions; and I presume a practical surveyor is required under the new Act, not a mere architect.

I am, Sir, yours, &c.,

B.

##### DRAINAGE AND FIRE-ESCAPES.

SIR,—You would confer a great boon to the public, by advocating in your valuable journal the paramount importance to the health and comfort of families, of good drainage, and of fire-escapes.

In my humble opinion, the district-surveyors ought to be authorized by the proposed New Building-Act to enforce these essential comforts, at least in all future new dwellings to be set up.

I am, Sir, yours very respectfully,  
Civis.

##### COMPETITION IN BUILDING.

SIR,—Observing in your last number your remarks upon the competitions of the present day, might I call your attention and have your opinion on the policy, justice, and satisfactory method of receiving tenders, by accepting the estimates of those parties whose amount in the aggregate should form the middle sum, which in my opinion would in a great measure do away with the now universal system adopted by our great builders of underletting different works to persons of little standing and small reputation? Such an amount of responsibility would then be attached to their performances, that the public would reap the ad-



vantage in every sense, and also give honest tradesmen a better chance of meeting the times, and of performing their works in the old-fashioned substantial and effective manner.

The present evil calls loudly for remedy, as all moral principles are set aside to gain the ascendancy, either by goading the labourer, using inferior materials, or obliging the manufacturer to take ruinous prices, which from circumstances he is often constrained to do; and as to the ultimate result I will not take on me to divine.—I have the honour to be Sir, your humble servant, and at the same time

A SUFFERER.

[Competition in every sense to be deprecated as immoral: it is, without doubt, one of those kinds of strife which is by Scripture deprecated.]

We lately knew a case in which a Dissenting minister, whose business it is to promulgate integrity, accepted joyfully a tender for thoroughly painting his house, which is a large one, and performing some other repairs to it, for little more than 30%, maple-wood, and wainscot-work included. Another tender was for about the value, and amounted to double the other: the fortunate contractor acknowledged that he lost 40 per cent. on the prime cost. Again, take the new churches, the parties interested will say "*We are bound to have the work performed at the lowest possible rate: there are duties to perform.*" &c. &c. &c. "*though we admit we should not so proceed in our own private affairs.*" Thus it is, the same men who would not wrong their neighbour of a farthing, combine in the robbery by which no church is indeed honestly obtained, most who ever engage in building them being ruined. The case is very common for those who set on foot the building of a small church, to obtain 1,000% at least of the property of the builder's creditors. The whole system is a foul stain upon commissioners, bishops, clergy, church-builders, church-subscribers, and the laity generally. Again, the whole system of competition for the designing of churches is still worse, being, in most cases, little more than a hoax—a scramble for a petty piece of patronage—in which the candidates in spite of their goodness of disposition, become as hungry ravens after the plunder, which turns out nothing but trouble and vexation; the cost with the fortunate mostly exceeding the payment, besides an infinitude of labour and trouble. The bishops and clergy know as well that competition leads to ruin as that sin leads to damnation. In either case can the tempter be excused? The Israelite if he gave was to give a ram or a bullock without blemish; what an accursed offering to the Deity must then be a church or a chapel designed, built, and finished in cheater.—*Ed.*]

#### THE RAILROAD BRIDGE OF VENICE.

SIR,—In perusing some of the back numbers of *THE BUILDER*, I was surprised to find in No. 35, a very erroneous, but luckily a short account, of the bridge which is now being built by the railroad company to connect the heretofore "island city" with the mainland. Having very lately returned from a continental tour of some months' duration, in which I spent a fortnight at Venice, I have this bridge still before me, and will endeavour to describe the same.

It extends from Mestra to Venice, crossing *The Lagoon*, which is a large shallow surrounding the city on all sides, and in former times a great protection against the enemy; this lagoon has from 2 to 5 feet of salt water, on a sandy bottom; where the channels intersect it, the depth of the water is from 40 to 50 feet. This splendid bridge is commenced in many places, and up to the present time (I was there last month), there are no less than 147 arches finished, or nearly so, and yet there is much more to be built before this magnificent work will be completed; the masonry of the arches is all stone, and the piers placed at certain distances are of brick faced with stone; the top of the arch to the surface of the water is, I should say, about 12 feet, perhaps not so much, as I had not the means of measuring it. No one besides those persons who have seen it can imagine the difficulties and labour required for this gigantic work; every morsel of earth, stone, brick, lime, iron, wood for framework and for the coffer-dams, together with the fresh water for making the cement, is brought in boats from the mainland, a considerable distance, and yet

this has all been surmounted by the indefatigable zeal, talent, and industry of a German engineer, Milano by name, by whom the extraordinary undertaking is superintended, planned, and executed.

In your statement it is said, "of thirty-four arches which it is to have, twenty are already completed, &c." This is not giving the Continental engineer "fair play," and as we love doing that which is right in old England, I am sure you will gladly correct the error, and give the foreigner his due.

It is supposed that in addition to the bridge being a viaduct for travellers, merchandise, &c., it will also be an aqueduct to supply fresh water to Venice, which up to this time owes all its supply to a few rain-water tanks, and to the fresh-water boats which bring the water from the river Brenta, not a very inviting stream. It will indeed be a grand triumph of art when Venice is independent of the water-boats by fresh water carried on arches over the sea. The railroad itself will finally go on to Milan; at present it only runs from Mestra to Padua, about one hour's steam. Your readers will be glad to hear that the engines and one-half of the iron rails are of English manufacture, this does one's heart good when away from England, and makes a man proud of his dear country.—Yours, &c.,

June 17th, 1844.

C. T. A.

[The proposed further communication will oblige.—*Ed.*]

#### Miscellanea.

THE NEW HOUSES OF PARLIAMENT.—The following report has been presented by the select committee appointed to inquire into the progress of the building of the Houses of Parliament:—"That the Committee have met, and considered the subject-matter to them referred, and have examined witnesses, and have come to the following resolution, viz.:—That, considering the great inconvenience of the present House of Lords, and that such inconvenience will be greatly aggravated by the progress of the new buildings before the commencement of the session of 1844, no delay should take place in the building and preparing the new House of Lords, beyond what is absolutely required for the safety of the work; that the architect be directed so to conduct his operations as to secure the occupation of the new House of Lords, with temporary fittings, at the commencement of the session of 1845; that in case the architect, in the progress of the work of the new House of Lords, shall find that more time will be required in consequence of any apprehension of injurious consequences to the building, he shall report the same to the Commissioners of her Majesty's Wood and Forests, in order that such report may be communicated to this House in due time; that it does not appear to the committee that it is advisable that any alterations in the ventilation of the present House of Lords, which would lead to additional expense, should be adopted; and the committee have directed the minutes of evidence taken before them to be laid before your Lordships."

WEYMOUTH.—The Harbour of Refuge Commissioners having completed a careful survey of Weymouth Bay and Portland Roads, and examined all those who offered themselves and were qualified to afford the necessary information, took their departure on Wednesday, fully impressed with the natural advantages presented to their notice for forming a breakwater in Portland Roads, capable of affording shelter and protection to the shipping and maritime commerce of England, of being a counterpoise to Cherburgh (from which we are only distant sixty miles) and St. Malo, and situated about midway between Portsmouth and Plymouth. In their visit to Portland the commissioners were forcibly struck with the economy that would be attendant on the erection of a breakwater here—large quantities of stone, already quarried, and now only encumbering the land and of no value, seeming to invite the undertaking, and the owners would no doubt be glad to see it removed. This stone (the roach) being in large pieces of from ten tons and under, is admirably adapted for the construction of a breakwater; and we most sincerely congratulate the town and neighbourhood upon the prospect of this great and important national undertaking being carried into effect.—*Dorset Chronicle.*

#### PEAL OF BELLS FOR YORK MINSTER.—

In the course of a few days a very fine and powerful peal of bells will be erected in one of the towers of York Minster, and for melody, richness of tone, and power it is said, they will far surpass any other in the north of England. They are the gift of the late Dr. Beckworth, the eminent physician of York, who, amongst his many charitable bequests, directed 2,000*l.* to be named in his will for the purpose of furnishing the great northern cathedral with a suitable peal of bells. They have been cast at the foundry of Messrs Mears, in White-chapel, and are twelve in number, the largest weighing 53 cwt., and being in note C; the smallest 8 cwt., and in the whole being upwards of 10 tons in weight. In addition to the above, a complete "monster" clock bell is about being cast for the Minister at the same foundry, which is stated to be the largest in the world. It will be the enormous weight of 10 tons, and in key F; that of the great bell at Oxford being 7 tons; Great Tom of Lincoln 5½ tons; and the great bell at St. Paul's 5 tons. It will be paid for by public subscription, 1,700*l.* being already collected.

A newly-invented compass, which has already attracted a great deal of attention among nautical men, was shewn on Wednesday at the Hall of Commerce, some of the leading merchants having promised to inspect it. It is the invention of Mr. William Bush, the engineer, constructed for her Majesty's yacht the *Victoria* and *Albert*, being the counterpart of another meant as a present to the King of the French, the patentee intending to proceed to Paris with a view of submitting it to his Majesty. The appearance of the compass is in some respects quite different from the common one, magnetic bars in a neat case being attached to the framework of what we believe is technically called the box. Upon the lurching of the vessel these remain perpendicular, and the compass itself is entirely unaffected by local attraction. This has been sufficiently proved by repeated trials in Woolwich Royal Dock-yards, where thousands of tons of iron are lying, and which nevertheless failed to disturb in any essential degree the patent compass, while that constructed on the ordinary principle was subjected to violent oscillations. There have also, as we understand, been several experiments on board iron steamers, so ill adapted to the right working of common compasses, and with the greatest success to the new one. Of course, if the desideratum of non-variability of the needle shall be found to have been fully supplied (and we confess from all we have heard and seen, despite the fruitless efforts that have been made for more than a century, we believe it now is), this will have to be ranked among the great discoveries of the age.—*Essex Standard.*

Mr. J. F. Francis, of Berkeley-square, London, has obtained the prize of 50*l.* offered by the Town Council for the best architectural design for two chapels and an entrance-lodge for the new Cemetery. There were twenty-five competitors from various parts of the country. The consecrated chapel is in the Norman style; the chancel is semi-circular, and the floor and walls are well adapted for monumental brasses. The chapel in the unconsecrated ground is in the early English style; it is smaller than the other, and is not provided with a chancel.—*Salisbury Journal.*

AMENDED NEW BUILDINGS-BILL.—A meeting in committee of the Master Carpenters was held at the Freemasons' Tavern, on Monday last, to consider and report upon the above Bill. The report being agreed to, the chairman, Mr. H. Biers, was instructed to arrange for a deputation to Lord Lincoln, at the Woods and Forests, to impress upon his lordship several other improvements, and also to point out the objectionable parts in the amended Bill. We shall endeavour to lay before our readers a copy of the above report in our next publication.

THE ANNIVERSARY DINNER OF THE MASTER CARPENTERS' SOCIETY will take place at the West India Dock Tavern, Blackwall, on Tuesday next; the chair will be taken at four o'clock precisely. Visitors will be admitted at this meeting upon the introduction of a member, and, from the position of this society relating to the proceedings in Parliament on the "Buildings-Bill," it is anticipated that this meeting will be very fully attended.



## Tenders.

TENDERS delivered for altering, dividing, and repairing Bolton House, Russell-square, and for building three first-rate houses on the adjoining ground.—A. Moseley, Esq., Architect, Keppel-street, Russell-square. June 19.

Mr. Baker .....	£10,400
Mr. Jackson .....	9,776
Mr. Mansfield .....	9,340
Messrs. Grissell and Polo .....	9,130
Messrs. Pearce and Guerrier .....	8,972
Messrs. Locke and Nesham .....	8,890
Mr. Grimsdell .....	8,864
Mr. Nicholson .....	7,790

TENDERS delivered for building six houses in London-street, Bethnal Green.—W. Howard, Esq., Architect.

Messrs. Vanderstru and Parry .....	1,130 14 9
Mr. Breveter .....	891 18 0
Mr. Slater .....	816 0 0
Mr. Norris .....	797 0 0
Mr. Litchfield .....	768 0 0

## NOTICES OF CONTRACTS.

For the additions and alterations to the County Gaol, at Nottingham; and the Nisi Prius Court, at the Shire Hall. (Separate Tenders.)—Messrs. Hawkesley and Jalland, Architects, Nottingham. June 26.

For building Sewers in Old Fish-street, Trinity-lane, and several other streets and places adjacent thereto.—Jos. Daw, Esq., Guildhall. June 25.

For the alterations, improvements, and repairs to the School House in Hatton Garden.—Mr. Cooper, Architect, 1, Verulam-buildings, Gray's-Inn. June 29.

For the necessary Iron-work of a Bridge of one arch, 110 feet span, to be built over the river Avon, at Bath.—Drawings, &c., Mr. Manners, Architect, 1, Oxford-row, Bath. June 25.

For a Farmstead and House, at Dullingham Ley, for R. J. Eaton, Esq., M.P.—Mr. J. F. Clark, Architect, Newmarket. June 26.

For the erection and completion of seven Cottages, &c., in Kentish Town.—Address Black Horse Public-house, back of Cain's-place, Kentish Town. June 24.

For the repairs in restoring the Tower and Spire of Louth Church, Lincolnshire.—Mr. Cottingham, Architect. June 24.

For building a Sewer in Haberdasher's-Walk, Hoxton, Myrtle-street, Hoxton Town, Hyde-place, to end under the Regent's Canal, near the Rosemary Branch-bridge, a length of 4,350 feet.—Messrs. Stable and Lush, Office of Sewers, Hatton-garden. June 29.

For Bricklayers, Carpenters, Smiths, Plumbers, and Painters and Glaziers Work for one year from Midsummer-day next, for all such works as may be required to be done at the Churches, Chapels, Court-house, &c., of St. Marylebone.—C. Flood, Esq., Vestry Clerk. June 29.

## COMPETITIONS.

Plans, &c. are wanted for erecting a Church at Shallow, Notts.—Further particulars of Mr. Wm. Shaw, Southwell, Notts. The successful competitor will be employed on the usual terms.

## TO OUR CORRESPONDENTS.

We have not at present time to measure the altitude of St. Paul's Cathedral, which is variously stated, and can therefore only refer to Pugin's Public Buildings of London, in which it is given at 360 feet from the internal marble pavement, and from thence to the foot of the western steps 13 feet more, but somewhat less towards the east, as the ground ascends to Panier-alley, which is reputed to be the highest spot within the city of London.

We have received several complaints relative to the competition for the designing of the church at Southwall, but, not knowing any of the parties or any of the circumstances, we cannot at present give any opinion.

## MEETINGS OF SCIENTIFIC BODIES.

To-day and during the ensuing week.

SATURDAY, JUNE 22.—Royal Botanic, Regent's-park, 4 P.M.

MONDAY, 24.—Geographical, 3, Waterloo-place, 8½ P.M.

TUESDAY, 25.—Medical and Chirurgical, 53, Berners-street, 8½ P.M.; Civil Engineers, 25, Great George-street, 8 P.M.; Zoological, 57, Pall Mall, 8½ P.M.

WEDNESDAY, 26.—Geological, Somerset House, 8½ P.M.; Pharmaceutical, 17, Bloomsbury-square, 9 P.M.

THURSDAY, 27.—Royal Society of Literature, 4, St. Martin's-place, 4 P.M.; Medico-Botanical, 32, Sackville-street, 8 P.M.

FRIDAY, 28.—Philological, 49, Pall Mall, 8 P.M.

## Current Prices of Metals.

June 19, 1844.

	£.	s.	d.
SPELTER.—Foreign ton ..	0	0	22 0 0
" For delivery ..	0	0	21 10 0
ZINC.—English sheet ....	0	0	30 0 0
QUICKSILVER .....	per lb.	0	4 6
IRON.—English bar, &c. per ton	6	5	0 6 10 0
" Nail rods .....	0	0	7 5 0
" Hoops .....	0	0	8 0 0
" Sheets .....	0	0	9 0 0
" Cargo in Wales ..	5	10	0 5 15 0
" Pig, No. 1, Wales ..	3	10	0 4 0 0
" No. 1, Clyde ..	3	5	0 3 7 0
" For, Swedish ..	9	10	0 9 15 0
" Russian, CCND ..			16 10 0
STEEL.—Swedish keg, p. ton	16	10	0 17 0 0
" Faggot ..	0	0	17 0 0
COPPER.—English sheathing, per lb. —	0	0	9 2 0 0
" Old .....	0	0	8 2 0 0
" Cake p. ton ..	0	0	82 0 0
" Tile .....	80	0	0 81 0 0
" S. American ..	72	0	0 74 0 0
TIN.—English, blocks, &c. cwt. —			3 13 0 0
" bars ..	0	0	0 13 6 0
" Foreign, Banca ..	3	5	0 3 7 0
" Straits ..	0	0	0 3 6 0
" Peruvian ..	0	0	0 3 0 0
Tin plates, No. IC. p. box	1	8	0 1 13 0
" No. IX ..	1	14	0 1 19 0
" wasters 3s. p. box less			
LEAD.—Sheet milled .....	per ton	17	15 0 0
" Shot, patent ..	0	0	0 19 15 0
" Red .....			21 10 0
" White .....			23 10 0
Pig-LEAD.—English ..	16	15	0 17 0 0
" Spanish ..	0	0	0 16 10 0
" American ..	0	0	0 15 10 0

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## ADVERTISEMENTS.

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CHARLES F. TILSTONE, Sec.

**ANONYMOUS.**—In consequence of an Anonymous Advertisement having appeared in "The Times" of this date, stating that part of Trafalgar-square has been laid with Asphalt, the public are informed that such is not the fact, the material laid down there being only an imitation of Asphalt, composed of chalk, sand, and tar. The Pavement in Whitehall (opposite the Horse Guards), and that at the Duke of York's columns (both laid down in 1838, are samples of works executed with the genuine Seyssel Asphalt.

J. FARRELL, Secretary, Seyssel Asphalt Company, 14th May, 1844. "Claridge's Patent," London.

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"CLARIDGE'S PATENT,"

ESTABLISHED 1839.

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Amongst various uses to which it can be applied, the following may be enumerated:—For Foot-Pavements, basements, and others; in the Carriage Approach to Mansions, Garden-walks, and Terraces; the flooring of Kitchens and other basement offices; also of Coach Houses and Stables, Dog Kennels, Barn Floors, Cow Houses, Piggeries, Poultry Houses, Tun Rooms, and Maltings. For Roofing, Covering of Railroads and other Arches, the Lining of underground Cellars near Rivers to prevent the ingress of the Tides; also in covering the ground-line of Walls, to prevent damp rising (this application of the Asphalt of Seyssel is particularly recommended by the Commissioners on the Fine Arts, thereby rendering the basement stories in the worst situations both dry and warm. It is an excellent Cement, as applied to Dock, Breakwaters, or Walls built for resistance to the encroachments of the sea. For lining of Tanks, Fish-Ponds, and other Hydraulic purposes.

I. FARRELL, Secretary, Seyssel Asphalt Company's Works, "Claridge's Patent," Stangate Depot, London.

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THE DIRECTORS of the SEYSSAL ASPHALTE COMPANY have much pleasure in recommending to the notice of Architects, Builders, and others, the application of the ASPHALTE of SEYSSAL as the only effectual means of preventing DAMP rising in WALLS.

The following account of its application is extracted from "The Appendix to the Commissioners of Fine Arts Report, page 18.

"In 1839 I superintended the construction of a house of three stories on the Lac d'Enghien. The foundation of the building is constantly in water, about 10½ inches below the level of the ground-floor. The entire horizontal surface of the external and internal walls was covered, at the level of the internal ground-floor, with a layer of Seyssel Asphalt, less than half an inch thick, over which coarse sand was spread.

"Since the above date no trace of damp has shown itself round the walls of the lower story, which are for the most part painted in oil of a grey stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is only about 28 inches above the external surface of the soil, and only 19½ at the utmost, above that of the sheet of water.

"The layer of Asphalt having been broken and removed, for the purpose of inserting the sills of the door, spots in proof the presence of damp have been since remarked at the base of the door-posts.

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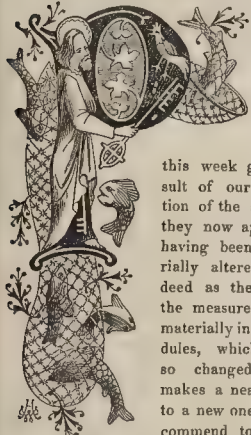
R. C. having just completed his Show Rooms for the above articles, begs to invite the inspection of the Public. A liberal Discount to Dealer keepers and others.



# The Builder.

NO. LXXIII.

SATURDAY, JUNE 29, 1844.



URSUIING  
thesubject  
of the  
amended  
proposed  
Building-  
Act, we

this week give the result of our consideration of the schedules as they now appear, after having been so materially altered, that indeed as the energy of the measure lies most materially in these schedules, which are now so changed, the Bill makes a near approach to a new one. We recommend to the building

ing interest, and to the members of the legislature who make this matter their especial concern, still to weigh it well in every passage and paragraph, and to consider minutely the former and fresh reports and suggestions which have been made upon the measure by various bodies and competent parties; and when the whole assumes a state satisfactory to the minds of the ablest builders and archi-

teets, we then recommend that before the Bill be sent up to the House of Lords, it be placed in the hands of a competent barrister and a competent architect to re-examine and polish the whole; for, after the numerous alterations which have been made in the Bill, it must of necessity contain numerous errors, incongruities, vulnerable places, and oversights, if not palpable contradictions. We still notice in it many errors in grammar, many awkward and doubtful expressions, words spelled in different ways, or taking the plural in a manner against decent usage and in different manners, and many other glaring faults of grammatical construction and orthography.

Now we trust that all who are not by nature mere bores desire that a measure which has engaged such an unusual degree of attention, relative to which an expenditure so great has been gone to, and which is of so much public interest, will be rendered nearly perfect, and as far as so technical a production can be, will be rendered elegant; that its style and orthography may be appealed to as a standard, and not be pointed at as authority for the old confusion in matters of so much importance. We therefore trust we may not be offended by seeing the misspelling "chimnies, monies, attorneys, breastsummers;" but that they may be written in all cases chimneys, moneys, attorneys, breastsummers; that a proper use may be made of the words *to* and *from*, and that the present misplacing of words almost general throughout the Bill may be remedied, so as to vie with the nervous propriety of old unpunctuated English, which, somehow or other, always conveyed its meaning without any doubt, whereas a large portion of modern punctuated English is, from the false position of its words, weak and open to innumerable constructions other than the intended meaning.

We now proceed to the reconsideration of the schedules of the Bill.

SCHEDULE (C), PART I.—The following are now the proposed particulars of the *second class*:—“If a building be built originally as a

warehouse, storehouse, granary, brewery, distillery, manufactory, workshop, or *STABLE*, or be occupied or intended to be occupied as such, or for a similar purpose,—then it is to be deemed to belong to the second or warehouse class;”—in which it will be perceived that the word *stable* is now included.

*Rule for ascertaining height.*—The following is the original form of this proposal:—

“The height of every building is to be ascertained by measuring from the surface of the first or lowest floor of the building, up to the underside of the ceiling of the topmost story at the highest part thereof, whether such story be within the roof or not:

“And if there be no ceiling made or intended to be made to the topmost story,—then by measuring from the surface of such first or lowest floor of the building up to the underside of any tie-beam, collar beam, or other substitute for a tie-beam to or within the roof of the building, and to the highest part of such roof, and the level of the under-side of such tie-beam, or such substitute for a tie-beam, is in such case to be taken to mean the ceiling of the topmost story.”

The following words have been added to obviate the defect pointed out by Mr. Bartholomew: “And if there be no tie-beam, collar-beam, or other substitute for a tie-beam, to or within the roof of any building,—then up to a level three feet below the level of the under-side of the ridge-piece, or substitute for a ridge-piece, to the roof of such building.” But we must repeat that gentleman's observation, to the following effect:—“Any additional depth to which it may be necessary to carry down the walls of a building, in order to arrive at a secure foundation, ought to be clearly excluded from the admeasurement of stories, and if the party-walls and other walls be carried down to different levels, as is sometimes necessary, clear definition ought to be provided for such cases.” And that, “The official referees ought to have a discretionary power relative to permitting addition to the thickness of walls; otherwise cases of excessive hardship and vexation will arise.”

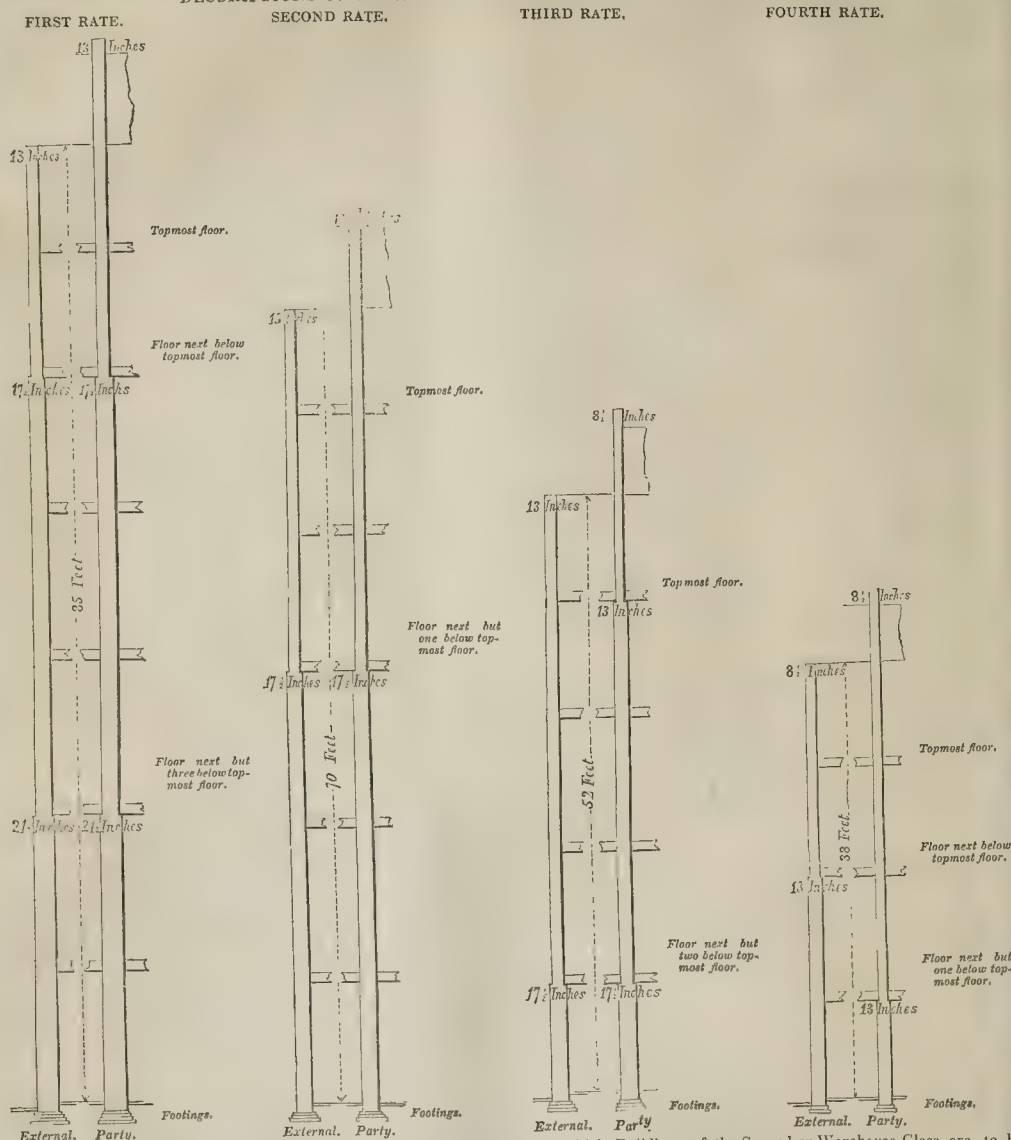
The mode of rating buildings has been altered as follows:—

SCHEDULE (C).—PART II.—CONDITIONS for determining the Rates to which Buildings of the First or Dwelling-house Class are to be deemed to belong, and the thickness of the External Walls and of the Party Walls thereof.

In reference to Height.	In reference to Area.	In reference to Stories.	Rate of Building.	Requisite thickness of External Walls of each Rate of the First Class.	Requisite thickness of Party Walls of each Rate of the First Class.
1. If the building be in height more than 10 feet, and not more than 85 feet,	-- If the building cover more than 10 squares, and not more than 14 squares,	-- If the building contain seven stories,	-- It is to be of the first rate of this class,	-- And the thickness of the external walls must be, at the least, 21½ inches from the top of the footing up to the under-side of the floor next but three below the topmost floor; and, at the least, 17½ inches from the under-side of the floor next but three below the topmost floor, up to the under-side of the floor next below the topmost floor; and, at the least, 13 inches from the under-side of the floor next below the topmost floor up to the top of the wall.	-- And the thickness of the party-walls must be, at the least, 21½ inches from the top of the footing up to the under-side of the floor next but three below the topmost floor; and, at the least, 17½ inches from the under-side of the floor next but three below the topmost floor up to the under-side of the floor next below the topmost floor; and, at the least, 13 inches from the under-side of the floor next below the topmost floor up to the top of the wall.
But if it be in height more than 85 feet,	-- or if it cover more than 14 squares,	-- or if it contain more than seven stories,	-- or if it contain more than seven stories,	-- It is to be an extra first rate of this class,	-- And the thickness of the party-walls must be, at the least, 21½ inches from the top of the footing up to the under-side of the floor next but two below the topmost floor; and, at the least, 17½ inches from the under-side of the floor next but two below the topmost floor up to the top of the wall.
2. If more than 52 feet, and cover not more than 6 squares, and not more than 10 squares,	-- or if it cover more than 6 squares, and not more than 10 squares,	-- or if it contain six stories,	-- It is to be of the second rate of this class,	-- And the thickness of the external walls must be, at the least, 17½ inches from the top of the footing up to the under-side of the floor next but one below the topmost floor; and, at the least, 13 inches from the under-side of the floor next but one below the topmost floor up to the top of the wall.	-- And the thickness of the party-walls must be, at the least, 17½ inches from the top of the footing up to the under-side of the floor next but one below the topmost floor; and, at the least, 13 inches from the under-side of the floor next but one below the topmost floor, up to the top of the wall.
3. If more than 38 feet, and cover not more than 4 squares, and not more than 6 squares,	-- or if it cover more than 4 squares, and not more than 6 squares,	-- or if it contain five stories,	-- It is to be of the third rate of this class,	-- And the thickness of the external walls must be, at the least, 17½ inches from the top of the footing up to the under-side of the floor next but two below the topmost floor; and, at the least, 13 inches from the under-side of the floor next but two below the topmost floor up to the top of the wall.	-- And the thickness of the party-walls must be, at the least, 17½ inches from the top of the footing up to the under-side of the floor next but two below the topmost floor; and, at the least, 13 inches from the under-side of the floor next but two below the topmost floor up to the under-side of the topmost floor; and, at the least, 8½ inches from the under-side of the topmost floor up to the top of the wall.
4. If not more than 38 feet, and cover not more than 4 squares,	-- or if it cover not more than 4 squares,	-- or if it do not contain more than four stories,	-- It is to be of the fourth rate of this class,	-- And the thickness of the external walls must be, at the least, 13 inches from the top of the footing up to the under-side of the floor next below the topmost floor; and, at the least, 8½ inches from the under-side of the floor next below the topmost floor up to the top of the wall.	-- And the thickness of the party-walls must be, at the least, 13 inches from the top of the footing up to the under-side of the floor next but one below the topmost floor; and, at the least, 8½ inches from the under-side of the floor next but one below the topmost floor up to the top of the wall.



TRANVERSE SECTIONS OF WALLS OF THE FIRST, OR DWELLING-HOUSE CLASS, ACCORDING TO THE DESCRIPTIONS OF THEIR THICKNESSES IN SCHEDULE (C.)—PART II.



SCHEDULE (C.)—PART III.—CONDITIONS for determining the Rates to which Buildings of the Second or Warehouse Class are to be deemed to belong, and the thickness of the External Walls and of the Party Walls thereof.

In reference to Height.	Rate of Building.	Requisite thickness of the External Walls of each Rate of the Second Class.	Requisite thickness of the Party Wall of each Rate of the Second Class.
1. If the building be in height more than 66 feet,	- It is to be of the first rate of this class,	- And the thickness of the external walls must be, at the least, 26 inches from the top of the footing up to the level of 76 feet below the topmost ceiling; and, at the least, 21½ inches from the level of 76 feet below the topmost ceiling up to the level of 36 feet below the topmost ceiling; and, at the least, 17½ inches from the level of 36 feet below the topmost ceiling up to the top of the wall.	- And the thickness of the party-walls must be, at the least, 26 inches from the top of the footing to the level of 76 feet below the topmost ceiling; and, at the least, 21½ inches from the level of 76 feet below the topmost ceiling up to the level of 36 feet below the topmost ceiling; and, at the least, 17½ inches from the level of 36 feet below the topmost ceiling up to the level of the topmost ceiling; and, at the least, 13 inches from the level of the topmost ceiling up to the top of the wall.
2. If more than 44 feet and not more than 66 feet,	- It is to be of the second rate of this class,	- And the thickness of the external walls must be, at the least, 21½ inches from the top of the footing up to the level of 58 feet below the topmost ceiling; and, at the least, 17½ inches from the level of 58 feet below the topmost ceiling up to the level of 22 feet below the topmost ceiling; and, at the least, 13 inches from the level of 22 feet below the topmost ceiling up to the top of the wall.	- And the thickness of the party-walls must be, at the least, 21½ inches from the top of the footing up to the level of 58 feet below the topmost ceiling; and, at the least, 17½ inches from the level of 58 feet below the topmost ceiling up to the level of 22 feet below the topmost ceiling; and, at the least, 13 inches from the level of 22 feet below the topmost ceiling up to the top of the wall.
3. If more than 22 feet and not more than 44 feet,	- It is to be of the third rate of this class,	- And the thickness of the external walls must be, at the least, 17½ inches from the top of the footing up to the level of 28 feet below the topmost ceiling; and, at the least, 13 inches from the level of 28 feet below the topmost ceiling up to the top of the wall.	- And the thickness of the party-walls must be, at the least, 17½ inches from the top of the footing up to the level of 28 feet below the topmost ceiling; and, at the least, 13 inches from the level of 28 feet below the topmost ceiling up to the level of the topmost ceiling; and, at the least, 8½ inches from the level of the topmost ceiling up to the top of the wall.
4. If not more than 22 feet,	- It is to be of the fourth rate of this class,	- And the thickness of the external walls must be, at the least, 13 inches from the top of the footing up to the level of 9 feet below the topmost ceiling; and, at the least, 8½ inches from the level of 9 feet below the topmost ceiling up to the top of the wall.	- And the thickness of the party-walls must be, at the least, 13 inches from the top of the footing up to the level of 16 feet below the topmost ceiling; and, at the least, 8½ inches from the level of 16 feet below the topmost ceiling up to the top of wall.



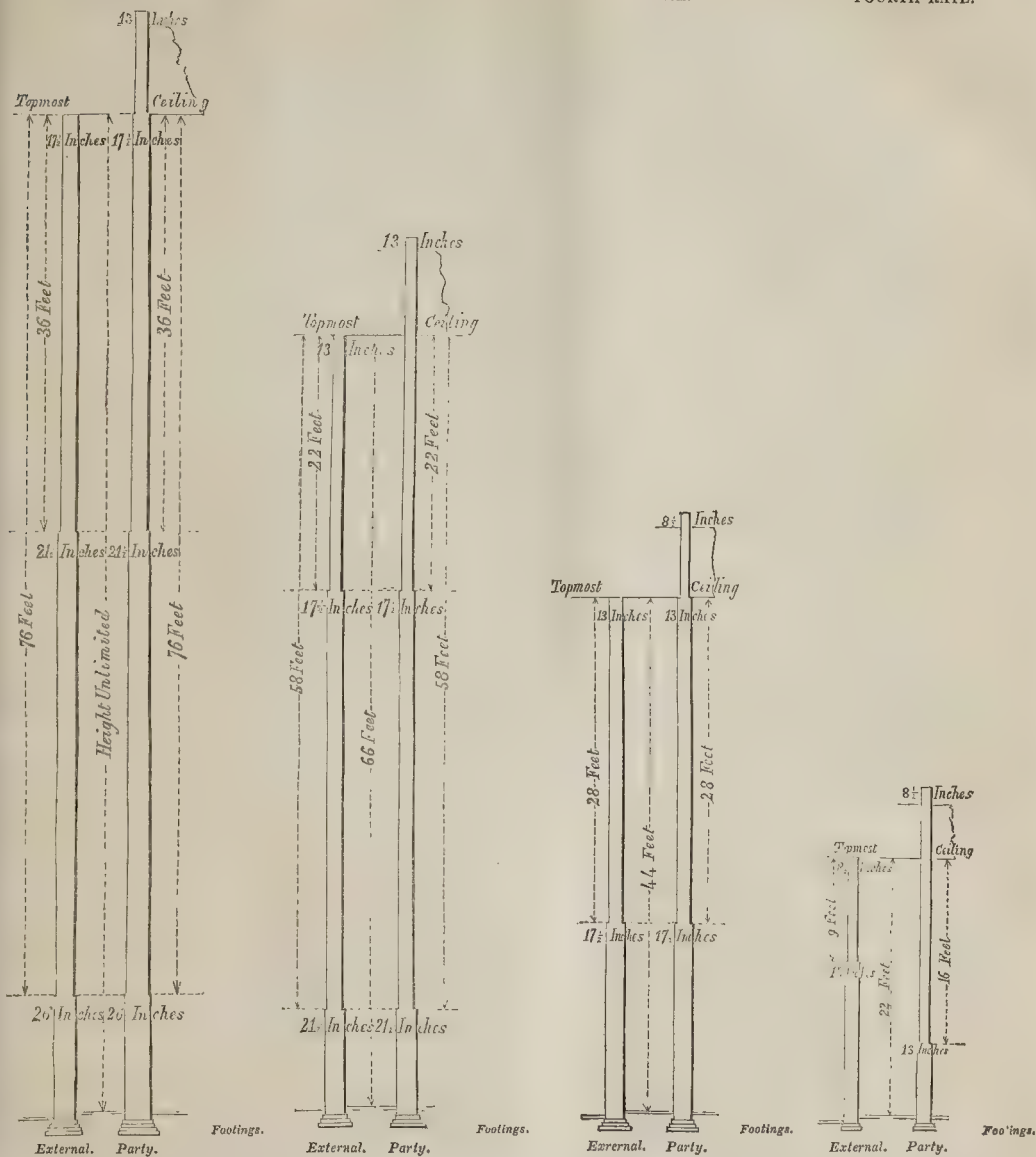
TRANSVERSE SECTIONS OF WALLS OF THE SECOND, OR WAREHOUSE, CLASS, ACCORDING TO THE DESCRIPTIONS OF THEIR THICKNESSES IN SCHEDULE (C.)—PART III.

FIRST RATE.

SECOND RATE.

THIRD RATE.

FOURTH RATE.



SCHEDULE (C.), PART IV.—*Rules concerning Buildings of the Second or Warehouse Class—Warehouses, &c.*—"With regard to any building of the second class, hereafter built or rebuilt, in reference to the area thereof within the same enclosing walls:—

"If such building exceed 35 squares, then it must have for every 35 squares thereof party-walls; unless the quantity exceeding 35 squares or an extent of 25 feet in length at the least, and the whole breadth of every such building, between every two quantities which together may exceed 35 squares, and not amount to 70 squares, and neither of which must exceed 35 squares, be built and fitted from the foundation to the highest part of the roof, or other summit thereof, wholly fire-proof; or otherwise, unless such portions of such buildings as shall be thought necessary by the official referees, upon special application, be built in like manner fire-proof;

"And in either such cases, no internal separation by party-walls of the same building will be required."

As Mr. Bartholomew suggested, stables are

not now proposed to be confined to 25 squares, but may be made as large as any other building of the warehouse-class.

*Openings in Party-walls.*—"And with regard to buildings of the second class, in reference to the openings in party-walls;—

"Such openings must not be made wider than six feet, nor higher than eight feet, unless in each case the official referees shall previously authorize larger openings.

"And the floor, and the jambs, and the head of every such opening must be composed of brick or stone-work throughout the whole thickness of the wall.

"And every such opening must have a strong wrought-iron door on each side of the party-wall, fitted and hung to such opening without wood-work of any kind; and such doors must not be less than one-fourth of an inch thick in the panels thereof;

"And each of such doors must be distant from the other not less than eighteen inches."

Thus power is reserved to the official referees to allow such doors to be increased in dimensions; the doors which before were required

to be 4 feet apart, are now proposed to be only 18 inches apart. We must still insist that the floors, jambs, and heads of such doorways ought also to be permitted to be made of iron or other incombustible substances.

The following is the form of the remainder of this part of the Bill:—

*Fire-proof part of Buildings.*—"And with regard to such second-class buildings so built in part fire-proof, in reference to the construction and materials of such fire-proof part, it must be built of such materials and in such manner as shall be approved by the official referees."

*Roofs.*—"And with regard to the roofs of buildings of the second class, in order to prevent the formation of curved roofs to such buildings, the plane of the surface of the roof of every such building must not incline from the external or party-wall upwards at a greater angle than 50 degrees with the horizon."

This latter provision relative to roofs is a new introduction.

SCHEDULE (D.)—PART I.—*Materials of Footings.*—The words, "squared stone," have



been inserted. The word "squared" ought to be removed as ridiculous; those stone foundations which are of materials not squared, but closely united at various angles, in general are the soundest and freest from settlement.

**Walls generally.**—"With regard to every party fence-wall, and to the external walls and party-walls of every building hereafter built, and of every addition to such building, whether already built or hereafter built,—Every such wall must stand equally on each side within the top of its footing."

Compelling the upward diminution of footings to be equal on both sides is highly objectionable; there are many cases in which walls, to be built substantially and effectively, are required to be set out of perpendicular, and with their footings more on one side than the other.

**Thicknesses of Enclosing Walls to Stories of Buildings of whatever Rate.**—"With regard to the enclosing walls to stories of buildings of the first and second classes,—Each of the enclosing walls of any such story, throughout the whole height thereof, from the top of the footing up to the top of such story, and with all the sets-off in addition required for such wall, to whatever rate or whichever class it may belong, and throughout at the least one-third of the whole length of such wall, in piers properly distributed, must be of the following dimensions (unless cross or return walls, coursed and bonded with the enclosing walls, shall, in the opinion of the official referees, upon special application to them in each particular case, give sufficient strength, with less thickness in such enclosing walls); that is to say,—

"As to first class buildings; if the story be in height more than 11 feet,—then the thickness of its enclosing walls must be at the least 13 inches.

"Or if the story be in height more than 15 feet,—then the thickness of its enclosing walls must be at the least 17½ inches.

"As to second class buildings; if the story be in height more than 9 feet,—then the thickness of its enclosing walls must be at the least 13 inches.

"Or if the story be in height more than 12 feet,—then the thickness of its enclosing walls must be at the least 17½ inches.

"Or if the story be in height more than 15 feet,—then the thickness of its enclosing walls must be at the least 21½ inches.

"Or if the story be in height more than 38 feet,—then the thickness of its enclosing walls must be at the least 26 inches.

"Nevertheless, any external wall of any building of the first class in which there are no apertures or recesses may be built of the thickness of 13 inches, of any height not exceeding 18 feet, within any story, although the rate of the wall may require a greater thickness, if another external wall and a cross wall of not less than 8½ inches thick, coursing and bonding with such external wall, or if two such cross walls occur within a length of 24 feet of such wall; but always upon condition that the substructure of such wall is 4 inches thicker at the least than such superstructure, and vertically under it.

"And also any such external wall abutted by cross or return walls within a length of 12 feet may be built of any thickness not less than 13 inches, notwithstanding the rate of such wall may require a greater thickness, if not more than one aperture or recess occur within such length of 12 feet, and not more than one-half the quantity in length be taken out of such compartment of a wall by any such aperture or recess."

**PART II.—External Walls.—Construction and Materials.**—"And with regard to the component materials of external walls to buildings of whatever class:—

"Every such wall must be built of SOUND BRICKS, or of SQUARED STONE, or of SUCH BRICKS AND STONE TOGETHER, laid in and with mortar or cement in such manner as to produce solid work; and every such wall must be carried up of its full thickness to the underside of the plate under the roof.

"Nevertheless, in such walls, besides all requisite openings for doors and windows, recesses may be formed, so that the back thereof be of the thickness of 8½ inches at the least; and so that the stability and sufficiency of the wall be not injuriously affected by making such recesses.

"And with regard to other substances than the component materials of external walls,

"There may be such wood and iron as shall be necessary.

"And every plate, lintel, bond, corbel, being of wood, and every wood-brick laid into any external wall, and all ends of joists, of girders, and of the heads and sills of partitions running into any external wall, must be fixed at a distance from the external face of the wall of four inches at the least.

"And the frames of doors and windows must be fixed in reveals at a distance from the external face of the wall of four inches at the least.

"And shop-fronts must be fixed in such manner as is herein specially directed.

"And the tiers of doors-cases to warehouses must be fixed in the openings left in such walls, at a distance from the external face of the wall of two inches at the least.

"But no timber must be laid into any external wall in such manner, or of such length, as to render the part of the wall above it wholly, or in great part, dependent upon the wood for support, or so that any such wood might not be withdrawn without endangering the safety of the superincumbent structure, except in the case of brestrummers."

We again refer to Mr. Bartholomew's notes: absurd is the objection to "*opus incertum*" masonry, such as most ancient Gothic buildings are composed of, and which has in so many thousand instances survived walls of squared materials. We advise an hour's two-shilling ride to Cheshunt Church, which is of such masonry, sound, and without a fracture.

**Wood and Iron.**—"We think that no plate or bond of wood ought to be allowed to extend into a wall so much as half the thickness of such wall, and that in walls not exceeding 13 inches in thickness, the wooden plates and bond inserted therein ought to be restricted to 4 inches.

"We think that more exact definitions are required respecting the ranges of windows of printing-offices and workshops."

**Height and Thickness of Parapets.**—"And with regard to external walls, in reference to the height and thickness of any parapet thereon:—

"If an external wall adjoin a gutter,—then such external wall must be carried up, and remain one foot at the least above the highest part of such gutter.

"And the thickness of an external wall, so carried up above the level of the underside of the gutter-plate, and forming a parapet, must be at the least,—

"In every such wall of the extra first rate of the first class, and in every such wall of the first rate of the second class, 13 inches thick; and—

"In every other external wall of whatever rate or whichever class, 8½ inches thick."

The requirement of parapets 13 inches thick is ridiculous, tending to injure the formation of gutters properly, and affording no advantage. Nothing could be more absurd than to compel gothic pierced parapets, carried up for ornament, to be made expensively gouty: those roofs last far the longest which project without any parapets at all, the wet, in case of imperfection, falling *without* the building.

(To be continued.)

## SOMATOLOGY, OR THE ESSENTIAL AND CONTINGENT PROPERTIES OF MATTER.

BY ALEXANDER JAMIESON, LL.D.

(Continued from p. 311.)

Our organs of sense furnish us with accurate ideas or perceptions of the various properties which all bodies possess, whether in a state of apparent rest or of visible motion. Thus, *touch* informs us of the exterior surface of a body, its figure, hardness, softness, or any other property essential or contingent which it may possess, except colour, smell, or taste. Sight, with the intervention of light, gives us clear perceptions of the superficial extension and figure, apparent magnitude, colour, &c. of bodies. Hence we may clearly understand how observation, or that attention which we pay to the appearances of objects that are remarkable, or which become subjects of our scrutiny, contributes to our aid in the pursuit of science. And things become remarkable as

they fall under our scrutiny and observation and not by tradition; by their reference to other objects, or by their comparison, similitude, or contrast with each other. Our familiarity from infancy with the objects around us, and the heedless gaze we glance upon, the material world, our daily intercourse with the objects of which it is composed, the knowledge we have by habit of its wonderful properties, all contribute to make us indifferent observers; nor do we readily begin to read the volume of nature to mark the various appearances under which she presents herself to our view, to learn that there is one set of phenomena which characterizes the operations of our mind in its examinations and pursuits, and another which characterizes body, matter, or the substances composing this fair world; and that these are *totò calo* different one from the other. But when we have begun to speculate upon the material world, we find that our souls are endowed with powers capable of deriving pleasure from an accumulation of intellectual knowledge, independent of all consideration of its advantages. Our observation becomes then profitably fixed upon the properties of body or of matter, and we in some measure understand by reference to other bodies and other matter, what may be the bulk, weight, elasticity, fluidity, &c. of such as we wish to compare and contrast one with another. And if these observations be applied to what we have already said upon this subject—that is upon body or matter—the reader will clearly perceive what species of discipline the mind undergoes in entering upon the very threshold of science, and with how much stability it must be loaded, if we may speak figuratively, in order to exercise its powers for the acquisition of such knowledge as belongs to that branch of natural philosophy which we designate somatology.

All bodies are composed of elements which are supposed to be few in number, but, by their combinations, capable of producing all the varieties found in the works of nature. The extraordinary transformations we discover excite our surprise, and prove that there can be no absolute annihilation. We do not refer to mere antiseptics or those substances that resist putrefaction, or apparent dissolution by the action of the elements; nor do we glance at the wreck of the antediluvian world in coal basins, chalk-pits, and organic remains of animals larger than any now existing by as much as the lives of the patriarchs exceeded the present standard of life in the proportion, at least, of ten to one. The antediluvian world was altogether, and except one family and the animals, &c., preserved by that family, entirely changed by a visitation the most awful that could have visited the earth; but there was no annihilation of the materials composing the old world. Nor is there annihilation now of any part of nature's productions. Thus, grass seems to be the origin of blood, chyle, milk, flesh, bones: and light, air, and water are the chief nourishment of plants that grow in the earth or vegetate in any other circumstances. The oak is the same material now that it was four thousand years ago. Its essence is unchangeable. In fact, we may thence infer that the elements of bodies are not only few in number but unchangeable in character, essence, or essential properties. Men are black, copper-coloured, brown, fair: cross the breed as you will, the elements of the original remain unchangeable,—nature is always herself. And this regularity, or uniformity in the course of nature, shews that the elementary parts of bodies are permanent and unchangeable; for if these elementary particles which constituted an oak some four thousand years ago had undergone any gradual decay, the oaks of the present day would have been formed considerably different from those of the Patriarch's times; but as we cannot allege any difference, it would seem that the ultimate elements of bodies have continued the same. This is equally remarkable in the human race. Men are not more divided by speech than by cast or colour and physical organization.

We have already noticed that the ancients confined the elements of bodies to four—fire, air, earth, and water: but chemistry unfolds many combinations of air, earth, and water, into each of which that invisible fluid *heat* enters, and with which they unite in a wonderful manner. All matter which is the object of



our senses is continually being altered and changed in form, or some other of its essential or contingent properties; but never ultimately destroyed by annihilation. For all those changes which take place in the sensible qualities of bodies, result from the action of one species of matter upon another. Thus, the ascension of water from the earth in the form of vapour, by means of the sun's influence and other atmospheric causes; the conversion of certain elements of air, moisture, and earth into the structures of plants by the peculiar organization of these bodies; the formation of coal and other species of bitumen under the surface of the earth by the changes which vegetables undergo when deprived of their vital principles, and they have become subservient to other agencies; and the liquefaction of metals by means of fire;—prove that the operations of chemistry are concerned in the greater part of the secret processes of nature as palpably as of those which display the most useful and agreeable results of the art of man. But chemistry, like nearly the whole of the other subjects of human skill and industry, was practised as an art long before any knowledge of its principles was attained as a science. And our inquiries are vain when we search to discover the inventor of the first plough, the baker of the first bread, the potter who first turned a bowl on the wheel, or the Wright who hollowed out the first canoe. Men used their hands for the purpose of supplying their wants long before they were acquainted with the laws of mechanics; and prompted by the power of instinct or invention, while the example of other animals favoured their imitative faculties, they exercised many of the useful arts without knowing on what principles they were enabled to attain their ends. Yet were these ends attained at a period very far anterior to that in which they had any methods of recording their acquirements; and more remote too, we should suppose, than that to which the immense grasp of human tradition can extend.

But what has all this to do with a discourse upon somatology? Much every way. Unless men in those remote ages had studied the essential and contingent properties of bodies, the arts of metallurgy, dyeing, and pottery, which are mentioned in the earliest literary records we possess, would not have arrived at the excellence they had reached; and but very few people have been found so barbarous as not to present some specimens of their skill in productions allied to those arts. Nor was their genius confined to one quadrant in the circle of sciences; they traversed its circumference, else whence those difficult and abstruse chemical processes that have immortalized Egyptian invention and Mexican skill? The grape, eaten in its unfermented juice, is charged with no inebriating qualities, but its expressed juice is rendered intoxicating; and the vine is never mentioned in times of remote antiquity except as the fruit which "maketh glad the heart of man." Osiris or Bacchus traversed the globe for the purpose of teaching all nations the cultivation and use of the vine. But to illustrate our allusion to Egyptian invention. The conversion of rough ore into a finely polished metal, the application of antiseptics in the art of embalming the dead, the whole art and mystery of medicinal chemistry as practised by the corporations of mummy-makers, the manufacture of colours and of stained glass, demonstrate a state of civilization highly conducive to the comforts of man; for the Egyptians were without doubt the first people of antiquity who excelled in all the arts which are purely scientific. As it was among the nations of antiquity, so it is with us; some men record the observations that fall within their reach, others by experiments arrive at results highly conducive to the comfort of society; upon inquiry we find that the material world, and the application of its treasures to the ease or splendour of human existence, form the grand emporium in which every man, as he may be prompted by inclination or talents, is at liberty to exercise his talents and push forward his invention to convert to public advantage and private emolument the inexplicable resources which on all hands solicit the unremitting application of his patient, laborious industry.

Mechanical means may be employed to reduce masses of hard substances to dust; the agency of fire will convert water into steam;

and, even gold, which in the crucible becomes liquid, can by intense heat be dissipated into vapour and again collected into its original mass without losing in weight by these most extraordinary changes. In this example, the identity of the substance we call gold is the most unanswerable proof of the indestructibility of matter. Our experiments must always be limited to our apparatus. But, had we the means of erecting apparatus sufficiently capacious, we might let off in vapour all the water in Loch Ness, or reduce to fine sand all the Grampian Hills. Yet the vapour, though by the laws of repulsion it was no longer water, would still exist, and the debris of those primitive rocks would be held down to the surface of the earth by virtue of gravitation.

Thus we see that whether we assume the veriest atom of aeriform, liquified, or gross and hard substances, as the representative of body and matter, all that we can do with that atom but enables us the more accurately to define its properties, and expatiate upon the transformations through which it can be pushed by human ingenuity. Let the gold-beater hammer his leaves of gold so thin that eighteen hundred of them would not be thicker than a leaf of this book, still it is gold! Let the chemist with a single grain of vitriol or carmine tinge a gallon of water, every particle of his vitriol, every atom of his carmine, is diffused in the water, every drop of which imbibes the die. Let the manufacturer of gas convert the pith of coal into an invisible aeriform fluid, its permanency is obvious by the light it affords, and its soot, which is generated by the flame, attests the indestructible quality of matter. Let the grave absorb the noble structures that once formed the frail tenements of immortal spirits, still the ultimate particles of kindred matter will serve again for new combinations, as inexplicable to our gross senses, and incomprehensible to our feeble understandings, as the solution of the great problem which forms the basis alike of revelation and of all human knowledge; "In the beginning God created the heaven and the earth."

In that heaven and this earth we behold the greatness of Almighty Power, the infinite wisdom and unsearchable goodness of our common Parent. With how much humility, then, doth it become us to talk about even the properties of matter. Some of these properties are essential to its existence; others are contingent to that existence, and depend upon various changes to which every created substance is liable, by reason of the invariable laws of nature, or the transformations to which it may be subjected by the ingenuity of man. But in any and in all situations matter is body, and body is matter; yet in geometrical language the term body means a solid, which in natural philosophy is defined a portion of space or of matter limited in magnitude on all sides. Habit has fixed upon our minds a notion of space that supersedes definition. Body—that is, a solid—considered in itself, may be viewed as indifferent to motion or rest, but capable of any sort of motion, straight or curvilinear, speedy or slow, and of all sorts of figure, square, round, and oval, or of any forms we may choose to impress upon it externally. Body then is matter, of which we know nothing except by its properties; and our notions of these properties are all simple ideas, which we cannot divide, even in imagination, so perfectly uniform are they, so devoid of parts. But when we proceed to analyse these ideas, their simplicity vanishes—each forms a nucleus of an extensive aggregate; the fecundity of the whole exceeds our furthest conceptions. For, how many associations may we link with the terms extension and figure? and yet these are but two out of a dozen of properties that we might enumerate as essential or contingent to all matter, *solid or fluid*.

Moreover, all bodies have secondary properties, which may be classed as hard, soft, and elastic. A *hard body* does not yield without breaking to any stroke or percussion, but retains its figure unaltered, unless the blow or percussion be so great as to overcome the cohesion of the parts, and produce fracture or pulverization. A *soft body* is that which yields, in all its parts, to any stroke or percussion, or even impression, without ability of restoring itself to its original form. An *elastic body* is that whose parts yield to any stroke, but immediately begin to restore themselves, and

the body ultimately assumes its previous figure. There are no bodies, however, with which we are acquainted, that are perfectly hard, soft, or elastic; but all bodies—that is to say, all matter, or created substances—possess some one of these properties in a greater or less degree.

The popular distinction of matter into solids and fluids requires to be noticed in this place. Philosophers define a solid as that in which the attractive power of the particles of which it is composed exceed their repulsive power, and consequently they are not easily moved among themselves: the body therefore retains any figure with which it may be impressed. A fluid, on the other hand, is that in which the attractive and repulsive power of the particles are in exact equilibrio, or in a state of balanced rest amongst themselves, and the body therefore yields to the slightest impression, and, like the elastic body, easily and readily resumes its primitive form. A fluid is any thing which cannot be grasped by the hand like a piece of marble or the branch of a tree.

Among the mechanics of natural history, one of the most delicate examples we have to offer in illustration of a fluid is the following:—

Upon the surface of smooth water, you will see the most active little insects run their daily course without sinking, or even wetting their feet. Examine with a magnifying glass the track which one of these has run on the surface of the water, and round each foot a pit will be observed resembling the indentation which a baker makes in kneading dough. If the feet of these insects be examined with a microscope, they will present five or six spreading hairs, ranged as the rays in which we draw a star. When on the water, each fibre is surrounded by a pit, much broader than the fibre; the quantity of water displaced in the pits is exactly equal to the weight of the insect, which in its rapid course upon the bosom of an Alpine spring leaves the most beautiful tracery behind it that can be imagined, and analogous to what may be termed the mechanical undulations which we trace in the wake of a steam-vessel; so also a well-polished needle will displace its weight of water and swim, because its surface is so smooth that the water does not adhere to it. The brushy feet of the insects are in physical, but not in mathematical contact with the water, and, by repelling it, depress so much of it that they are supported. But upon luke-warm water or a glass of mixed ordinary distilled spirit and water, none of the aqueous insects can run; on these they will sink to their belly. Into the specific law of corpuscular action, which obtains in this case, our inquiry does not enter. We have shewn that a fluid is matter which yields to the slightest impression, and we might further confirm our example by reference to the whale and the minnow; the fry of the minnow, not one-tenth of an inch long, and even wonderfully smaller animals which the microscope exhibits to our gaze, swim about with perfect freedom in a globule of water. The particles of fluid bodies are spherical, and their forces are more directed to their centres than to their surfaces, by which means motion is allowed freely when any force is applied from without; whereas when these particles are at rest all their parts are in equilibrium, in respect of each other. The pressure however of incumbent bodies, and containing vessels, always produces some deviation from the perfect equilibrium. It may be that in fluids of one class the particles or molecules have no mutual power, or they may have repulsive or attractive power. Of the first we have examples in sand and fine powders; of the second are the elastic fluids, as air; and of the third all liquids, as water, mercury, &c. These three kinds of fluids are obviously produced by the original differences which exist in the primary particles of which they are composed.

**EXTRAORDINARY CIRCUMSTANCE.**—One mass of rock has been raised in Mr. King's quarry, Higher Bebbington, 40 feet long, 12 feet wide, and 3½ feet deep, making 1,680 cubic feet, or 120 tons. It is perfect, and without stain or flaw of any kind, and is now being cut up for use.—*Halifax Guardian*.



## ENTRANCE TO THE BRITISH MUSEUM.



## ENGLISH DOORWAYS.—No. 2.

MONTAGUE HOUSE.

We this week give a view of the entrance leading from Great Russell-street, Bloomsbury, through the screen-wall to the courtyard of Montague House, now with the new buildings forming the receptacle of the British Museum. We hasten to insert a view of this subject, as it will no doubt very soon be no more. We have two other engravings upon the same building ready, but on account of our extended remarks upon the proposed New Building-Act, cannot this week insert either them, or any extended remarks.

## THE WELLINGTON STATUE.

THE cost of the statue and pedestal was 9,000*l.*, the metal having been given to the committee by the Chancellor of the Exchequer, and valued at 1,500*l.*, in addition to that amount. The money was raised by a public subscription, after a meeting held at the Mansion House. The contract with Sir Francis Chantrey was made in February, 1839, by the trustees, Sir Peter Laurie, Mr. John Masterman, Mr. Arthur K. Barclay, and Mr. R. L. Jones, the work to be completed and fixed by 1843. Sir F. Chantrey, at his death, left the whole model complete, and also the head of the duke the full size. The work has since been completed by his assistant, Mr. Weeks, under the direction of the executors. There was much apprehension from the delay in delivering the stones of the pedestal to the contractors, Messrs. McDonald and Leslie, that the statue could not have been completed on the anniversary of the battle of Waterloo, and they were not on the ground until mid-day on Saturday. Mr. Jackson, the

contractor for the Royal Exchange, then took the work in hand, and by the most spirited exertions succeeded in getting the whole of the pedestal fixed, and the statue in its place by the evening of Monday. The general opinion passed upon the pedestal during yesterday was, that it is much too high and too plain to do justice to the magnificent structure in the front of which it is placed.—[Bah.]

The statue itself is 14 feet in height from the feet of the horse to the top of the head of the duke. The pedestal on which it stands is of Peterhead, or the red granite of Aberdeenshire, with the exception of the lower course, which is of grey granite. The pedestal is altogether 14 feet high, so that the total height is exactly 28 feet. The attitude of the horse is of the quiet character which was introduced by the great artist, and greatly resembles the horse of the statue of George IV. in front of the National Gallery. The costume of the duke is generally taken from that which he wore on the great day of Waterloo, including his usual and remarkable military cloak.—*Morning Herald*, June 20.

## ROYAL COMMISSION OF FINE ARTS.

THE exhibition of works sent in, pursuant to notices issued by Her Majesty's Commissioners of Fine Arts, in May and July, 1843, with a view to assist them in the selection of persons to be employed in the decoration of portions of the New Houses of Parliament, will be thrown open to the public on Monday next, at Westminster Hall. The subjects included in the present exhibition, by the terms of the notices, are limited to the following departments of art:—1. Models of statues of British Sovereigns and illustrious personages, to be subsequently executed in bronze or marble, for the decoration of the New Palace. The works to be ideal or portrait, statues, or groups; the sub-

jects being left to the choice of the respective artists. The specimens, not exceeding two in number, to be sent by each artist, may be either prepared for the occasion, or selected from works already executed by him within five years; but the dimensions of each work must be on the scale of an erect human figure, not less than three nor more than six feet. 2. Specimens of fresco painting, executed on portable frames, each specimen to be composed of not less than two applications of the superficial mortar, so as to exhibit the skill of the artist in joining the work of two or more days. Each exhibitor in this department is at liberty to send a cartoon as a specimen of his ability in design and composition. The reception of subjects closed on the 15th inst., the original period having been extended one week on the petition of a large body of artists. The work of arrangement, however, has been progressing during the last fortnight, and his Royal Highness Prince Albert, accompanied by the Duke of Sutherland, Lord Colborne, the Earl of Lincoln, Viscount Palmerston, Lord Mahon, Lord John Russell, Sir R. Inglis, and several other commissioners, inspected the exhibition on Friday week. The commissioners, who were conducted through the hall by Mr. Eastlake and Mr. Barry, are understood to have expressed themselves much gratified with the general character of the works; but, in the exercise of their judgment, it was thought advisable to exclude many subjects in the fresco department, as not possessing sufficient artistic merit to entitle them to a place in the exhibition. The models for works in sculpture are both numerous and interesting. These occupy the centre of the hall, and being most favourably placed for observation, will probably form the most attractive feature in the forthcoming exhibition. The frescos, with their accompanying cartoons, are also numerous, and it is said that some of them evince a very satisfactory degree of talent in this interesting branch of art. From their limited size, how-



ever, none of the subjects exceeding eight feet in their longest dimension, and from the large number which it has been thought right to exclude, the walls of the hall do not present so well covered an appearance as on the recent occasion of the cartoon exhibition. It is expected that her Majesty will honour the exhibition with a visit previous to its being opened to the public on Monday next.

#### SAFETY BEACON FOR THE GOODWIN SANDS.

The Trinity Buoy steam-yacht, on June 20th, towed off to its station, on the Goodwin Sands, a stupendous safety beacon, designed and executed, we believe, by James Walker, Esq., C.E., under the auspices of the Trinity Board. The beacon is intended not only to be a guide to mariners, but also a place of refuge for the crews of vessels cast away on the fatal Goodwin. It will be recollected that a safety beacon, the invention of Captain Bullock, R.N., was placed on the Goodwin Sands some years since, and still braves the storm. The one that has been towed out to-day is of larger dimensions, and will be placed on a different part of the sands. This beacon is an experiment, and we understand, should it succeed, it is the intention of the Trinity Board that similar fixed erections shall supersede floating buoys. Mr. Walker's beacon consists of a strong iron column, about 40 feet high, based on a circular platform of solid masonry, the latter being upwards of 20 feet in diameter. The foot of the pillar is bell-shaped, and tapers upwards to the extent of some six or eight feet. About the middle of the column there is a convenience resembling a vessel's top, surrounded with an iron railing, capable of receiving, we should say, half-a-dozen men; and on the summit is placed an iron basket, shaped like a balloon, which is also constructed to contain about a like number of persons, should they be enabled to reach it in the case of shipwreck. The column is tied down to the stone-work by iron stays, and on it are fixed steps, by which it may be ascended.

The whole of the unwieldy machine is incased in a huge timber vessel, resembling a brewer's vat, in which it was built, for the purpose of floating it to its station on the sands. The sides of this wooden building are constructed in such a way as to admit of their being removed on the beacon settling down in the sand. The bottom, on which the masonry rests, will, however, remain under the beacon. —*Morning Herald.*

#### Law Intelligence.

##### COURT OF QUEEN'S BENCH.—JUNE 12. (Sittings in Banco.)

##### THE QUEEN V. THE NORTHERN AND EASTERN COUNTIES RAILWAY.

THIS was an application by a person named Webb, a lessee of Rye-house and farm, and of the tolls of Rye-bridge, for a mandamus against the defendants, to compel them to make a road on the line of their railway of a sufficient width, and in a manner which should accord with the requisites of the Act under which the company had been established. The line of railway went across the road, which had to be remade, and which it was contended ought to have been made 16 feet in width, and not less than one foot in 20 inclination.

Mr. Crowder, Mr. Kelly, and Mr. Wells shewed cause against the rule, and contended—first, that the bridge was in fact sufficient; and, secondly, that the provision on which this application was founded related solely to roads which were public roads, and that the road in which Mr. Webb was interested was a private road, and did not therefore come within the Act.

Mr. Erle and Mr. Gray, in support of the rule, insisted that this was a public highway, and was consequently the proper subject of this application. They further contended that the bridge was not in the state required by the Act.

The Court thought the question of liability which was raised on this application could not be satisfactorily decided on affidavit, and therefore made the rule absolute for the mandamus, that the facts might be stated on the return.

#### LECTURES ON ARCHITECTURE AND ANTIQUITIES.

##### Lecture III.

##### ON GRECIAN ARCHITECTURE—THE DORIC STYLE. (Continued from p. 313.)

AFTER passing through the Propylæa at Eleusis, the votaries had to enter another building, forming a second vestibule to the grand mystic temple, and here they had to encounter some of the appalling trials which awaited them. In this vestibule was a moveable floor, on which the aspirants for initiation descended to the mysteries below. The order in this building was the Ionic. Beyond this vestibule was the Temple of Ceres, which was protected by the sacred inclosure or wall. In front was a portico of twelve columns, which have the peculiarity, of not being fluted from top to bottom, as Doric columns usually are, but their shafts plain throughout their whole height, with the exception of a part at the top and at the bottom of each about 7 inches high, which is fluted. Within the temple, according to a passage in Plutarch, it is imagined there were two ranges of columns, with others over them. The architect of this building was Xenocles. Little is known concerning the Eleusinian rites, as the parties initiated were obliged to contract a solemn engagement to observe secrecy, and the celebration was conducted under the veil of impenetrable mystery. Those who revealed the nature of these mysteries were looked upon as the most impious of wretches, as unworthy to exist, and with whom it was not considered safe to hold communion. Thus Horace alludes to the general feeling of horror expressed against such persons,—

"Beneath one roof ne'er let him rest with me  
Who Ceres' mysteries reveals;  
In one frail bark ne'er let us put to sea,  
Nor tempt the jarring winds with spreading sails."

One of the charges brought against Socrates, of impiety, arose from his contempt for the mysteries of Ceres; Diagoras, the Melian philosopher, on account of divulging some secrets of the Eleusinian rites, was proscribed, and a price was set upon his head; it very nearly cost Æschylus his life for speaking too freely of them in one of his tragedies; and the disgrace of Alcibiades proceeded from the same cause.

According to mythologic authority, when Ceres was in search of her daughter Proserpine, she was hospitably entertained at Eleusis, at the house of Celeus, king of Attica, to whose son, Triptolemus, she taught the art of agriculture, and imparted a knowledge of the holy doctrine; he in return instituted

festivals and mysteries in her honour. The celebration of these rites took place at night, to add to the impressiveness of the scene, and the aspirants were obliged to perform ablutions and sacrifices at the river Ilissus, near Athens, and after a year's preparation they were admitted to participate in the more solemn ceremonies which took place every fifth year at Eleusis, and which were called the greater mysteries (*μυστήρια μεγάλα*), whereas those observed at the Ilissus were the lesser mysteries (*μικρά μυστήρια*). They appear to have been very similar to the rites of the Egyptian goddess Isis, whence they were most probably derived. The emperor Hadrian introduced them at Rome, where they lasted until abolished by Theodosius the Great, after a total duration of 1,800 years. The colossal half-length of Ceres, brought to England by Dr. Edward Clarke, and now deposited in the public library at Cambridge, was found near the inner front of the second vestibule of this temple.

In front of the Eleusinian Propylæa was the temple of Diana-Propylæa, presenting an arrangement in its porticos differing from any examples we have hitherto noticed; instead of columns at its angles, *antæ*, which are often improperly called pilasters, terminate its fronts—the distinction between the Greek *antæ* and the Roman pilasters is very great. The former were never diminished (or so slightly as not to appear so to the eye), and were not fluted; their capitals consisted of straight lines; whereas the Roman pilasters were diminished like their columns, frequently fluted, and their capitals generally resembled those of the accompanying columns; and such pilasters were often placed in situations where the Greeks would have employed columns. The temple of which we are speaking was small, with a front measuring only 20 feet 10 inches on its upper step; its length 39 feet 9 inches, and its height to the top of the cornice 20 feet 6 inches; the building was of Panticte marble, but with roof-tiles of baked clay.

At Olympia, in the Peloponnesus, once existed a magnificent hexastyle temple of Jupiter, of which the dimensions are presumed to have been 230 feet by 95 feet. Mr. Dodwell measured a column, of which the diameter was 7 feet 3 inches. Within this building was enshrined the master-piece of Phidias, his statue of Jupiter, of gold and ivory, 50 cubits high.

At Rhamnus, in Attica, on the sea-coast, is a fine Doric temple of Nemesis, which stands in a noble situation, elevated 300 feet above the sea. Pausanias says that it was built by Alcamenes, the pupil of Phidias. This temple, and a smaller one adjoining it, dedicated to Themis, were inclosed by a wall of white marble, remains of which are yet to be traced. The temple of Nemesis had at



TEMPLE OF DIANA-PROPYLÆA, AT ELEUSIS, IN ATTICA.

\* "Vetabo, qui Ceresis sacrum  
Vulgatit arcana, sub isdem  
Sit trabibus, fragilemque mecum  
Solvat phaselum."—*Od. li. lib. 3.*



each end porticos of six columns, and flanks containing twelve each; the external columns, like those to the temple of Ceres, were only fluted at top and bottom.\* It is ascertained that the mouldings of the cornice were painted red, a practice adopted by the Greeks in other temples. The details in this building are very fine. Close to it is the small temple which bears the name of Themis, but which is supposed to be the original temple of Nemesis, injured by the Persians, and the Greeks not caring to repair a structure desecrated by their enemies, chose rather to erect another. The smaller building is, in fact, of an earlier style, being one of the class called *in antis*, a mode of building well known to be of great antiquity. It is very similar to the small temple of Diana, at Eleusis. These two temples in *antis*, of Themis and Diana, would serve as excellent models for an entrance porch to a gentleman's house of moderate size, and would afford a far better protection against sun, wind, and rain, than the lofty and open porticos, which are frequently designed in a way to afford no defence against the elements.

At SUNIUM, which is a promontory forming the southernmost point of Attica, are the remains of two Doric buildings; one is a Propylæa, the porticos of which have two columns placed between *antis*. The other building is a temple dedicated to Minerva-Surinus. The portico consisted of six columns, and ten have been ascertained on the flanks; but the building is so much in ruins that the exact number cannot be clearly made out. The structures are of marble, highly-finished, and belong to the best ages of Grecian architecture. "The striking remains of the temple of Minerva on the promontory of Sunium are, in all probability, to be attributed to the same authors." (The architects of Pericles—Lord Aberdeen's Inquiry, p. 143.)

At THORICUS, about eight miles to the north of Cape Sunium, are the remains of a singular Doric building, which was found half-buried in the sand, which being cleared, a portico was discovered, having fourteen columns on each front, and seven in each return; and as no remains of walls were discovered within the area, it is conjectured that the building was not a temple, but an open portico, perhaps an agora; these columns are only fluted at their upper and lower extremities.

Leaving Attica, we shall pass now into Sicily, where we find the remains of one of the most astonishing specimens of Doric architecture, surpassing in magnitude all that we have hitherto noticed. This is the celebrated temple of Jupiter Olympius, at AGRIGENTUM, now called Girgenti, and by Virgil styled, from a neighbouring river, Agragas. It was the wealthiest and most powerful city of Sicily, and, according to Diogenes Laertius, contained within its territory 800,000 persons. "The temples of Agrigentum, numerous and costly as they are, appear to have arisen during little more than a single century. The prosperity and independence of the city commenced with Theron, about 450 years before Christ; after the battle of Himera (fought on the same day with that of Salamis), his thoughts were entirely turned to its decoration, and the Carthaginian prisoners were made to assist by their labour in the erection of trophies to perpetuate the glory of their conquerors. The Agrigentines continued in this employment until a second and more successful invasion of the Carthaginians found them occupied in completing the temple of Jupiter Olympius, the greatest in the island, and one of the most stupendous monuments of ancient times." (Lord Aberdeen's Inquiry, p. 134.) We gather, from early writers, exalted notions of the wealth and splendour of this people. One of its merchants, named Gellias, is said to have received, at one time in his house 500 knights, and to have supplied them all with a change of raiment; the daughter of another citizen, Antisthenes, had 800 cars in her bridal train; 300 cars, each drawn by milk-white horses, superbly caparisoned, accompanied the return of Exanetus, as victor from the Olympic games. The horses of Agrigentum were long famous for their beauty and swift-

ness,\* and it is related by Pliny and by Diodorus (a native of the island, whence his additional name Siculus) that funeral honours were paid to those horses which had been often victorious in the Olympic games. Alluding to the pitch of luxury and splendour of building at which his countrymen had arrived, the famous philosopher Empedocles (the same who threw himself into the crater of Mount *Ætna* to immortalize himself) said of them, "that they so built as if they were to live for ever, and they so feasted as if they were to die on the day following."†

The temple of Jupiter was in its proportions truly colossal, and it ranked among ancient Greek temples as second only to that of Diana at Ephesus (which was 425 feet long and 220 feet in breadth); it was 369 feet in length, its breadth 182 feet, and its height 120 feet, in which dimensions Mr. Cockerell is of opinion that it exceeded the building at Ephesus. Unlike other Doric structures, in this temple the columns are not detached from the walls, thus they present only the appearance of half-columns; these, however, are 13 feet in diameter, so that if the columns had been disengaged, their circumference would have been more than 40 feet, a dimension exceeding the largest columns in Egyptian architecture. (The Roman-Doric column erected by Sir C. Wren, called the Monument, is only 15 feet in diameter, though of a proportion much loftier.) The echinus of the capitals is formed of two large stones, each weighing 2½ tons; the triglyphs are in single stones, each weighing 12½ tons; few of the stones employed in the entablature weigh less than 8 tons; and a man could stand in one of the flutings of the columns. As compared with a modern building, we may observe that the width of the cell is 2 feet more than the nave of St. Paul's, and the height exceeds it by 18 feet. The front portico, in which were seven columns, had the battle between the Gods and the Titans represented in the pediment, and in that of the other portico was sculptured a representation of the siege of Troy, in which each hero was distinguished by the peculiarity of his dress and arms. (Diodorus.) In the interior was a double row of pilasters ranging like the pillars of a cathedral, the attic story above the pilasters was supported by figures of the rebellious and defeated giants, most appropriately placed there to contribute to the glory of Olympian Jove, whose power they had dared to oppose. The proportions of these Titans are as vast as the other parts of the structure: being 25 feet in height; with heads alone 3 feet 10 inches, and chests 6 feet across.

The other temples at Agrigentum were very numerous; in the year 1790, by Sir Richard Colt Hoare, eleven could be traced in different stages of dilapidation. The next in size to that of Jupiter was one dedicated to Hercules, which was 154 feet long, and 55 feet broad, having six Doric fluted columns in each front, and fourteen on each flank; the columns were 7 feet in diameter at bottom, and only 4 feet 10 inches below the capitals, shewing a very great diminution. In this temple was the celebrated picture of an earthly Venus by Zeuxis, and a painting by the same artist representing the infant Hercules strangling the serpents, which was so highly esteemed by the painter, that, thinking no price equal to its value, he presented it as a gift to the Agrigentines. A celebrated bronze statue of Hercules likewise adorned his temple, and was held in the highest repute. The infamous Roman Prætor Verres, when he was plundering Sicily of her statues and works of art, attempted to carry off this statue by night, but was prevented by the citizens, who rose in arms to protect the temple.

The temple of Juno Lucina had in 1774 thirteen fluted Doric columns standing entire on one side; there were formerly in all thirty-four, each portico having six columns in front. In this temple was placed a famous picture of Juno, painted by Zeuxis from the choicest beauties of the loveliest women of the city. The temple of Concord was also hexastyle, and in proportions similar to the temple of Juno, and in 1790 was in tolerable preserva-

tion; it is now converted into a church. The temple of *Æsculapius* had twelve half-columns at each side, and four columns in *antis* in each front, of which two columns and one *anta* remained in 1790. In this temple was a celebrated statue of Apollo, in the thigh of which the name of the sculptor, Myron, was inserted in letters of silver. This statue was carried to Carthage, but restored by Scipio; and it has been imagined by some that this statue is the same as the Apollo Belvidere, one of the chief ornaments of the Vatican, although Flaxman was of opinion that that celebrated statue was only a copy. (If so, what must the original have been?) Near the temple of Jupiter was that dedicated to Castor and Pollux, also of the Grecian-Doric order, and presumed to have been in arrangement similar to the other hexastyle temples, but of it only scattered fragments remained. The temple of Vulcan was also hexastyle, with fourteen columns on each side; two columns only of this temple remain, and they are much injured. In one of the five divisions of the city, called the *Rupis Athenæa*, was a temple sacred to Jupiter and Minerva, to which the hospitable Gellias (heretofore noticed) "fled for protection during the siege of Agrigentum by Hamilcar, flattering himself that the enemy would respect so sacred a place; but finding that their rage for plunder knew no restraint, he set fire to the edifice, and there perished, with all the riches it contained. Of this ancient structure no traces remain, except some of the foundation stones which mark its form and situation. Beneath the *Rupis Athenæa* was another celebrated temple, dedicated to Ceres and Proserpine, which was so highly venerated, that Pindar, in his Olympics, calls Agrigentum the seat of Proserpine." (Sir R. C. Hoare.) Sicily is the scene of the myth of Proserpine, being carried away by Pluto, and the goddess, who is also called Hecate, was much honoured in this island, of which every foot is classic ground.

The Carthaginian general having taken Agrigentum after an eight months' siege, spoiled it of all its riches, pictures, and statues, and after sending to Carthage the most precious articles, disposed of the remainder by public auction. Among these trophies was the celebrated brazen Bull of Phalaris (the tyrannous, or sovereign of Agrigentum), made by Perillus (who was the first victim to his own invention), which was restored to the Agrigentines by Scipio on the fall of Carthage, 260 years afterwards.

At SELINUS, or Selinuntium (so called from the great quantity of parsley, *σαλυνον*), on the southern coast of Sicily, were six magnificent Doric temples, probably the largest ever erected in this style, and which appear to have been overthrown by an earthquake. One of these is believed to have been 331 feet long and 161 feet broad, with columns 60 feet high; a stone, which is supposed to have formed part of an architrave, is 40 feet long, 7 feet deep, and 3 feet thick, and some of the columns were found to be 12 feet in diameter, and others 10 feet 10 inches, and 48 feet high. Near these ruins were the remains of a hexastyle-peripteral temple, computed to have been 186 feet long, and 76 feet broad on its upper step, and to have had 36 columns in all, 6 feet 8 inches in diameter. Another temple, not far from these, was 232 feet by 83 feet on its upper step, with fluted columns, six in each front and sixteen on the flanks. The other three temples are supposed to have been unfinished when they were thrown down. One of these had porticos of seven columns in front, with seventeen on each flank; another had six columns in the porticos, and sixteen on each flank. In the quarry, near Campo Bello, whence it is presumed that the materials were derived, are yet some shafts of columns, 10 feet in diameter, and one of 12 feet, still joined to their natural bed of stone. Mr. Woods measured one block of an architrave, 26 feet 2 inches long, 4 feet 9 inches wide, and 6 feet 10 inches high. The city was, 409 B.C., nearly destroyed by the Carthaginians.

SYRACUSE once comprised within its walls five cities (whence it was called Pentapolis), and maintained an army of 100,000 foot and 10,000 horse, and a navy of 500 armed vessels. It was, in 414 B.C., attacked by the Athenians,

\* It seems very reasonable to presume that this practice arose from motives of economy, and that at a future period the flutings were to be carried through; the practice of the best period thus was not lost sight of.

\* Thus Virgil speaks of Agragas as famous for its breeding of horses, "magnanimū quondam generator equorum."

† "Agrigentinos ita edificare, ac si perpetuo victuri, ita convivere ac si postidit morituri forent." This expression has also been attributed to Pliny.

\* "The riches of any one of the sovereigns of Europe, and the skill of his wisest subjects, would barely suffice for the erection of only one of the six Selinuntian temples—the works of a distant colony of Greece." Dr. Mezza.



who were repulsed with the loss of their generals, Nicias and Demosthenes. The city, however, was taken by the Romans, under Marcellus, 212 B.C., after a siege of three years, and among those who perished was the celebrated Archimedes, a native of the town. The Grecian Doric temple of Minerva was in the seventh century converted into a church, and is now the cathedral, the few ancient remains of which are of excellent proportions. Near the river Papyrus stand two gigantic Doric columns, about 6 feet in diameter; they have only fifteen flutings, which are not continued to the bottom. They belonged to the temple of Jupiter Olympius, whose celebrated statue was adorned with a golden robe, of great weight, presented by Hiero II.; but which was taken away by Dionysius the Elder, with the remark, "That it was too heavy for summer, and too cold in winter, and that he should provide one of woollen cloth, fit for both seasons."\* The statue was carried to Rome by Verres, the unscrupulous plunderer of Sicily.

At Segeste, the ancient *Ægesta*, is a famous Grecian Doric temple, almost entire, standing in a splendid situation on the brow of a precipice. There are six columns in each front, and fourteen at each side, making thirty-six in all; these are about 30 feet high; the length of the building is 190 feet, its width 78 feet; the stones composing the architrave are of great size, and one extends over two columns: the date of its erection, as well as the nature of its dedication, are unknown. The columns, which are not fluted, are 6 feet 7 inches in diameter at the base, and 4 feet 11 inches below the capital.

We now quit Sicily, the land of fable and of song, no less famous in the sweet strains of Virgil and Ovid, than for its ancient magnificence and patronage of the fine arts, and for its rivalry with Athens, Carthage, and the mighty Rome.

In a notice of Grecian Doric architecture we must not omit to speak of some ancient temples in Italy, namely at *Pæstum*, the ancient *Posidonium*, so denominated from its tutelary god Neptune, who by the Greeks was called *Ποσειδών*. From its unhealthiness, the place had, in very early times, fallen into decay, and Augustus visited the temples as venerable antiquities in his day; but they were completely forgotten, until in 1755 discovered by an artist of Naples. Among the ruins, which are very extensive, are three buildings of imposing character; two of them are temples. The temple of Neptune, raised on three steps, was 194 feet long and 78 feet broad, having six fluted columns in each front, and fourteen (including the angular ones) at each side. The entablature and capitals were equal to half the height of the columns, of which the shafts only were 27 feet, the lower diameter 6 feet 10 inches, the upper diameter 4 feet 8 inches, and with twenty-four flutings; the intercolumns are 7 feet 7 inches wide. The cell is 90 feet by 43 feet, having fourteen columns in two rows, with shafts 16 feet 11 inches high, 4 feet 9 inches in diameter, and with twenty flutings. These columns support a deep architrave, on which rises another set of columns, about 11 feet high. The largest stone in this building is 13 feet 8 inches by 4 feet 8 inches by 2 feet 3 inches. Professor Wilkins in this temple detects a close resemblance to the temple of Solomon (*Prolusiones*). The temple of Ceres is in a lighter style than the former building. It is 108 feet long and 48 feet broad, with the same number of columns as in the temple of Neptune; the diameter of the columns is at bottom 4 feet 3 inches, at top 3 feet 3 inches, and their shafts have 20 flutings. The third building is called a *Basilica*, because there is no appearance of a cell or altar. It is 170 feet long and 80 feet broad, and it is raised on three steps, having nine columns in each front (the only example of such arrangement), and eighteen on each side, with the lower diameter 4 feet 6 inches, and twenty flutings. Both fronts have a vestibule, and the interior was divided by columns. The date of these structures is unknown.

The beautiful lines by Mr. Rogers on the temples of *Pæstum* are tolerably familiar, and have been often quoted; the following, from an

Oxford prize poem, are less known, but hardly less beautiful:—

"Mid the deep silence of the pathless wild,  
Where kinder nature once profusely smil'd,  
Th' eternal temples stand;—untold their age,  
Untrac'd their annals in th' historic page;  
All that around them stood, now far away,  
Single in ruin, mighty in decay;  
Between the mountains and the azure main,  
They claim the empire of the lonely plain.  
In solemn beauty, through the clear blue light  
The Doric columns rear their massive height,  
Emblems of strength untam'd; yet conquering  
Time

Has mellow'd half the sternness of their prime,  
And bade the lichen 'mid their ruins grown  
Imbrown with darker tints the vivid stone.  
Each channelled pillar of the fane appears  
Unspoil'd, yet soften'd by consuming years,  
So calmly awful, so serenely fair,  
The gazer's heart still mutely worships there."

One of the most ancient Doric temples in Greece is in the island of *Ægion*; this was a hexastyle temple, dedicated to Jupiter Panhellenius. "It is said by Pausanias to have been built by *Æacus* considerably before the Trojan war; a story wholly incredible, but which serves to prove that it had outlived all tradition of its real origin. It is still nearly entire." (Lord Aberdeen's Inquiry, p. 128.) There were twelve columns on each flank, making thirty-six in all, of a porous stone, covered with a thin stucco, and the architrave and cornice were painted in colours. Fifteen statues, formerly belonging to this temple, are now at Munich; they are supposed to represent the Greeks and Trojans contending for the body of *Patroclus* (casts of them are in the British Museum); they have been restored by Thorwaldsen. Illustrations of the Temple of Jupiter have been published by Mr. C. R. Cockerell, and have proved a valuable addition to our knowledge of Doric architecture.

Despite the sarcastic allusion of Mr. Welby Pugin to what he is pleased to call "the grand cab and omnibus entrance" to the Birmingham Railway, in Euston-square, that noble building is calculated by its colossal proportions to convey an idea of the majestic simplicity of Doric architecture, more than any thing else in England; and will be a lasting memorial of Mr. Hardwick's skill and taste in the eyes of all but those who are determined only to admire one style of building, and who refuse to recognize merit in any other.

G. R. F.

#### PETRALOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 303.)

**GRANITIC PORPHYRY.**—As basalt is said to be the base of porphyry, so the latter exhibits itself in various stages of transition with basaltic and other rocks. The passage of granite to granitic porphyry is observable in numerous varieties, and in some cases so closely are they identified with each other, that something more than mere external observation is necessary to determine their true character. Dolomieu writes very pertinently on this subject: he says, "During the great coagulations to which the primitive mountains owe their construction, it seems that there have been substances, of which the concurrence, or the great abundance, has impeded or prevented the regular aggregation, in giving the paste a tenacity, in some manner fattening it, to make use of a term applied to mother earths, when they refuse to crystallize. Such are the particles of talc and of argillaceous magnesian earths, when free. It seems that these earths, naturally unctuous, have prevented the particles from assuming the places to which the laws of elective aggregation destined them, in causing them to slide on one another. I have pretty generally observed that the superabundance of magnesian earth chiefly raised upon the laminated texture of felspar, causing its loss, without depriving the felspar of the faculties of assuming the exterior forms of its regular crystallization. This is perceived in those felspars which constitute the large spots in green porphyry, called *serpentino antico*; and still more in the felspars, which, mingled with green hornblende, formed the granites called Egyptian greens. It frequently happens that their compact fracture no longer

presents any indication of a laminar texture, although they still affect the quadrangular prismatic form, which belongs to their mode of crystallization.

"Just as in the magma of mother waters, reduced to a state of paste by evaporation, there are particles which, escaping from the vicinity of the medium in which they are placed, aggregate and form crystals, which are found buried in the mass; in the same manner, in these kinds of magma of the great precipitation, it is rare that some isolated crystals are not found among them, and which have acquired so much more bulk and regularity, as they have had more facility of aggregation. They are distinguished from the paste which contains them, by their form, their tissue, and almost always by their colours, brighter than that of the base. Thus are formed rocks called porphyries, which in reality only differ from granites by their accident of aggregation."

Such is the opinion of this eminent man, after careful examination of the existing porphyritic monuments brought from Egypt, and carefully comparing them with the rocks common to the Alps and Appennines. Dolomieu had no opportunity of observing them in the act of formation; but his conjectures in this respect, although not strictly in accordance with nature, are well grounded and ably supported. The silicious rocks of the Egyptian, Nubian, and Arabian deserts, including almost every known variety of porphyry, are without exception portions of the oceanic soil; in their primary state we see them formed and still forming on the shores of the Red Sea, every locality presenting accumulated heaps or beds in their mixtures peculiar to that locality. Some of these vast beds are uniform in their composition, consisting of sea-weeds uniting with atomic particles of oceanic bodies accumulated in mounds of vast size, or forming the lower beds; they are observed, in the first place, constituting the ocean-beds, capping the summits of submarine hills, or covering the valleys and troughs of the sea, their disposition being governed by the accident of deposition and tidal action. In the second stage of nature we find them on the gradual retreat of the waters composing a portion, and enlarging the domains of terra firma.

Dolomieu supposes them, while in this stage of formation, to be in a pasty state; but, in nature they are not so, they are loose masses of dry calcareous matter, of various salts and earths, of bodies decomposed and decomposing, of acids formed by the process of decay, or previously formed, now liberated, and entering into other combinations: they generally exist in this state in regions where it never rains, and where moisture is denied, thus their after-changes are produced rather by chemical than by mechanical action. Water is undoubtedly the active agent of change in some aggregate masses, as it is in the atomic disposition of many nodules; but the great masses of rocks are more generally formed by the act of withdrawal of hydrogen, and the substitution of the elements of atmospheric air; and the porphyries form in this manner, their masses of the earths becoming gradually oxidated, and this oxidating principle being carried, by progression of time, into all parts of the mass, composed as it is of conflicting material of the alkaline earths and acids in their uncombined state: the mineralogist will readily conceive that, while general change is taking place throughout the whole, local aggregations of crystalline structure will of necessity form, their disposition being regulated by the disposition of the earths imbuing those acids freely passing throughout the whole. On the other hand, as Dolomieu conjectures, the general change often checks and diverts local change; and the cementing matter, which is always some neutral body, as silica, or alumine, or both united, in variable proportions, and equally diffused, forming the loose, friable, colourless mass; otherwise speaking, the bases of the various coloured aggregates, which are united in the masses of amygdaloidal porphyry, gradually embracing the whole, prevents further change, and by continuous increase of oxygen, the ponderous solidity of the whole is produced, not immediately, but in the slow progress, apparently of ages, the causes of effects produced continuing undisturbed during the period of time requisite to complete the operation.

\* Dixit, "Ætate gravem esse aureum aniculum, hyme frigidum; læneum autem ut utrumque tempus anni optum." —Valerius Maximus.



It must be distinctly understood by my readers, that inasmuch as all organic species of the ocean and of the earth administer to the continual increase of the solid matter of the planetary body; so the earths thus locally produced and accumulated by living action, by death and decomposition, have a tendency, under favourable circumstances, to unite chemically or mechanically with each other, and thus to assume other forms, characterized by their varying mixtures, as rocks, stones, and mineral bodies. It is palpably manifest that both silica and alumine, when exposed to a high degree of atmospheric heat, undergo numerous changes in their physical condition; that they are capable, in the absence of water, of uniting in one general mass their atomic and aggregate quantities, and of embracing within their medium numerous mineral bodies, holding them merely by the simple force of cohesion: the same law which governs the formation of a flint, of opal, of quartz, of chalcedony, agate and jasper, is equally manifest in the formation of the most ponderable aggregates. The bodies and portions of bodies of shell-fish, by after exposure to the atmosphere, and very often within the shallows, at first silicify, the calcareous cement with which they are united, is at the same time, on exposure to the atmosphere, equally the subject of change, for its compounds are various and contrary in their nature, although every particle of the organic body may, and does generally retain its compound qualities, developed in the entire organic body; still, blending with these particles, are the material of ocean slime and of the waters, held in suspension and continually deposited by them; and this atomic disposition of parts is generally maintained through the series of after-changes, to which the aggregate masses are of necessity subject. Who then can wonder at seeing the beautiful uniformity and almost mathematical disposition of some varieties of rock, and of some varieties of stone, seeing that same uniformity manifest in many marls, boles, and clays?

Rock, while existing in its native state, and under the conditions by which it was formed, maintains its integrity of form and composition: it has, in fact, some portion of the vital principle within it, action and re-action existing within the mass; if permeable, it is permeated by the elements of the waters, and by mineral exudations; thus its accidental fractures and natural hollows become filled up with some pure body or bodies, as crystal, quartz and metals. But this communicating action no longer exists when the rock becomes exposed, as atmospheric influences are inimical to its preservation, for it is then we find it moulder away, and sometimes almost insensibly resolve once more into earth.

"The best characterized porphyries," says Dolomieu, "easily pass to the state of granite. It is enough that their base shews a beginning of regular aggregation, and there are few large masses of red porphyry among the most perfect in which spots are not observed, of more than a foot in extent, where the grains of felspar multiply so as to touch each other; little crystals of shorl are then seen in the midst of them, which have also profited by the local facility given to the aggregation, or which perhaps has caused it by seizing the iron, the presence of which, when it is free and oxygenated, so far as to assume the red colour, seems to place an obstacle to the crystallization. Thus also are these parts of granitic appearance discoloured: one would often believe that those large grey granitose spots which disfigure the purple colour of the rock proceeded from foreign substances accidentally incorporated in paste of the porphyry, if one did not discern on the margin of those spots that the grains become gradually less distinct, and reassume the tissue of the base, in which there is some appearance of a solution of continuity.

"There are porphyries in which these spots, which differ by their colour and texture from the base of the rock, are so multiplied that they resemble breccias; they appear formed of an infinity of similar species, which become united by a common cement.

"It is easy, besides, to shew that the bases of many porphyries are only disguised granites; and it is sufficient to take off the kind of mask which covers them, and which depends on the colouring substance, to behold with astonishment that this base, judged to be uniform, is

itself a stone, composed of two distinct substances, which do not even always require the power of the lens to be observable."

AMYGDALITE is, strictly speaking, a variety of porphyry; it consists of a base of earth, oceanic, terrestrial, or mixed, and interspersed with nodules or kernels of chalcedony, agate, calcareous spar, zeolite, and green magnesite, or magnesian earth, mingled with iron. It affords valuable material for manufacturers. In Scotland it yields agate in abundance, which is wrought up under the name of Scotch pebbles, and in the rocks it sometimes alternates in thin layers with chalcedony, cornelian, &c. In Italy it yields chalcedonies. In the Faroe islands, the chalcedony generally assumes the stalactitic form, being clearly deposited by water, and enveloping mosses and straws. The base of the Rock of Gibraltar is amygdaloidal, embracing, in a calcareous or limestone matrix, groups of nodules and stratified plates of chalcedonic bodies. Werner considers amygdalite as of two formations, the base of one of which is argillaceous, sometimes inclining to basalt, which it generally accompanies, and sometimes to ironstone, and a mixture of iron and clay, which is also the chief repository of phrenite. The other formation belongs to the floetz horizontal or stratified rocks.

In this latter state it is forming in great abundance in the mountains of Arabia, the silicified nodules and lamellated plates being first formed in the loose calcareous mass, which eventually consolidating, encloses the whole, forming one ponderable rock, resembling porphyry. It is also very abundant in the East Indies and South America, and in the former place passes into breccia on the one hand, and into basalt on the other. Like basalt, it contains nodules of steatite and small crystals of ironstone, and from its coarseness of polish, it manifests a common origin with basalt. Amygdalite, with open pores, abounds in the elevated regions of Mexico, and is the petzontli used in building: it is of a reddish colour, and supposed to be lava. The consideration of amygdaloid naturally leads to the consideration of agate.

(To be continued.)

#### INSTITUTION OF CIVIL ENGINEERS.

June 13.—The President in the chair.

A paper by Mr. Braidwood, superintendent of the Fire Brigade, gave the results of his experience as to the best means of rendering large supplies of water available in cases of fire, and on the application of manual power to the working of fire-engines. The author stated that if water could be obtained at an elevation, pipes with plugs or firecocks on them would be preferable to any mode at present in use; and when this could not be obtained, and the premises were of value, it would be advisable to erect elevated tanks to be kept constantly charged. When water could be obtained, however, at not less than twelve feet below the level of the premises, if it was not thought prudent to erect elevated tanks, it might be conducted beneath the surface by cast-iron pipes, with openings for introducing the suction pipes. The system of covered tanks the author believed to be the least advantageous mode of supplying water, and in many cases where the supply proceeded from large reservoirs, he thought it would be better to place plugs or firecocks on the water-pipe. The results of a series of experiments were given, shewing that the idea of extinguishing fires by jets from water-mains, without the use of fire-engines, would not succeed. They also proved the necessity of placing the plugs on the mains, and not on the service-pipes, where that could be done. The details were then given of the mode of obtaining water from pipes or mains, and the advantages or disadvantages both of the plug and fire-cock were fully entered into. The author then stated that the best mode of using manual power was by applying the greatest aggregate amount of power to the lightest and smallest machine; that the reciprocating motion was to be preferred to the rotary; and that a fire-engine with two seven-inch cylinders and eight-inch stroke, weighing 17½ cwt., was the most advantageous size that could be adopted.

In the discussion which ensued, Mr. James Simpson approved of Mr. Braidwood's general views, but combated his ideas as to the disad-

vantages of sunk tanks, which he contended had been proved in certain situations to be essentially useful, and that they were provided in many public establishments. He stated that to the Dutch, who arrived with King William in 1638, we are indebted for the first organized system for extinguishing fires. Many parts of their system still remained; and in Cape Town, in 1817, he had been much struck with the completeness of their plans. He examined into the supplies of water for fires, and the modes of obtaining them, and thought that more water was wasted through the general excitement and want of presence of mind than was generally imagined. He recommended the use of screw-cocks rather than plug-cocks, as the latter were apt to become set and to be injured, as well as having in general too contracted a water-way. He also disapproved of the use of jets direct from the mains, stating them to be wasteful and not efficient, and that in almost every case they had failed, except under very peculiar circumstances.

In the paper by Mr. Andrew Murray, Assoc. Inst. C.E. (Royal Dockyard, Woolwich), the author considered, in the first portion, the quantity of atmospheric air chemically necessary for the complete combustion of a given quantity of coal, examining the proportion necessary for the inflammable gases, and for the solid carbon, shewing the large excess of air that would be required if the gases were not ignited until they had passed into the flues of the boiler, on account of their admixture with the carbonic acid gas generated in the furnace. The question of the velocity with which the products of combustion pass off was next considered.

The practical recommendations given in the paper were, that the supply of air should be as free as possible; the entrance into the ash-pit should not be less than one-fourth part of the area of the fire-grate; the depth of the ash-pit should be about 2½ feet, no advantage being found to result for the combustion of the coal from its being deeper; the space between the fire-bars should be about ⅞ inch, but that depth should be regulated by the kind of coal used; for any kind of coal it should not be less than ⅞ inch, nor more than 1 inch; the fire-bars were recommended to be made as thin as was consistent with their required strength; half an inch in width had been found to be a good proportion. The space in the furnace above the fire-bars was recommended to be made large, about three cubic feet to each superficial foot of fire-grate, when such an amount could be obtained. The proper area of the flue was next considered, with reference to the bulk of the products of combustion, and their velocity, shewing that the area requisite for the quantity chemically required was found to be much too small, and that in practice it should not be less than two square inches for the products of combustion from each pound of coal consumed in the grate per hour.

Taking a furnace in which 13lbs. of coal were burned on each square foot of fire grate per hour (which was stated to be a very usual rate of combustion in steam-boilers), the area of the flue to every superficial foot of the fire-grate would be about 26 square inches.

The area of the chimney was recommended to be three-fourths of that of the flue.

The mode of conducting the flue to the chimney, and the angles formed in its passage, were also carefully considered. The time occupied by the gases in passing through the flues of a boiler, from the instant of their generation to that of their reaching the chimney, was shewn not to be of importance, provided that the incandescent gases were so subdivided that all the particles were brought into contact with the boiler, and were made to part with their caloric, as was the object in the construction of locomotive and other tubular boilers.

The amount of heating surface recommended was in the proportion of 18 square feet to each foot of fire-grate, when the combustion was carried on at the rate of 13lbs. per square foot per hour, though a larger amount might be employed in land boilers, where there was no objection against cooling down the products of combustion in a greater degree. The principles were stated to be applicable to all kinds of boilers used either for land or for marine purposes.



## Correspondence.

## IMPROVED FLUES V. CLIMBING BOYS.

SIR,—The very able and humane remarks which appeared in your leading article of June 8th, with regard to chimneys, have led me to consider how necessary it is that the formation of flues generally should be such as to preclude the possibility of using the living machine for cleansing them. The usual rectangular form of flue is just sufficient to allow this inhuman and degrading practice to be exercised; and although most flues are at present so constructed, legislative enactment prevents the use of climbing-boys; but it is possible that there may at some future time be a repeal of the Act, so highly creditable to the present age. It is therefore incumbent on those connected with building to turn their serious attention to the formation of flues, and if they can substitute a more scientific form for the transit of smoke, combination of strength, and facility of cleansing by machinery, and consequent safety from the effects of ignition, I say they will act, not only from the most humane principles, but also do that which will add far more to the health, comfort, and safety of the community at large, than any legislative enactment can do, as applied to so very important a feature in our dwellings, and which has, I am sorry to say, received very little attention from scientific men.

Mr. Hunt, Mr. Seth Smith, and a few others, have, I believe, taken out patents for the construction of flues of a circular form, which most scientific men would consider adapted to their several purposes better than a square flue. The former flue was of brick, and although its construction was extremely clever, all bond was destroyed, and its interior being glazed, there was no adhesion for the soot, which frequently descended *en masse*; moreover, this mode was very expensive. The other plan was one which is alluded to in your number dated 15th inst., in a letter signed Edward Nangle; this was the application of metallic tubes for the purposes of a lining to the flues, also a most expensive plan, and one that might be extremely detrimental to a building by expansion and contraction, and lead generally to very careless workmanship. I have given some attention to the matter, and am of opinion that a flue should be of a circular section and constructed of bricks, which should be moulded to that form, and so fashioned as to bond in perfectly with the general work; and that the interior of the flue should not be glazed or pargetted, but be worked as fairly as possible, and be well flushed up to prevent the escape of smoke; and I really cannot imagine there would be much more expense than on the present plan. I hope you will excuse me for troubling you with these observations, but feel assured, from your observations on the subject, that you would feel disposed to assist any of your readers in the advocacy of those principles, which are an honour to the age in which we live.

PHILANTHROPY.

## COMPETITION.

SIR,—I observed in the THE BUILDER of Saturday last, some very excellent remarks on the immoral practice of competition, and I do hope that, you having now declared yourself a most unqualified enemy to this vicious system, every exertion in your power will be used to wipe away this stain from the "scutcheon" of architects and builders.

The system operates as much to the injury of the employer as the employed, by creating a disposition on the part of the latter to take unfair advantages of the want of judgment in the authors of plans, to make up for deficiency of profit, and is also a premium on dishonesty, as the sharpest trader and the man of no principle generally fares best, from his determination at the outset of his contract to substitute bad materials, bad work, and, if possible, to seduce the clerk-of-works to connive at his conduct.

The present system also widens the breach that unfortunately has, for the last few years, taken place between the middle and working classes, as it gives a species of monopoly to a few capitalists to concentrate in themselves all the different branches of art connected with building, and keeps the workman to his *caste* or *class*, whatever may be his genius. A work-

man, whether a carpenter, or a joiner, a mason, or a bricklayer, however gifted, unless he can obtain capital to unite all these and many other trades under the denomination of builder, must never hope to be independent of servitude, or become, as of old, a master. He may become a drudge—a task-master—a tool of the great builder, but he will never be the respectable, substantial master that was commonly known forty years ago. Neither can it be expected that the same advance will be made in different branches of building while this system prevails. How can a contracting, competition builder feel that interest and pride in his work which the old master mechanics used to feel? It is impossible; it is contrary to his mode of doing business, which is cheapness; it is sufficient for him that the work obtains the architect's certificate. Moreover, the present system is the worst possible for training youth to any one of the building arts, as there is no emulation, nor proper master to direct his taste and ability.

I have had great opportunities, possibly greater than most men, of observing the changes which have taken place during the last five-and-twenty years amongst those whose trade is connected with building, and the amount of ruin and utter destitution I have witnessed among men who were once respectable master carpenters, bricklayers, masons, and plasterers of the old school,—men, who have tried to meet the new order of things, and bear up against this accursed system, has been pitiable in the extreme, have yet been crushed by its harshness and knavery. Ask any commercial traveller, who sells building-materials, to look at his journey-book, and let him tell you how many names he can point out of those who have retained their business on the new system? He will tell you that it will be more easy to recount those that have ended their days in a gaol, and whose families become paupers, in the attempt to live by "competition;" and he may tell you some tales on this score not much to the credit of members of that institution, which you seem not to respect more than others.

Your remarks in reference to competition for building churches are but too true. I venture to assert that there is not a county in England, where churches have been built on this system, in which some have not been cursed by the builders, as the origin of their ruin.

Roman Catholics are not exempt on this score, and I do hope that Welby Pugin, who, in good round terms, rates architects as parsons-down of tradesmen's accounts, will lend his aid in crushing this system, and prevent, in the erection of Roman Catholic buildings, such circumstances taking place as a few years ago attended the erection of the new Roman Catholic buildings at Bury St. Edmunds and Hereford.

Surely no Christian would wish that the altar of his God should be raised in envy,

malice, and all uncharitableness; and that some of the earliest prayers whispered at its foot should be a cry for bread from the wife and children of the ruined and broken-hearted man, who literally placed the material head and corner-stone of the temple, and whose distress was occasioned by the integrity with which he fulfilled his bond.

Much of the sin lies at the door of architects, much also at that of "the builders" themselves; but let both unite in getting rid of this disgraceful mode of transacting business, and they will confer an incalculable benefit on the arts. And, I am sure, when this has been effected, that no branch of manufactures or arts will keep pace with the advances that will then be made in architecture, and in those arts which it calls to its aid.

I am, Sir, yours, &c.,  
London, 24th June, 1844.

## DERBY LUNATIC ASYLUM.

SIR,—I perceive you have not received any notice respecting the result of the competition for the Derby County Lunatic Asylum. There were seventy-nine designs sent in, consisting of more than 800 drawings, some very elaborately got up.

The design chosen, and which it is intended to carry into execution forthwith, was sent in by Mr. Henry Duesbury, late of the firm of Lee and Duesbury, 20, Golden-square, London; it is certainly a very excellent plan, far superior to all the others sent in—so much so, that the committee did not even divide, but were unanimous for its adoption. Messrs. Lee and Duesbury were the successful competitors for the Derby Town Hall, which is now finished from their designs; it has a commanding elevation, and the plan is very convenient, and well adapted to the purpose intended. If a plan and elevation should be of service to your useful publication, I will, with pleasure, send it, to the proper scale.

It is lamentable to see the great expense that young architects put themselves to in competing: some of the designs sent in had very large and elaborate drawings, executed in the first style, by Mackenzie and other artists, framed and glazed. This would be all very well, did it only concern themselves; but this is not the case; it compels those, who would only otherwise attend to the designing a good building, to employ artists and make large drawings, or they stand no chance of attracting attention when the designs are exhibited for approval.

With good wishes for the success of your useful publication,

I am Sir, your obedient servant,  
A SUBSCRIBER.  
Derby, June 19, 1844.

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Date of Register, 1843.	No. in Register.	Proprietor's Name.	Address.	Subject.
APRIL 29	173	William Glegg Glover.	8, Chester-square, Middlesex.	Design for window-sashes.
— 30	174	Green and Bentley.	33, Compton-st., Brunswick-square, London.	The Protean reflecting oven.
MAY 3	177	Robert Fry.	Tockington, Gloucestershire.	Design for the configuration of a bed, or a floor for thrashing grain and seeds, and for breaking stones and other matter.
— 4	178	David Middleton, Jun.	Lincoln.	Chimney-pot and cowl-sweeper.
— 8	179	Isaac Luggitt.	Howden, County York.	Design for a new lamp for burning spirit.
— 11	180	Wm. and Joseph Harcourt.	209, Bristol-street, Birmingham.	Harcourt's sliding blind pulley.
— —	181	George Thos. Caswell.	Wolverhampton, Staffordshire.	A double-acting pump.
— —	182	Vincent Price.	Wardour-street, Soho.	Design for a manumotive carriage.
— 14	183	William Warne.	Lark-hall-lane, Clapham.	Cordwainer's standing or sitting machine.
— 15	184	Benjamin Hick and Sn.	Bolton, Lancashire.	Design for a portable forge.
— —	185	H. Negretti.	19, Leather-lane, London.	Thermo-hydrometer.



## RAILWAY INTELLIGENCE.

A memorial has been got up by the inhabitants of Saffron Walden to the Railway Company, requesting that the station may be placed nearer to that town than at present contemplated.—*Chelmsford Chronicle*, June 21.

The South-Western Railway Company have agreed to pay to the proprietors of the intended branch line from Newbury to Basingstoke and Southampton a net annual rent in perpetuity, equal to  $\frac{3}{4}$  per cent. on the outlay; and also to divide equally with the shareholders the contemplated profits, after payment of that rent, which, it is calculated, will raise the dividends to 5 per cent. The length is something more than fifteen miles, and 200,000l. is the estimated cost. The branch from the Bishop Stoke station to Salisbury will cost 240,000l.; the length is twenty-one miles and fifty-seven chains.—*Wills Independent*.

*Southampton and Dorchester Railway.*—A correspondent states that Captain Moorsom is proceeding with the utmost expedition in making this survey, and parties under him are actively engaged on the whole length of the line, so that there is no doubt of its report being made in time for the meeting at Dorchester on the 19th of July.—*Salisbury Journal*.

*Another Contemplated Railroad.*—It is in contemplation to lay down a railroad from Bath to Weymouth. The projected line to be connected with the principal intermediate towns, and to be designated the "South Union Railroad." The scheme is said to emanate from an influential source.—*Wills Independent*.

*Projected Line of Railway.*—A line of railway has very lately been surveyed by Mr. Stephenson, jun., from the Serray station, on the North of England line, to Boroughbridge, thence by the villages of Staveley and Furnham, to Knaresborough, by which it is intended to pass on the north-east of the town, through a field called "Hansel Pasture," and quite as well known by the name of the "Cricket Field," thence across the Nidd, near St. Robert's Cave, through Plumpton to Braham Warren, where it comes in contact, in the Crimple Valley, near Spoforth, with the line of railway lately proposed from Star Beck to Bolton Percy, and at that point the survey has at present terminated. What is the ultimate object in view is not at present perceptible; and whether it will turn out a mere bubble, or terminate in something tangible, time only can determine.—*Doncaster Gazette*, June 21.

*Oxford.*—*Extension of the Great Western Railway.*—The directors, accompanied by a large party of their friends, went down to Oxford on Monday week by a special train to inspect the works, which they found in a very satisfactory state. After inspecting the station at Oxford, and the bridges at Nuneham and Appleford, they returned to Paddington by a special train. On the Wednesday morning following, the line was opened for traffic, and was found in very good order.—*Wiltshire Independent*, June 20.

## Miscellaneous.

**AMERICAN INFRINGEMENT OF AN ENGLISH PATENT.**—Mr. Henry Stephens (the mechanical drawing-ink manufacturer, of Stamford-street), recently obtained 2,000 dollars damages in the United States Circuit Court, against Messrs. D. and W. Felt, stationers, of New York, for their infringement of the plaintiff's patent for making blue writing fluid for ink, and other colouring purposes. It appeared that the defendants did make an article similar to, or in imitation of, that made by the plaintiff, and sold it as the article made by him, but they denied that he was the first inventor of it, or was entitled to any patent for, or monopoly in, the article. Much evidence was adduced for both sides, and the jury found a verdict for the plaintiff for 2,000 dollars, liable to be increased in amount by the court to 6,000 dollars.—*Mining Journal*.

A splendid church for the parish of Horningshaw, near Longsealt Park, has been in course of erection for some months, and will be consecrated by the Lord Bishop of Salisbury in a few weeks. It has been erected at the sole expense of the Marchioness of Bath.—*Morning Herald*.

## Tenders.

TENDERS delivered for building in carcass a first-rate House, adjoining the Anti-Corn-Law League Offices, Fleet-street.

Geo. Webb .....	£1,120
C. Turner and Co. ....	1,127
J. Lucas .....	1,139
E. Taylor .....	1,150
W. F. Chapman .....	1,209
J. Higgs and Son .....	1,220
Locke and Nesbham .....	1,225
Pearse and Guerrier .....	1,239

Slaters and Masons' work not included in the above.

TENDERS delivered for the enlargement and improvement of the Wesleyan Chapel, Liverpool-road, Islington.—Mr. John Parkinson, Architect.

Mr. Glenn .....	£1,259
Mr. Dove .....	1,098
Mr. Ashby .....	1,067
Mr. Smith .....	998
Mr. Elston .....	860

## NOTICES OF CONTRACTS.

For erecting a Farm House, &c., at Court-y-Graban, in the county of Radnor.—Plans, &c., Mr. Edward Powke, at Glanhenwyl, near Hay.

For erecting a Farm House at Trechendre, in the county of Brecon.—Plans, &c., Mr. Fowke.

For reinstating Dwelling House and Buildings at Great Thurtow, Suffolk.—Further particulars, Messrs. Newton and Woodrow, Land Agents, Norwich.

For the erection of a New Church at Cotton-in-the-Elms, in the parish of Lullington.—Specifications, &c., J. Harding Esq., Rolleston, near Burton on Trent.—Quantities, &c., Mr. H. T. Stevens, Architect, Derby. 3rd July.

For the erection of South Hackney Church.—Plans &c., Mr. Hakewill, 8, Craig's-court, Charing-cross. 29th June.

For furnishing and setting up the necessary Apparatus for Warming by means of Water the Church of St. Clement Danes.—Messrs. Collier and Steel, 9, Carey-street, Lincoln's-Inn. 3rd July.

For building Sewers.—Plans &c., Mr. Daw, Sewers Office, Guildhall. 9th July.

For the erection of a Building on the premises of the Workhouse of the parish of St. Mary, Newington.—Plans, &c., Mr. Edmonds, Surveyor, Bridge-street, Southwark. 15th July.

For certain alterations and additions to the Treadwheels, and for Air Pumps to be connected therewith, and also for certain Hand Crank Machines for hand labour at Norwich Castle.—Drawings &c., at the Castle.—Further information, Mr. Brown, County Surveyor, Norwich. 19th July.

## ADVERTISEMENTS.

**MILTON** next Gravesend, Western side of Windmill-hill.—Valuable BUILDING GROUND to be SOLD in plots, for building second-rate houses according to a plan, with a frontage of 29 feet each, and running in depth from 141 feet to 173 feet. This building-ground unites in itself what is rarely to be met with, being lower than Windmill-hill, and sheltered from the cold east and north-east winds, and by a brick wall (if erected) to separate the ground from the Tivoli Garden; it may also be sheltered from the north wind and being open to the milder breezes from the south-west, and having, with these advantages, a considerable elevation, so as to afford delightful views of the Kentish and Essex hills and surrounding country, the situation of the ground, combined with its mild and salubrious air, renders it worthy of attention.

For further particulars and terms apply to Mr. Edmed, solicitor, Gravesend; and Mr. E. B. Carey, 24, Southampton-buildings, Chancery-lane, London, where plans of the premises may be seen.

## LITHOGRAPHY.

**H. T. CHURCH** is desirous of calling the attention of ARCHITECTS, SURVEYORS, BUILDERS, and the Public to his LITHOGRAPHIC AND GENERAL PRINTING OFFICE, 58, WATLING-STREET, CITY. Drawings of Railways, Canal and Estate Plans, executed with the greatest accuracy and elegance; a combination of qualities difficult to obtain, as many Printers are entirely ignorant of the nature of the drawings committed to their care for the purpose of being lithographed. H. T. Church having, besides a ten years' experience of the business, had the advantage of three years' observation in the office of an eminent Surveyor, is particularly fitted for the superintendence of drawings, &c. which require to be lithographed with great accuracy. Circular Letters, Fac-similes, Bill-heads, Cards, Labels, Gum Tickets, and every description of Printing in demand in the commercial and manufacturing world executed with punctuality and elegance, and on the lowest remunerating terms.

H. T. Church will wait upon gentlemen in any part of London for the purpose of giving estimates or receiving orders. Country orders instantly attended to, if accompanied by a London reference.

## COLLINGS' PATENT HINGES.

Sole Manufactory, 64, Bridge-road, Lambeth, where a great variety are always on view, for church, park, coach-house, and all other doors and gates, of large or small dimensions, a gate of a ton in weight moving with these hinges as easily as a wicket; they are also admirably adapted for drawing-rooms, being highly ornamental, and folding-doors fitted with them may be removed and replaced in an instant. Also, spring hinges, with very superior fastenings, for exterior gates, at moderate prices. To be seen at Chas. Collings and Co.'s patent axletree, sugar mill, and spherical hinge manufactory, 64, Bridge-road, Lambeth.

**ANONYMOUS.**—In consequence of an Anonymous Advertisement having appeared in "The Times" of this date, stating that part of Tradlar-square has been laid with Asphalt, the public are informed that such is not the fact, the material laid down there being only an imitation of Asphalt, composed of chalk, sand, and tar. The pavement in Whitehall (opposite the Horse Guards), and that at the Duke of York's column, both laid down in 1838, are samples of works executed with the genuine Seyssel Asphalt.

J. FARRELL, Secretary, Seyssel Asphalt Company, 14th May, 1844. "Claridge's Patent," London.

## SEYSSAL ASPHALTE COMPANY.

"CLARIDGE'S PATENT,"

ESTABLISHED 1838.

This ASPHALTE is a Bituminous Limestone, obtained from an inexhaustible Mine at Fyrmont, in the Jura Mountains.

Previously to its introduction into this country, in 1838, the material had been used for many years in France, and from its great utility was extensively patronized by the Government of that Country.

Among the various uses to which it can be applied, the following may be enumerated:—For Foot-Pavements, public and others; in such Applications to Mansions, Gardens, walks, and Terraces; the flooring of Kitchens and other basement offices; also of Coach Houses and Stables, Dog Kennels, Barn Floors, Cow Houses, Piggeries, Poultry Runs, Roosts, and Walting. For Roofing, Covering of Railroad and other Arches, the Lining of underground Cellars near Rivers to prevent the ingress of the Tides; also in covering the ground-line of Walls, to prevent damp rising, and in the application of the Asphalt of Seyssel is particularly recommended by the Commissioners on the Fine Arts, thereby rendering the basement stories in the worst situations of dry Rot, and in the case of Cement, as applied to Docks, Breakwaters, or Walls built for resistance to the encroachments of the Sea. For lining of Tanks, Fish-Ponds, and other Hydraulic purposes.

J. FARRELL, Secretary, Seyssel Asphalt Company's Works, "Claridge's Patent," Stangate Dock, London.

## COMMISSIONERS OF FINE ARTS' REPORT ON THE MEANS OF PREVENTING DAMP IN WALLS.

THE DIRECTORS OF THE SEYSSAL ASPHALTE COMPANY have much pleasure in recommending the notice of the Architects, Builders, and others, the application of THE ASPHALTE OF SEYSSAL as the only effectual means of preventing DAMP rising in WALLS.

The following extract from the Appendix to the Commissioners of Fine Arts' Report, page 18.

In 1839 I superintended the construction of a house of three stories, the Lac d'Enghien. The foundation of the building is constantly in water, about 19 inches below the level of the ground-floor. The entire horizontal surface of the external and internal walls was covered at the level of the internal ground-floor, with a layer of Seyssel Asphalt, less than half an inch thick, over which coarse sand was spread.

"Since the above date no trace of damp has shewn itself round the walls of the lower story, which are for the most part painted in oil of a gray stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is only about 24 inches above the external surface of the soil, and only 19, at the utmost, above that of the sheet of water.

"The layer of Asphalt having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been since remarked at the base of the door-posts."

## BRITANNIA LIFE ASSURANCE COMPANY, 1, PRINCE STREET, BANK, LONDON.

This Institution is authorized by Special Act of Parliament (IV. Vict. cap. IX.), and is so constituted as to afford the benefits of Life Assurance in their fullest extent to Policy-Holders, and to present greater facilities and accommodation than are usually offered by any other Company.

Amongst others, the following important advantages may be enumerated:—

A most economical set of Tables—computed expressly for the use of this Company, from authentic and complete data, and presenting the lowest rates of Assurance that can be offered without compromising the safety of the Institution.

By this Table the Policy-holder has the option of discontinuing the payment of all further Premiums after TWENTY, FIFTY, TEN, and even five years; and the Policy itself, remaining in full force, for the full amount originally assured; and in either of the three other cases, for a portion of the same according to a fixed and equitable scale endorsed upon the Policy.

Increasing Rates of Premium on a new and remarkable plan for securing Loans or Debts; a less immediate payment being required on a Policy for the whole term of Life than in any other Office.

## CREDIT TABLE.

By this Table the Premiums may remain unpaid for five years, upon satisfactory security being given for the liquidation of the same at the expiration of that period.

Premiums payable either Annually, Half-yearly, or Quarterly, in one sum, or in a limited number of payments.

A Board of Directors in attendance daily at 5 o'clock.

Age of the Assured in every case admitted in the Policy. Medical Attendants remunerated in all cases for their reports.

Extract from Increasing Rates of Premium, for an Assurance of 1000, for Whole Term of Life.

Annual Premiums payable during									
Age.	First Five Years.	Second Five Years.	Third Five Years.	Fourth Five Years.	Remainder of Life.	£	s.	d.	£
20	1 1 4	1 1 4	1 1 4	1 1 4	1 1 4	2	3	8	2
30	1 1 4	1 1 4	1 1 4	1 1 4	1 1 4	2	3	8	2
40	1 1 4	1 1 4	1 1 4	1 1 4	1 1 4	2	3	8	2
50	1 1 4	1 1 4	1 1 4	1 1 4	1 1 4	2	3	8	2

PETER MORRISON, Resident Director.

A Liberal Commission allowed to Solicitors and Agents.



# The Builder.

NO. LXXIV.

SATURDAY, JULY 6, 1844.

**G**AIN pursuing the subject of the proposed new Metropolitan Building-Act, which, though no doubt tedious enough to our country readers, is with the London building world of all-absorbing interest, we this week finish our comments upon the schedules of the Bill, as they have been so materially altered; but as we have just received some extremely valuable remarks upon the Bill, shewing on

the part of its writer a thorough competence to undertake a criticism of the kind, we shall still extend our remarks to next week, reviewing the whole, and giving also the able report upon it made by the Society of Builders; and we doubt not that most of our readers will still bear with us for continuing a subject which, though dry enough to the readers of ordinary periodicals, is nevertheless of cardinal importance to all who possess estates and general property; nor should our country friends disesteem the matter as an useless taxing of their patience, for there exists a very strong feeling, that when this Bill is once perfected and made law within its metropolitan range, there will be no great slowness in extending its powers, in some modified shape at least, if not all over the three kingdoms, certainly to every great town within them. We must here say we cannot but very severely condemn the pertinacity with which certain provisions of the measure are still maintained, against the wholesome advice of every respectable builder, architect, and surveyor, and in opposition to the matured practical experience of the present district-surveyors. We have made some inquiries upon the subject, and have been told that the deeply-experienced respectable gentlemen who mainly drew up the bill wholly disclaim the odium and folly of these ridiculous and presumptuous blots upon the measure. And yet, strange to say, these are the very matters which, to common observers, however trivial, form the bones of contention, and are, indeed, reasons why the measure progresses so slowly.

The following is the form of words at present used in the Bill with regard to BREAST-SUMMERS and external walls and inclosures:—

**Breastsummers.**—"With regard to every breastsummer fixed to carry any front wall of a building,—

"If such breastsummer have a bearing at one end upon a party-wall,—then it must be laid upon a template or corbel of stone or iron, which template or corbel must be tailed through such wall at least two-thirds of the thickness thereof; and the end of such breastsummer must not be fixed into, and must not have its bearing solely upon such party-wall, but must be supported by a sufficient pier built of brick or stone, or by an iron column, or iron or timber story-post fixed on a solid foundation.

"And if any such breastsummer have its bearing at each end upon a party-wall,—then it must be supported by at least two sufficient piers built of brick or stone, or by iron columns, or by iron or timber story-posts fixed on solid foundations, and standing within and clear of the party-walls.

"Or any such breastsummer may bear also upon constructed returns in the direction of the length of the breastsummer of four inches at the least, coursed and bonded with the substance of the party-wall or party-walls; and such constructed returns must be increased one inch, at the least, for every six feet in length that the breastsummer may be otherwise unsupported.

"And if the height of the under-side of any breastsummer, laid from party-wall to party-wall to carry any external wall, exceed 15 feet from the surface of the public foot-pavement in front of the building,—then there must be constructed returns in the direction of the length of the breastsummer from the inside of each party-wall of 84 inches at the least, and at the least of the full thickness of such breastsummer; and every such return must be increased one inch at the least for every foot or part of a foot the breastsummer may be in height from the surface of the public foot-pavement more than 16 feet, whether the breastsummer be otherwise supported or not."

**Materials to be used in Repairs.**—"And with regard to old external walls or other external inclosures of any building already built, in reference to materials to be used in the repair thereof:—

"If any such wall or inclosure be not built of the materials required by this Act for external walls or other external inclosures hereafter to be built, then every part of such wall or other external inclosure (except the inclosure of roofs, and the flats, gutters, dormers, turrets, lantern-lights and other erections thereon), may be at all times thereafter repaired with materials of the same sort as those of which such external wall or inclosure has been already built."

We must still insist that we think pitch and other inflammable materials ought to be forbidden.

**Materials to be used in Rebuilding.**—"But if any such external wall or inclosure be at any time hereafter taken down or otherwise demolished for the height of one story, or for a space equal to one-fourth of the surface thereof, then every part thereof, not built in the manner and of the several materials by this Act directed for external walls, must be taken down; and the same must be rebuilt in such manner, and of such materials, and in all respects as by this Act directed for external walls hereafter to be built, according to the class and rate of the building to which such external wall or inclosure shall belong."

We must again urge Mr. Bartholomew's observation upon this clause:—"The words 'one-fourth of the surface thereof' do not clearly express whether of one story, or if the whole inclosure be intended."

**External Wall used as a Party Wall.**—"And with regard to external walls to be used as party-walls to any building adjoining thereto (except an attached building or office as is hereinbefore described);—

"If the external wall of any building have not such footings, or be not of such heights and thicknesses, or be not built in such manner and of such materials as are herein directed for party-walls of buildings of the highest rate to which such wall shall adjoin,—then such external wall must not be used as a party-wall for any such building; but there must be a distinct external wall built as herein described for external walls, of the rate to which it shall belong."

We think that permission ought to be allowed for footings of the proper kind to be underpinned to a wall otherwise fit to remain.

**SCHEDULE (D), PART II.—Division of Buildings.**—The grammatical alteration recommended by Mr. Bartholomew has been made.

**SCHEDULE (D), PART III.—Site of Walls.**—Upon this subject Mr. Bartholomew made the following observations:—"Where the buildings are of different rates, the wording should run 'so much of the BREADTH OR THICKNESS thereof'; otherwise, as one building being higher than the other, and requiring the whole thickness of the wall above the roof

of the other, such wording could not possibly be complied with."

The clause now stands thus:—

"With regard to party-walls, in reference to the site thereof;—

"If the buildings be of equal rate,—then such party-wall must be built on the line of junction of such buildings, one-half on the ground of the owner of one of such buildings, and one-half on the ground of the owner of the other of such buildings.

"If such buildings be of different rates,—then such wall must be built on the line of junction thereof, as follows: that is to say, one-half of the thickness of the wall required for the building of the lower rate, on the ground of each of the adjoining owners; and the whole of the additional thickness of the wall required for the building of the higher rate, on the ground of the owner of such building of the higher rate;

"And if such building of the lower rate be thereafter enlarged or altered, so as to become a building of a higher rate,—then the owner of such first-mentioned building of the higher rate, for the time being, shall be entitled to receive from the owner of such building of the lower rate, such sum of money as shall be a sufficient compensation for the ground occupied by that portion of the party-wall, which, according to the rate of the building enlarged, ought to have been built by its owner on his own ground, as well as the value of so much of the wall itself as may be more than the owner of such building of the lower rate had already paid for."

**Construction and Materials.**—The word "squared" has been prefixed to "stone;" this would be very oppressive.

"And with regard to party-walls, in reference to the component materials thereof;—

"Every part of such party-wall must be built of sound bricks or of squared stone, or of such bricks and stone together, laid in, and with mortar or cement, in such manner as to produce solid work."

"And as to the wood-work which it may be desired to connect with the party-walls of any building,—The bearing ends of wooden beams, breastsummers, girders, trimming-joists, and the ends of partition-heads and sills, and the bearing ends of the main timbers of a roof, and wood-bricks, may be laid into the substance of a party-wall; but no such beam, breastsummer, girder joist, partition-head or sill, nor any part of a roof being wood, nor any wood-bricks, must be laid or placed within four inches of the centre of any party-wall; and no other wood-work of any kind must be laid into, placed upon, or be run or driven into any part of the substance of any party-wall:—

"But if the ends of timbers be carried on iron shoes or stone corbels, then such iron shoes or stone corbels must be built into the wall at the least one-half of the thickness of such wall."

"And the top of every such party-wall must be finished with one course of sound stock-bricks, set on edge with good cement, or by a coping of any other properly secured and sufficient waterproof and fireproof covering."

**Height of Party-walls above Roof.**—On this subject Mr. Bartholomew's observations were as follow:—

"We think that for two or three feet back from a public way, a party-wall should be allowed to be only twelve inches high above a gutter."

"We also think if a turret or other erection upon the roof of a building be of incombustible materials, that such erection, which may often be for useful or for ornamental purposes, as for instance a chimney-shaft, a bell-cover, or a Gothic spire or pinnacle or flying-buttress, then there should be no requirement of the extension of a party-wall opposite the same."

The following is now the form in the Bill:—

"And with regard to party-walls in reference to the height thereof;—

"If a party-wall adjoin to any roof,—then such party-wall must be carried up and remain one foot six inches at the least above the part where the party-wall and roof adjoin, measured at a right angle with the back of the rafters of such roof."

"And if any party-wall adjoin a gutter,—then such party-wall must be carried up, and remain two feet at the least above the highest part of any such gutter."



"If there be fixed within five feet of a party-wall, upon the flat or roof of the building, any turret, dormer, lantern-light or other erection, of combustible materials,—then every such party-wall must be carried up next to every such turret, dormer, lantern-light or other erection, and must extend one foot six inches higher, and one foot six inches wider than any such erection on each side thereof."

**Openings in Party-walls.**—"And for the purpose of regulating the making of openings through any party-wall between one dwelling-house and another, whereby two or more such dwelling-houses shall be united—

"With regard to any dwelling-houses of any rate, such dwelling-houses may be united by means of openings in the party-walls,—

"But with regard to any dwelling-houses which when so united will contain more than fourteen squares,—

"If such dwelling-houses shall be and continue to be in the same occupation,—and if the poor-rates in respect thereof shall be paid by the same person,—then, upon its being declared by the official referees that in their opinion the stability and security from fire of any or either of such dwelling-houses will not be endangered by making such openings, they may be made accordingly; but the external and party-walls thereof must be such as are herein prescribed for buildings of the extra first-rate of the first class."

**Recesses and Chases.**—"And further, with regard to any party-wall, as to recesses, and as to chases in such wall,—

"In every story recesses may be formed, but only with the consent and authority of the official referees first had and obtained, and so that such recesses be arched over, and so that the back of any such recess be not nearer than seven inches to the centre of the party-wall in the first or lowest story, nor nearer than four inches to the centre of the party-wall in any other story, and so that the stability and sufficiency of such party-wall be not injuriously affected thereby.

"If any chases be required for the insertion of ends of walls, of piers, of chimney-jambes, of withes of flues, of metal pipes, or of iron story-posts,—then every chase for any such purpose must not be left or be cut nearer than four inches at the least to the centre of a party-wall, nor within a distance of nine inches at the least from any front or back wall, and no two such chases must be made within a distance of seven feet six inches at the least from each other on the same side of a wall, and no such chase must be formed wider than nine inches."

We presume the words should run "not nearer than," &c., "FROM the centre of the party-wall." We still think that for the words "wider than nine inches" should be substituted the words "WIDER THAN FOURTEEN INCHES."

**PART IV.—Party-walls and Party-arches between intermixed Property.**—"And with regard to ANY BUILDING ALREADY BUILT, having rooms or floors, the property of different owners, which lie intermixed, without being separated by any party-wall or party-arch or stone-floor,—

"If EITHER OF SUCH HOUSES shall be altogether rebuilt, or to the extent of one-fourth of the cubical contents thereof,—then such intermixed properties must be separated from each other as follows:

"If they adjoin vertically,—then so far as they adjoin vertically, they must be separated by a party-wall.

"If they adjoin horizontally,—then so far as they adjoin horizontally, they must be separated either by a floor formed of brick, tile, stone or other proper and sufficient incombustible materials, subject to the consent of the official referees, or by a floor formed of iron-girders and brick-arches or stone-landings, or tiles, or by a party-arch or party-arches of brick or stone of the thickness of nine inches at the least, if the span do not exceed nine feet, and thirteen inches at the least if the span exceed nine feet; and such floor or party-arch or party-arches must be built with sufficient abutments and in a sufficient manner."

We must again direct attention to the ungrammatical incongruity in the above wording, relative to which Mr. Bartholomew made the following observations:—The words

"Either of such houses" do not relate properly to the foregoing words, "any building."

**PART V.—Buildings over Public Ways.**—"And with regard to buildings extending over any public way, as to the part thereof which extends over such way, so far as relates to the separation of such part from such public way,—

"If such part be rebuilt,—then it must be separated from such public way, either by a floor or arch formed of brick or stone, or of other incombustible materials, subject to the consent of the official referees; or by a floor formed of iron-girders and brick-arches or stone-landings, or by an arch formed of brick or of stone; which arch, if the span thereof do not exceed nine feet, must be of the thickness of nine inches at the least, and which if the span exceed nine feet, must be of the thickness of thirteen inches at the least."

Relative to this clause, Mr. Bartholomew observed—"We think grievous trouble would arise to all parties from recurrence to the official referees in all such cases." This duty, so retained, forms another reason for increasing the number of official referees. In fire-proof buildings, vaultings over public passages, should not be required to be thirteen inches thick. Old firm Gothic vaults are rarely so thick; the thrust of unskillfully-built thick vaults has occasioned them to be often superseded, in defiance of geometry and statics by tasteless bunglers, by those gross, execrable, and unsightly pieces of malconstruction, formed by iron girders, bearing brick arches.

**PART V.—And such floor or arch, with its abutments, must be built in such manner as shall be approved of by the surveyor; but there must not be formed over any public way a ceiling of lath and plaster, or of lath and cement."**

**PART VI.—Party-Fence-Walls.**—The former absurd paragraph has been altered as follows:—

"And with regard to party-fence-walls, in reference to the thickness thereof, and to the height thereof,—

"The thickness of every such party-fence-wall must be throughout, at the least one-eighth of its length, and in buttress piers properly distributed, one-twelfth, at the least, of the whole height of the wall, measured from the top of the footing to the top of the wall, and including any coping upon the wall; or if the wall be less than 8½ feet high, then such thickness must be in every part thereof 8½ inches at the least, and the intermediate parts of every higher wall must be at the least 8½ inches thick.

"And every party-fence-wall, less than nine feet above the ground on either side thereof, may be raised to that height, by the owner of the ground, on the side on which it is less than that height; but upon condition that he do pay all the costs and charges of so raising it."

This clause is now in a very improved form, though its language is not sufficiently clear. Yet if one-eighth were made one-tenth, it would be still more improved, for the very frequent recurrence of buttresses would be troublesome, and the buttresses ought to be allowed to be sloped off at top with water-tables, and indeed should, if of squared masonry, be allowed to slope altogether.

**SCHEDULE (E).—Rules concerning external Projections.—Projections from Walls of Buildings.**—"And with regard to all buildings, in reference to projections therefrom (except the porticoes of churches, chapels, theatres or other public buildings, but including steps, cellar doors and area inclosures).—The walls of all such buildings must be set back, so that all projection therefrom, and also all steps, cellar doors and area inclosures, shall only overhang or occupy the ground of the owner of such building, without overhanging or encroaching upon any public way."

We again refer strongly to Mr. Bartholomew's observations on this.—"The utterly forbidding of cornices and other decorations to private buildings to project over public ways, would be fatal to architecture, and would have the effect of deterring, on that account, many persons from altering or rebuilding the fronts of their houses; it would be quite sufficient to forbid the dripping of water or other liquids from such projections upon any public way."

**Wooden Shop Fronts and Shutters.**—"And with regard to shop-fronts and their entablatures, their shutters and pilasters and stall-boards, made of wood,—

"If the street or alley in which such front is situate be of less width than 30 feet,—then no part of such shop-front must be higher, in any part thereof than 15 feet; nor must any part, except the cornice, project from the face of a wall, whether there be an area or not, more than five inches; nor must the cornice project therefrom more than 13 inches.

"If the street or alley be of a greater width than 30 feet,—then no part of such shop-front, except the cornice, must project from the face of a wall, whether there be an area or not, more than 10 inches; nor must the cornice project therefrom more than 18 inches.

"And the width of such street or alley must be ascertained by measuring the same, as hereinafter directed with regard to the widths of streets and alleys.

"And the wood-work of any shop-front must not be fixed nearer than 4½ inches to the centre line of a party-wall.

"And with regard to such wood-work; if it be put up at such distance of 4½ inches,—then a pier or corbel built of stone or of brick or other incombustible material, and of the width of 4½ inches at the least, must be fixed in the line of the party-wall, so as to be as high as such wood-work, and so as to project one inch at the least in front of the face thereof."

"And the height of every shop-front must be ascertained by measuring from the level of the public foot-pavement in front of the building.

"And every sign or notice-board fixed against or upon any part of any house, or other building standing close to any public way, must be so fixed that the top shall be within 18 feet at the most above the level of such public way."

The expression should run, "4½ inches from the centre." Whether the highest or lowest part of the foot pavement should be expressed. We think if the clause with regard to notice-boards be allowed at all, the restriction with regard to altitude would be uselessly vexatious.

**Projections beyond the general Line of Buildings and from other external Walls.**—

"And with regard to buildings already built or hereafter to be rebuilt, as to bow windows or other projections of any kind,—

"Such projections must neither be built with, nor be added to any building on any face of an external wall thereof, so as to extend beyond the general line of the fronts of the houses (which general line may be determined by the surveyor), except so far as is hereinbefore provided with regard to porticoes projected over public ways, and with regard to projections from face-wall and shop-fronts; nor so as to overhang the ground belonging to any other owner; nor so as to obstruct the light and air, or to be otherwise injurious to the owners or occupiers of the buildings adjoining thereto, on any side thereof."

Mr. Bartholomew stated his opinion, that "verandahs, balconies, cornices, and decorations ought to be allowed to project, provided they cause no public or private injury, and are made of incombustible materials, and to the satisfaction of the surveyor or official referees." Amelioration in this respect has now been made.

**SCHEDULE (F).—Rules concerning Chimneys hereafter built or rebuilt.—Construction.**—The plural word chimneys was (like that of moneys) misspelled throughout the Bill, in defiance of that rule of English orthography, which requires if a word end with y, preceded by a vowel, the y shall be retained. We are particular in this, because we think architectural nomenclature and orthography ought to be as soon as possible corrected: the alteration has been only partially made. The language is now,—

"With regard to chimnies and chimney-stacks, in reference to the construction thereof,—

"The foundations and footings of every such chimney and chimney-stack must be built similar to those of the wall in or adjoining to which it shall be.

"And the brick-work of every flue in any party-wall must be built from the foundation of



such wall, of the full thickness required for such flue; so that the brick-work of such flue shall not in any part thereof oversail or overhang any part of such party-wall.

"And every stack containing two or more flues (except angle chimneys), must be built from the foundation to the top thereof without any corbelling over, whereby any upper part of the brick-work of such stack shall oversail or overhang any lower part of the brick-work on the front thereof."

Why is this ridiculous and oppressive restriction against corbelling over chimneys, possessing no earthly advantage, still inserted? We must repeat Mr. Bartholomew's observation.—The provisions restricting and forbidding the projection of flues would be so vexatious and useless, would so deform principal rooms by irregular and needless projections, as to become virtually impracticable, and lead to the immediate repeal of the Bill, if passed into law; the party-walls being stronger as they advance towards the ground, and the chimneys growing lighter as they proceed upwardly, by the increase in the number of flues and chimney-openings, the fears of want of sufficient support below are altogether unfounded; the constant finding of the finest buildings, several centuries old, unfractured and unfinching, although from their first erection they have had chimneys corbelled out, even externally from the face of the walling, shews how needless would such prevention be."

"Nevertheless, with regard to buildings of the first-rate and extra first rate,—the jamba, breast, and flue of any SINGLE chimney may be built upon brick, stone, or iron corbels, above the ceiling of the third story of every such building;" (so that a house might be built with all single projecting chimneys!)

"And with regard to buildings of the second and third rates,—the jamba, breast, and flue in any single chimney may be built upon brick, stone, or iron corbels, above the ceiling of the second floor of every such building."

"But the projection both of such jamba and breast, must not in any case exceed nine inches before the face of the wall or stack, to which the same shall adjoin."

"And with regard to angle chimneys,—such chimneys may be built in the internal angle of any building, so that the width of the breast thereof do not exceed FIVE FEET, and so that it be properly supported on iron girders, with brick arches, or on strong stone-landings, not less than four inches thick, and tailed at least nine inches into each of the two walls forming such angle."

The confining such chimneys to a width of 5 feet would be truly ridiculous; the building canted-work is one of the triumphs of science; the diagonal arches, which, in oriental architecture, change a square plan into an octagon, and that again into a circle, exhibit the absurdity, in point of construction, of such a restriction, which would, while useless, be such a nuisance. The dome of St. Paul's Cathedral is raised from piers in a similar way,—the "squinches," or diagonal arches, which support the canted sides of octagonal spires, where they leave the perpendicular support of the square tower below, are such pieces of construction. The method of building chimneys upon 4-inch landings is an execrable piece of unsafe malconstruction; an angle chimney with its jamba, each started from a single heading brick, and gradually corbelled over, and firmly arched at the mantel, is a sound and scientific piece of work, and never fails; stone landings are themselves constantly breaking, and fracturing the ceilings below them. The enactment of such provisions could only have the effect of exhibiting to posterity the possession of a limited knowledge of construction by the present generation.

**Dimensions and Materials.**—"And with regard to chimnies, in reference to the dimensions of the jamba thereof,—

"The jamba of every chimney must not be less than 8½ inches wide on each side of such opening." (To angle-chimneys they should be allowed to be of any size, because the adjoining walls would alone be sufficient.)

"And with regard to chimnies and flues, in reference to the thickness of the brick-work thereof,—

"The breast of every chimney, and the front, back, withe or partition, of every flue, must be at the least 4 inches in thickness of sound bricks, properly bonded, and the joints of the work must be filled in with good mortar

or cement, and all the inside thereof, and also the outside or face thereof, next the interior of any building, must be rendered or pargetted."

Pargetting the outside of flues can have no effect other than the creation of annoyance by defacement, and giving secret licence to inferior work, because such work is to be concealed. The scandalous unsoundness of ordinary flues arises from their being pargetted.

Many halls and other apartments are required to be finished with unplastered brick-work or masonry.

"And with regard to flues, in reference to the dimensions thereof,—no flue may be used for a smoke-flue, which is of less internal diameter in any section than 8½ inches."

We are not sure that the orthography of "withe" is correct.

We think the words "where required" ought to be omitted, as evasive, from before the words "to tie in the abutments," "four inches from."

**Slabs and Hearths.**—"And a slab or slabs of brick, tile, stone, slate, marble or other proper and sufficient substance, at the least 12 inches longer than the opening of every chimney when finished, and at the least 18 inches in front of the arch over the same, must be laid before the opening of every chimney."

"And in every floor, except the lowest or first floor, such slab or slabs must be laid wholly upon stone or iron bearers, or upon brick trimmers; but in the lowest or first floor, they may be laid on a brick fender, or bedded on the solid ground" (or upon concrete or other solid bases, should be added).

"And the hearth of every chimney must be laid and bedded wholly on brick or stone, or other incombustible substance, which must be solid for a thickness of nine inches at the least, beneath the surface of any such hearth."

We should like all slabs to be at least two feet wide; the word "wide" seems to be omitted in the description.

**Backs.**—"And as to the back of every chimney-opening of every building (except backs of chimnies in the first floor of buildings of the fourth rate),—every such back, in the lowest or first floor, must be at the least 13 inches thick from the hearth to the height of 12 inches above the mantle, and in every other floor, at the least 8½ inches thick up to the same relative height."

"And as to the backs of chimney-openings in the first floor of buildings of the fourth rate,—such backs must be at the least 8½ inches thick, to the height of 12 inches at the least above the level of the mantle."

"Provided always, that if the chimney be built in any wall, not being a party-wall,—then the back of every such chimney-opening may be 4½ inches less than the several thicknesses above described."

The word "story" ought to be substituted for the word "floor." There does not appear to be any restriction in the proposed Act to prevent chimney-openings from being carried to or beyond the centres of party-walls.

**Chimney-openings back to back.**—"And as to backs of all such chimney-openings,—if two chimnies be built back to back,—then the thickness between the same must be at the least of the thickness hereinbefore described for the back of one chimney-opening."

**Angles of Flues.**—"We little approve of the relaxation in the matter of flues, by which soot may be collected in horizontal and flat flues, and an addition to the execrable nuisance of soot-doors be induced."

**Close Fires.**—"And as to EVERY oven, furnace, cokel or close fire, used for the purpose of trade or manufacture,—it must be six inches at the least distant from any party-wall, and must not be upon nor within a distance of 18 inches of any timber or wood-work."

The words EVERY and IT are not in agreement. The words should run "two feet from." We do not perceive any restriction to prevent ovens from being built upon wooden supports, while iron is expressly forbidden for their supporting and surrounding floors.

"And the floor on or above which such oven, furnace, cokel or close fire, shall be built or fixed, must be formed and paved under, and for a distance of two feet all round, the same, with stone, brick, tile or slate, at the least two inches thick, or other proper incombustible and non-conducting materials."

**Chimney-Pots, Tubes, &c.**—"And as to earthen or metal chimney-pots, tubes, funnels,

or cowl of any description whatsoever,—no such pot, tube, funnel or cowl must be fixed so as that the top of it be higher than four feet above the brick or stone work of the flue on which the same shall be placed; and every such pot, tube, funnel, or cowl must be fixed two feet at the least into the brick or stone-work of the flue on which it shall be placed."

We again repeat Mr. Bartholomew's note upon this.—"We lately had a case in which a zinc smoke funnel so fixed was blown down in a storm, carrying with it, attached thereto, a lump of 4 cwt. of brickwork, and piercing through a neighbouring roof, broke a strong carpenter's bench quite across, escaping, by only a few inches, the man who was there at work."

**Smoke Pipes.**—"And as to any metal or other pipe or funnel for conveying smoke, heated air, or steam, in reference to the position thereof,—such pipe or funnel must not be fixed against or in front of any face of any building in any street or alley, nor on the inside of any building, nearer than 14 inches to any timber or other combustible material."

Should be "Fourteen inches" from "any timbers."

**Cuttings into Chimneys.**—"And as to every chimney-shaft, jamb, breast or flue already built, or which shall be hereafter built, in reference to cutting the same,—no such erection shall be cut into for any other purpose than the repair thereof, or for the formation of soot-doors, or for letting in, removing, or altering, stove-pipes or smoke-jacks, except as directed for building an external wall against an old sound party-wall."

The unnecessary restrictions as to the nature of rain-water-pipes are now removed.

**SCHEDULE (H.)**—The following are now the propositions relative to drainage of buildings:—

"Before the several walls of any such building shall have been built to the height of 10 feet from their foundations, the drains thereof must have been properly built and made good (that is to say), if there be within 50 feet from any front of the building, or from the ENCLOSURE ABOUT THE BUILDING, a common sewer into which it is lawful and practicable to drain,—then into such common sewer; and if there be not in such situation and within such distance any such common sewer,—then to the best outlet that can be obtained, so as to render, in either case, such drains available for the drainage of the lowest floor of such building, or addition thereto, and also of its areas, water-closets, privies, and offices (if any)."

"And the inside of the main drains under and from every building for carrying off soil must be of, or be equal to, an area at least NINE INCHES IN DIAMETER."

We must here repeat Mr. Bartholomew's observations, that the terms "Equal to an area of at least 9 inches diameter," are not sufficiently definite, the quadrature of the circle being a matter of difficulty; but some definite quantity, as, for instance, 72 superficial inches, ought to be substituted."

"And every such drain must be laid to a fall or current of, at the least, half an inch to ten feet, and so as that the whole of every such drain within the walls of such building shall be wholly covered over under the lowest floor, and independently thereof."

"And every such drain within the walls of such building must be built and covered over with brick, stone or slate, and so as to render the drain air-tight."

"And every part of such drain inside and outside the walls of every building must be built of brick, tile, stone or slate, set in mortar or cement."

**Cesspools and Privies.**—"And with regard to cesspools and privies:—

"If there be a common sewer within 50 feet from any front of, or from the ENCLOSURE ABOUT ANY HOUSE OR OTHER BUILDING,—then a cesspool must not be made for the reception of drainage from such house or other building, unless there be, or shall be built, a good and sufficient drain from such cesspool to such common sewer."

The words "enclosure about, &c.," here and in the preceding instance, require to be more definite.

"And if any cesspool be built under a house or other building,—then such cesspool must be built air-tight."



"And every privy built in the yard or area of any building, or under any street or alley, must have a door, and be otherwise properly inclosed, screened and fenced from public view."

**SCHEDULE (I).**—The following are now the proposed regulations relative to the widths of streets, &c.:—

"With regard to every such street or alley, hereafter to be formed, in reference to the width thereof;—Every street or alley must be of, at the least, the following width, from front to front, in every part thereof respectively; that is to say:—

"Every street must be of the width of 40 feet at the least; but if the buildings fronting any street be more than 40 feet high from the level of the street, then such street must be of a width equal, at the least, to the height of the buildings above such level.

"Every alley must be of the width of 20 feet at the least; but if the buildings fronting any alley be more than 20 feet high from the level of the alley, then such alley must be of a width equal, at the least, to the height of the buildings above such level.

"And the carriage-way of every street must be at the least 24 feet wide."

"And before every row of houses there must be a footway; and every such footway must be at least 5 feet wide.

**Entrances to Alleys.**—"And with regard to every such alley, in reference to the entrance thereof,—every alley must have two entrances thereto, each being, at the least, of the full width of the alley, and one of the two, at the least, open from the ground upwards."

**Measurement of Width.**—"And with regard both to such streets and alleys,—the aforesaid width is to be ascertained by measuring (at right angles to the course thereof), from front to front of the buildings on each side of such side of such street or alley.

**SCHEDULE (K).**—*Rules concerning Dwelling-Houses hereafter built or rebuilt, with regard to back-yards and areas, and rooms under-ground, and in the roof.*—**Back-yards.**—"With regard to back-yards or open spaces attached to dwelling-houses;—

"Every house, hereafter built, must have an inclosed back-yard or open space of, at the least, one square, exclusive of any building thereon.

"And if any house already built, be hereafter rebuilt,—then, unless all the rooms of such house can be lighted and ventilated from the street, or from an area of the extent of, at the least, three-quarters of a square, into which the owner of the house to be rebuilt is entitled to open windows for every room adjoining thereto, there must be, above the level of the floor of the third story, an open space of at least three-quarters of a square.

"And with regard to every building of the first class:—

"Every such building must be built with some roadway, either to it, or to the inclosure about it, of such width as will admit to one of its fronts of the access of a scavenger's cart, of the ordinary size of such carts."

These restrictions, while beneficial in new building sites (where, however, close building is rare), would be found to practically prevent improvement, by old houses being perpetuated to avoid loss of available sites.

**Lowermost Rooms.**—"And with regard to the lowermost rooms of houses being rooms of which the surface of the floor is more than three feet below the surface of the footway of the nearest street or alley, and to cellars of buildings hereafter to be built or rebuilt;—

"If any such room or cellar be used or intended to be used as a separate dwelling,—then the floor thereof must not be below the surface or level of the ground immediately adjoining thereto, unless it have an area, fire-place and window as required for rooms and cellars of existing buildings let separately and used as a separate dwelling, and unless it be properly drained.

"And with regard to every such lowermost room or cellar in any existing building used or intended to be used as a separate dwelling;—

"There must be an area not less than three feet wide in every part, from six inches below

the floor of such room or cellar to the surface or level of the ground adjoining to the front, back, or external side thereof, and extending the full length of such side.

"And such area, to the extent of at least five feet long and two feet six inches wide, must be in front of the window of such room or cellar, and must be open, or covered only with open iron gratings.

"And there must be made for every underground dwelling-room an open fire-place, with proper flue therefrom.

"And there must be a window-opening of, at the least, 9 superficial feet in area; which window opening must be fitted with a frame filled in with glazed sashes, of which, at the least, 6 superficial feet must be made to open ventilation.

**Attic Rooms.**—"And with regard to rooms in the roof of any building hereafter built or rebuilt, in reference to the number of floors

of rooms in the roof, and to the height of such rooms:—There must not be more than one floor of such rooms, and such rooms must not be of a less height than 7 feet, except the sloping part, if any, of such roof, which sloping part must not begin at less than 3 feet 6 inches above the floor, nor extend more than 3 feet 6 inches on the ceiling of such room."

The restriction relative to 3 feet 6 inches above the flooring would certainly operate detrimentally by occasioning the cubic contents of attics to be diminished by their lower parts being battened with "ashlar quarters," to render them perpendicular.

**Rooms in other Parts.**—"And with regard to rooms in other parts of the building, in reference to the height thereof:—Every room used or intended to be used as a separate dwelling must be of, at the least, the height of 7 feet from the floor to the ceiling.

**SCHEDULE (L).**—The following is now the List of Fees proposed to be payable to the Surveyors.

*Fees for New Buildings.*—For any building erected on old or new foundations, as follows:—

	Dwelling-House Class.	Warehouse Class.	Public Buildings Class.
	£ s. d.	£ s. d.	£ s. d.
If the building be of the 1st rate .. .. .	3 10 0	3 10 0	3 10 0
Ditto .. extra 1st ditto .. .. .	5 5 0	..	5 5 0
Ditto .. 2nd ditto .. .. .	3 3 0	3 3 0	3 3 0
Ditto .. 3rd ditto .. .. .	2 10 0	2 10 0	2 10 0
If the building be of the 4th rate, and exceed two stories in height .. .. .	2 2 0	2 2 0	2 2 0
If the building be of the 4th rate, and do not exceed two stories in height .. .. .	1 10 0	2 2 0	1 10 0
And with regard to buildings of the warehouse class, a further fee to be paid in respect of any additional 35 squares, or portion of 35 squares, in any such building, beyond the first 35 squares .. .. .	..	{ .. equal to one-half of the above fees respectively	..
And for inspecting and reporting to the Official Referees (s. 24) on party-walls and intermixed buildings:—			
If the building be of the 1st rate .. .. .	3 10 0	3 10 0	3 10 0
Ditto .. extra 1st ditto .. .. .	5 5 0	..	5 5 0
Ditto .. 2nd ditto .. .. .	3 3 0	3 3 0	3 3 0
Ditto .. 3rd ditto .. .. .	2 10 0	2 10 0	2 10 0
If the building be of the 4th rate, and exceed two stories in height .. .. .	2 2 0	2 2 0	2 2 0
If the building be of the 4th rate, and do not exceed two stories in height .. .. .	1 10 0	2 2 0	1 10 0
For every insulated building .. .. .	1 1 0	1 1 0	1 1 0
For every detached building built for the purposes of trade or collection for toll .. .. .	..	..	10 6

"For every attached or detached building, distinctly rated, such fee as is hereby imposed in respect of additions to, or alterations of buildings of the rate to which such attached or detached buildings shall belong."

**Fees for additions and alterations.**—"For every addition or alteration made to any building, which shall involve the execution of works subject to the regulations of this Act, the following fees; that is to say,—

	£ s. d.
If the building be of the first rate .. .. .	1 15 0
Ditto .. extra first ditto .. .. .	2 10 0
Ditto .. second ditto .. .. .	1 10 0
Ditto .. third ditto .. .. .	1 5 0

If the building be of the fourth rate, and exceed two stories in height .. .. . 0 15 0

If the building be of the fourth rate, and do not exceed two stories in height .. .. . 0 10 0

"And with regard to buildings of the warehouse class, a further fee, to the amount of half of the above fees respectively, according to the rate of such building, to be paid in respect of every additional thirty-five squares, or portion of thirty-five squares, in any such building."

**Fees for special duties.**—"For the following special duties performed by any Surveyor, according to the enactments of this Act, where such duties shall not be performed incidentally to the building or rebuilding of any building in respect of which any other fees may be payable; that is to say,—

For attending to the cutting away of chimney-breasts for external walls,—

	£ s. d.
If the building be of the first rate .. .. .	2 2 0*
Ditto .. extra first rate .. .. .	2 2 0*
Ditto .. second rate .. .. .	3 3 0*
Ditto .. third rate .. .. .	3 3 0*

\* The relative scale of these fees is no doubt erroneous.

If the building be of the 4th rate, and exceed two stories in height .. .. . 1 1 0

If the building be of the 4th rate, and do not exceed two stories in height .. .. . 0 10 6

For condemning party fence walls .. .. . 0 10 6

For the inspection and removal of projections, &c. in imminent danger, and ruinous buildings .. .. . 0 10 0

For surveying party-walls not kept in repair, and consenting to notice of repair being served .. .. . 0 10 0

For inspecting arches or stone floors over public ways .. .. . 0 10 0

For inspecting formation of openings in party-walls .. .. . 0 10 0

For inspecting chimney-shafts, pots, funnels, &c., above certain heights .. .. . 0 10 0

**Fees for Special Services not expressly provided for.**—"For any service performed by any Surveyor which is required by this Act, but not comprehended under any of the foregoing heads.

"Such fee, not exceeding 2*l*., as the Official Referees shall by writing under their hands order and appoint, with the consent of the Commissioners of Works and Buildings.

When it is considered that the scale of these fees is, compared with the price of the building, only about 60 per cent. of that which the fees were at the time of the passing of the present Building-Act, and that many new duties are proposed to be cast upon the district Surveyors, by which much expense in surveying and condemning party-walls, and other processes, are intended to be avoided, which, indeed, renders the fees virtually less than half that which they were made in the year 1774, we think no reason whatever can exist, on this head, for dissatisfaction of either the public or the building interest. b.



## OXFORD ARCHITECTURAL SOCIETY.

THE fifth annual meeting was held at Wyatt's Room, High-street, June 17, the Rev. the Rector of Exeter College in the chair.

After a few preliminary observations, the chairman read the annual report of the committee. He congratulated the society on the steady progress of the "Study of Gothic Architecture," which is daily becoming more general: the good effects of this are already visible on all sides, and still greater effects may yet be looked for. He rejoiced to observe the formation and successful progress of similar societies in various parts of the kingdom, and mentioned particularly the Cambridge and the Exeter Societies as very flourishing and efficient. The mutilation and destruction of the remains of Gothic architecture has been checked and well-nigh stopped, although a few more instances may still be heard of occasionally, as at Newcastle, where an ancient church has been wantonly destroyed within the last few weeks; the general indignation with which such acts are now viewed, by all persons who have any pretension to the rank of educated or enlightened men, is a guarantee that they will not be frequent. There is, however, another just ground of alarm in the mischief which is daily perpetrated under the name of restoration, which, when conducted without sufficient knowledge, is often productive of more injury than benefit, and should be very closely watched. Irreparable injury is often done by ignorant persons, under the plausible pretext of merely *scraping* off the whitewash, and still more when the decayed surface of the stone has also to be scraped.

In this university and city, there have been four instances of restoration within the past year, which are deserving of praise. At St. John's College the chapel has been restored in a very elaborate manner, and with good taste. At Merton, the roof of the ante-chapel, which was in a decayed state, has been renewed, and the floor for the ringers in the tower removed, throwing open a fine groined wooden ceiling, which is a great improvement; but the gallery for the ringers, which has been introduced in the place of the old floor, would have been better omitted. In St. Aldgate's Church the general effect of the exterior is pleasing; but there might have been more accuracy in the details; and we cannot but regret the loss of the old library. At Holywell, though the exterior is less striking, all the detail is admirable, and in the interior the good effect of open seats is fairly seen, and the manner in which this restoration and enlargement have been executed is worthy not only of praise, but of imitation. The restoration of St. Peter's in the East is now also in progress, and it is hoped that the most scrupulous care will be taken to preserve entire the character of the building, even in its most minute details, and that no attempts at *improvement* will be allowed to interfere with the designs of the original architects of this interesting and valuable relic of antiquity.

The publications of the society during the year have been: the second part of the "Guide to the Architectural Antiquities in the neighbourhood of Oxford," of which a third part is now in preparation; several sheets of working drawings of ancient pews and pulpits, which are found very generally useful, and are readily purchased. Two new sheets were laid on the table, containing the details of the pulpits of Beaulieu, Hants, of stone, very early, in the Decorated style. St. Giles's, Oxford, of wood, also in the Decorated style, but late; and Coombe, Oxfordshire, of stone, in the Perpendicular style. The drawings of Shottesbroke Church, a well-known and very perfect specimen of the Decorated style, have been engraved, and will be ready for publication in a few days; for these drawings the society is

indebted to W. Butterfield, Esq. The drawings of Minster Lovell Church, a good specimen of the Perpendicular style, promised at the two last annual meetings, are still not ready, the architect who undertook to furnish them having failed to fulfil his engagement. The drawings of Wilcote Church, presented by C. Buckler, Esq., were laid on the table, and will be engraved immediately; this is a small church in the Decorated style. Also those of St. Bartholomew's Chapel, presented by C. Cranston, Esq.; this is a small but elegant building of the period of transition from Decorated to Perpendicular.

New editions are preparing of Stanton Harcourt and Hasleby: to the series in 8vo. it is proposed to add the papers on Ewelme and Dorchester, lately read by Mr. Addington, for which the drawings are ready.

At the suggestion of the Bishop of Newfoundland, designs for churches to be constructed entirely of wood, the only material to be obtained in that colony, have been prepared by Mr. Cranston, under the directions of the committee. Two of these designs are now ready, and were laid on the table.

At the request of the Madras committee for the erection of a church at Colabah, a design has been prepared by Mr. Derick, under the direction of the committee, which it is hoped will be found well suited to the climate, while it preserves a strictly Gothic and church-like character. An elevation of this design has been engraved, and copies sent for distribution to any of our members who are interested in it.

The society has in several instances given useful advice to persons engaged in church-building or restoration, and have pleasure in doing so in any case in which they may be applied to.

A paper was read on Dorchester Church, Oxfordshire, by Henry Addington, Esq., of Lincoln College, illustrated by a large number of drawings of all parts of the building, including the original drawings by Mackenzie, for "Skelton's Oxfordshire," which were kindly lent for the occasion by the Rev. H. Wellesley. Mr. A. gave an outline of the early history of Dorchester, with its bishopric and abbey, shewing clearly that there was a Saxon church on this site, but considers no part of the existing building earlier than the middle of the twelfth century (unless it is a small portion of the masonry of the tower), and the greater part is of the time of Edward I. The two semi-circular arches, which have been sometimes considered as Saxon, are evidently cut through the Norman walls, and are probably of the time of Charles II., when the church was repaired after the injury it had sustained in the civil wars. As this interesting paper is to be published, it is not necessary to attempt any further analysis of it.

A memorial was presented to the meeting, very numerous signed by members of the society, suggesting that some of the rules should be more strictly acted upon, and that others should be altered. A special committee of nine members was appointed to consider this subject, and to recommend such alterations as appeared to them to be necessary, and to report thereon to a general meeting of the society, on October 30th.

## METROPOLIS IMPROVEMENTS.

THE new line of street from Coventry-street to Long-acre is now in a very forward state, and so soon as the opening from Coventry-street into Leicester-square shall be sufficiently advanced to be seen by the public (which may be expected in a very few days, as the buildings are now in the hands of Messrs. Reddin and Sons, the large contractors under the Commissioners of her Majesty's Woods and Forests for pulling down the old houses), the ground will be advertised to be let by public tender, immediately after which the new buildings will be commenced. Arrangements have been concluded with the parish authorities for the footway and carriage paving, both of which will be immediately commenced. The street will be 54 feet wide in clear of the houses, which will be of a handsome character, and may probably be expected to be completed in the course of about eighteen months. The

line of street from Oxford-street into Holborn is now rapidly advancing, the well-known rookery in St. Giles's having nearly disappeared, and the houses required for this improvement being all down, with a very few exceptions; these also are in the hands of Messrs. Reddin, and will be very shortly cleared. Contracts for the sewers and vaults have been entered into with Messrs. Bennett, and Messrs. Hayward and Mixon, respectively, and are already commenced. Ground for a French Protestant church has been sold and staked out, for which a design has been made by Mr. Ambrose Poynter, the secretary to the Royal Institute of British Architects, and will be commenced immediately. The design only awaits the approval of the Commissioners of her Majesty's Woods and Forests. It is also intended by the Commissioners of Woods and Forests to erect three handsome houses (as a standard for the houses generally, to be built on this line) immediately adjoining the new church; which said houses will be erected from the design and under the superintendence of Mr. J. Pennethorne, the architect to the Commissioners of her Majesty's Woods, &c.; under whom also, it may be proper to add, the whole of these very important and extensive alterations and improvements are now being carried into effect. The line from Long-acre to Broad-street will shortly be in a state to be thrown open to the public, it only awaiting the removal of the houses forming the block between Long-acre and Castle-street, which belong to the Mercers' Company, and are to be removed by them. A church is in the course of erection in this line, and from the rapid manner in which the works progress, under the direction of Mr. B. Ferry, promises a speedy completion. The design is of the early English character. The portion of the improvement at the corner of King-street, in continuation of Great St. Andrew's-street, is nearly completed, the buildings being, with only one exception, erected, those built by Mr. Buckingham, the rope-manufacturer, being of a very extensive, handsome, and substantial character. The line from Spitafields Church to the London Docks is now nearly cleared, and contracts will very shortly be entered into for the formation of the requisite vaults, sewers, &c.; immediately after which the ground will be advertised for tender, as in the other cases. This line is nearly a mile and a quarter long, and is being carried out with a view to ulterior continuation.—Times.

## LECTURES ON ARCHITECTURE AND ANTIQUITIES.

## Lecture III.

(Continued from p. 327.)

## ON GRECIAN ARCHITECTURE—THE IONIC STYLE.

THE second of the Grecian orders of architecture, called IONIC, is considered to be coeval with the Doric, and it is found frequently used in the interior of Doric buildings. "The earliest specimen of which any remains are to be found is the celebrated temple of Juno at Samos; which in the age of Herodotus was considered as the largest and most stupendous edifice ever raised by Grecian art. This interesting ruin, although often visited, has never until recently received any architectural elucidation. It was built about the 60th Olympiad,\* by Rhæus and Theodorus, two natives of the island, and the style, possessing many peculiarities, is such as strongly to denote its archaic origin. The bases of the columns are remarkable from the number and complication of their parts; the shaft is not fluted, nor is there any appearance of volutes to the capitals." (Lord Aberdeen's Inquiry, p. 160.) "The octastyle temple of Bacchus at Teos is a heap of ruins, but enough remains to attest the exquisite beauty of the ancient edifice, and fully to justify the praises lavished by Vitruvius on the architect, Hermogenes of Alabanda." (*Ibid.*, p. 162.) The date of this temple is supposed to be about 440 B.C. It appears from Vitruvius that the architect had prepared his materials to build this temple in the Doric style, but changed his mind to complete it in the Ionic, maintaining that the Doric was not fit for temples. A superb octastyle temple, dedicated to Apollo Didymæus, near Miletus, is supposed to have been built about 376 B.C.; its architects were Peonius of Ephesus, and

\* About 540 B.C.





IONIC TEMPLE ON THE RIVER ILISSUS.

Daphnis of Miletus. (Vitruvius.) "Three columns entire, and a profusion of marble fragments scattered around, are all that remain of this once magnificent edifice; but these are of a description amply sufficient to indicate its former beauty and grandeur, even if they had not been so highly extolled by the uniform voice of antiquity." (Inquiry, p. 169.) Another fine Ionic building, of an exceedingly rich character, is the temple of Minerva-Polias, at Priene, which was dedicated by Alexander the Great; the architect was Pytheus. At Sardis was a temple, of which five entire columns remain, whose diameter is 6 feet.

But the purest and best known specimens are to be found at Athens, where we see at once the simplest and richest modes of employing this style, the former in the graceful little temple on the Ilissus, and the latter in the double temple erected in honour of the virgin-goddess and Erechtheus. Authors differ respecting the name which should be assigned to the former building. Dr. Spon supposed that it was used for the celebration of the lesser mysteries of Ceres, and that it was dedicated to that goddess; to this opinion Stuart objects that it was not large enough for the purpose, the cell being only 15 feet 4 inches square. From Plato we are led to believe that it was consecrated to Panops, an Attic hero. From Pausanias we infer that it was appropriated to the worship of Triptolemus, who instituted the Eleusinian rites; this opinion appears to be the most generally received. Mons. le Roy, who made numerous mistakes in his work, calls it a temple of Diana the Huntress. Nothing can be more simple than the design of this beautiful little building, which is only 20 feet high to the cornice; from the fewness of the mouldings, and their freedom from enrichment, it serves as a model for most of the Ionic porticos of the present day, as it is admirably adapted to domestic structures. This temple had a portico of four columns at each end, but was without any lateral columns; the columns are only 21 inches in diameter, and are eight diameters high. The architrave has only one face, and the frieze was probably also plain, although Stuart considers that it may have had an enrichment, as a fragment of sculpture, representing several figures, was found at Athens, which exactly fitted the space. The cornice is composed of the fewest possible mouldings, which throughout the building are of the simplest character. A more enriched example is that of the Temple of Minerva-Polias (so called from *πόλις*, a city; thus the goddess was emphatically the protectress of the city, Athens), placed in the Acropolis, at a distance of 150 feet from the Parthenon. This temple is connected with two other buildings, the Erechtheum and the Pandroseum; the former so called, not after the sixth king of Athens, but from an appellation of Neptune, and because it contained the salt-spring called Erechtheis, fabled to have been produced by the rident of that god; the other building was named after Pandrosus, one of the daughters of Cecrops, who was favoured by Minerva, because she did not indulge her curiosity (like her two sisters) in looking into the basket containing the infant and deformed Erichthonius. Here was placed the olive said to be produced by Minerva in her contest with Neptune.

Professor Wilkins is inclined to place the sacred olive in the pronaos leading to the Pandroseum, and considers that the three windows were made to afford the light and air necessary for the tree. In the Temple of Minerva was an ancient image of the goddess made of wood. "It is reported," says Pausanias, "that this statue fell from heaven, but I shall not discuss whether it did so or otherwise; Callimachus made the golden lamp before the statue of the goddess. This lamp being filled with oil, from that day lasts the future year; the oil in the mean time supplies the lamp, shining night and day." The architect of these buildings was Philocles of Acharnae, as we learn from an inscribed marble now in the British Museum.

We now proceed to notice this triple-temple more in detail, for which purpose a plan is essential. Elevated on three steps is a portico of six columns, leading to what is called by Stuart the temple of Erechtheus, but which is considered by others to be the cella of the goddess. The columns here are 2 feet 3 inches in diameter, 21 feet 7 inches high, including base and capital, and are 4 feet 8 inches apart. The width of the cell is 32 feet 4 inches, and its depth 23 feet 11 inches. In the rear of the cell, and divided from it by a wall, is the apartment which Stuart ascribes to Minerva, receiving its light from three openings, like windows (a rare and valuable example), placed between half-columns, and having on one side a communication with the Pandroseum, and on the other with a noble portico of four columns in front, having a projection of two inter-columns. These three last-named parts are on the same level, which is, however, about nine feet lower than that of the hexastyle portico. The columns of the tetrastyle are 2 feet 9 inches in diameter, and 25 feet in height. The little building the Pandroseum had six female figures called Caryatides, instead of columns, to support the entablature, and their origin has given rise to much discussion. "Their appellation has been explained by Vitruvius, but it is not probable that the story which would refer their origin to the commemoration of the captivity of the Caryan women after the destruction of the city, in consequence of its desertion of the cause of the Greeks in the Persian war, is entitled to more credit than other traditions to be met with in the pages of the same author respecting the invention of the different Grecian orders. In fact, these female figures were not represented as captives, nor, as it would seem, with any symbols of subjection and disgrace, which we might naturally have expected to find had there been any foundation for this tale of their origin. On the contrary, in the architectural enumeration of the different parts of the Pandroseum, contained in the interesting inscription already mentioned, the figures forming the portico are simply ΚΟΡΑΙ, or the virgins, thereby intimating that they were native Athenians; and indeed, from their appearance, there is every reason to presume that they were intended to represent the Canephore, who were selected for the solemnities of the Panathenæan festival from the most distinguished families of the city." (Lord Aberdeen's Inquiry, p. 190.) These korai, or damsels, as they are termed in the inscription before alluded to, are draped entirely, with the

exception of the arms, which are bare, and their dress resembles that of the basket-bearers in the procession in the frieze of the Parthenon; and so honourable was this employment, that inscriptions, and probably statues, were granted to the young persons who had been selected for the office." Stuart has given an inscription, of which the purport is, "The council and the people (placed) Apollodora, the daughter of Apollodorus, of Gargettus, who carried the sacred things of Minerva-Polias." One of these figures, which thus appear to have been appropriate supporters of the canopy which sheltered the sacred olive of Minerva, is preserved in the British Museum, together with a capital from the Erechtheum, a base, and part of the architrave, cornice, and four pieces of the frieze. It has been supposed that these buildings were commenced during the administration of Pericles, but that his death put a stop to their progress. The architecture of the temple of Minerva-Polias has been closely imitated by Mr. Inwood in the new church of St. Pancras, and the vestries are fac-similes of the Pandroseum. There are some other Ionic structures in and near Athens, but they are of date later than those just considered, and partake strongly of the Roman manner, which, indeed, is evident from the title of one, the Aqueeduct of Hadrian. As in the Doric order the distinguishing feature is the triglyph, so in Ionic buildings, that by which they are best recognized is the volute of the capital, of which a trace may be seen in the Egyptian temples, especially in such as were dedicated to Isis. The height of Ionic columns varies from about eight diameters and a quarter, as in the temple on the Ilissus, to nearly nine and a half, as in the Erechtheum, the columns in the temple of Minerva-Polias being little more than nine diameters high.

The CORINTHIAN, the third of the Greek orders, is as rich and graceful in its decorations as the Doric is severe and majestic; examples, however, are not numerous at Athens. One of the most beautiful is the Choric monument of Lysicrates, sometimes called the Lantern of Demosthenes. This is quite a gem in architecture. It is circular in its plan, and on a high pedestal are ranged six columns which are attached to the wall; these support an appropriate entablature, above which rises the roof, or cupola, of one block of marble, the tiles of which are carved in the shape of leaves: upon the roof was an ornament adorned with beautiful foliage. The capitals of the columns are among the most exquisite specimens of design in existence, and they are unique, differing very much from the examples of the order to be found in Rome. It is a vulgar tradition among the modern Greeks which assigns this building to Demosthenes, as a place which he erected for study; it was certainly built in his time, about 330 B.C. But the inscription on the architrave sets the matter at rest, which imports that Lysicrates, the son of Lysitheidēs, was Choragus on the occasion of a musical entertainment. It appears that a spirit of emulation existed among

\* Vernadze, the Venetian engineer at the siege of Athens in 1667, describes the Pandroseum as "Sostenute da quattro statue di marmo, quale rappresentano le Grazie che sorreggono fra vestire per burlarsi di quelli, che lo hanno rappresentato nudo."



the Athenians of a certain rank to give entertainments, at their own expense, to the people. These consisted of different games, plays, and tragedies, in which the chorus occupied a prominent part, whence the giver of the entertainment was termed Chorus. Some of the most celebrated names in Grecian history may be noticed as having filled this honourable office. Lysias, the orator, the rival of Demosthenes, in one of his orations, enumerating his services to the Athenians, mentions the number of times he was a Chorus, and the expense he was put to each time, varying from 33*l.* to 208*l.* sterling. The just Aristides was a Chorus, and Themistocles obtained a victory on occasion of his having as a Chorus exhibited a tragedy composed by Phrynichus. The prize awarded to the victor was generally a tripod, a practice which was alluded to by Homer, Hesiod, and Pindar, Virgil and Horace, as well as by prose writers.

"It was the usual custom, and a very ancient one, for the victors to dedicate these tripods to some divinity, and to place them either in temples already built, or upon the top of some consecrated edifice erected for that purpose; thus they participated of the sanctity of the place, and were secure from injury and violence; to have destroyed or defaced them, had doubtless been esteemed an act of sacrilege. A tripod thus dedicated was always accompanied with an inscription; so that it became a permanent, authentic, and public monument of the victory, and of the person who had obtained it." (Stuart's Athens, vol. 1.) It is highly probable that a Choric tripod graced the summit of the little building under review, since cavities were found in the upper surface of the flower which appear suited to receive the feet of a tripod. On each panel, between the columns, two tripods are represented, and on the frieze is sculptured the story of Bacchus punishing the Tyrrhenian pirates. A modern imitation of this example may be seen in the turret of St. Philip's Chapel, Regent-street. The rest of that building is in the Roman Doric style, the architect, Mr. Repton, having been required by a committee to submit to this want of unity. In the original tower of Lysicrates, Lord Byron is said to have composed much of his poetry. Another interesting Choric monument is that of Thrasyllus, on which was placed the beautiful statue of Bacchus in female costume, which is now in the British Museum.

Another singular structure which may be classed with the Corinthian order, is the marble octagonal tower of the winds, called also the Tower of Andronicus Cyrrhestes, who built it, and adorned the frieze of each side with a figure representing one of the principal eight winds. The capitals which are supposed to belong to the columns of this building have only one row of the acanthus leaves, the upper range consisting of the smooth leaves generally termed *water-leaves*, nor are there any volutes. The form of this temple is imitated as the upper stage of the steeple of St. Pancras Church.

The remains of the temple of Jupiter Olympius, at Athens, are unfortunately so few, and those in so dilapidated a state, that we cannot give much account of it. Pausanias says, that it was the largest temple in Greece, and second only to the celebrated temple of Diana, at Ephesus. Altogether there were one hundred and fifty columns (inside and out), of which only sixteen remain; the front and rear porticoes had three rows of ten columns in each, and the flanks had two rows of twenty columns each; they were more than 64 feet in diameter, and 60 feet high. The temple is considered to have been 354 feet long and 171 feet wide. From Vitruvius we learn that it was first projected by Pisistratus, who laid the foundations about 540 B.C., but soon after his death, the work was discontinued until the time of Antiochus Epiphanes, at whose expense the building was carried on from the designs of Cossutius, a Roman architect, who determined the magnitude of the cells, and adjusted the arrangement of the columns about the dipteros, and the disposition of the architraves and the other ornaments, with great skill and supreme science. (Vitr. Lib. vii.) Again the progress of the building was arrested, and the glory of finishing the temple of Olympian Jove was left to the Emperor Hadrian, nearly 700 years after its commencement.

The arch of Hadrian, and a portico called the Pantheon of Hadrian, are likewise Corinthian examples, but cannot be considered to belong to Grecian art, since their details all partake of the practice of the Roman architects. Athens at one time must have been extremely rich in temples, from the enumeration of several, besides those noticed in various historians, of which not a vestige exists. Many, no doubt, perished in the Persian invasion. The remains of a theatre, called after Bacchus, are of great interest: it is of a semi-circular form, and well arranged for all the spectators to hear and see. Dramatic representations formed the favourite amusement of the Athenians, and one advantage in favour of the Greek theatre over the amphitheatre of the Romans is, that it was not polluted by the shedding of blood, whether of victims taken in war, or of men trained to a profession, which was one of slaughter, and in which they were required

"To fall with grace, with dignity—to sink  
While life is gushing, and the plaudits ring  
Paint and yet fainter on their falling ear,  
As models for the sculptor."

ROGERS' ITALY.

At Athens not any remains by which to judge of the domestic architecture of the Greeks are now existing. But it appears that architectural decoration was expressly forbidden to be employed on any but the public edifices; thus Demosthenes mentions "that in the best times of Athens, while the public buildings and the temples were rendered so magnificent and so perfect as to leave nothing for posterity to add, the private dwellings were invariably simple and modest; and he assures us that the policy of the state was so strictly observed in this respect, that even the residences of Aristides and Miltiades, and of the other illustrious citizens of that age, could not be distinguished from the houses of their neighbours." (Lord Aberdeen's Inquiry, p. 37.) The notion of Vitruvius, that the three orders borrowed their proportions from those of a male figure, of a matron, and of a girl, is prettily turned by the poet:—

"First undorn'd;  
And nobly plain, the manly Doric rose;  
Th' Ionic then, with decent matron grace,  
Her airy pillar heav'd; luxuriant last,  
The rich Corinthian spread her wanton wreath;  
The whole so measured true, so lessen'd off  
By fine proportion, that the marble pile  
Form'd to repel the still or stormy waste  
Of rolling ages, light as fabrics look'd  
That from the magic wand aerial rise."

THOMSON.

Yet we can only look upon this opinion as a poetical conceit. Again, in ascribing the introduction of one order to Dorus, the son of Hellen and Orseis, and of another to Ion, the son of Xuthus (brother of Dorus), Vitruvius would carry architecture to too early a date, Hellen being reputed to be the son of Deucalion, and Bishop Thirlwall considers "Hellen,

Æolus, Dorus, Achæus, and Ion, to be merely fictitious persons, representations of the races which bore their names." (Greece, vol. i. p. 107.) It would seem much more consonant to reason to look to Egypt for the prototypes of that columnar arrangement which, advancing through progressive stages of improvement, reached its climax of perfection in the age of Pericles, to whom Plato ascribed the praise of supereminence in what was wise, great, and becoming, and who adorned his beloved city with those glorious edifices wherein consummate taste was blended with magnificence; so that, "notwithstanding the lapse of ages, the injuries of barbarism, and of fanatical violence, Athens still presents to the student the most faultless models of ornamental architecture, and is still, therefore, the best school for the acquisition of the highest attributes of his art." (Lord Aberdeen's Inquiry, p. 36.) In allusion to an opinion expressed above, we may again quote the noble author.

"In thus mentioning the obligations of Grecian architecture to the practice of Egypt, the statement must be understood as limited to the mere mechanism of the art, and not as intended in any degree to detract from the just claims of the Greeks to originality. If, indeed, the discovery of all that is admirable, of all in which its beauty and attractions consist, can sanction such a claim, we may safely place this art among those which they most distinguished by the fertility of their invention, as well as by the unparalleled beauties of their execution." (Inquiry, p. 61.)

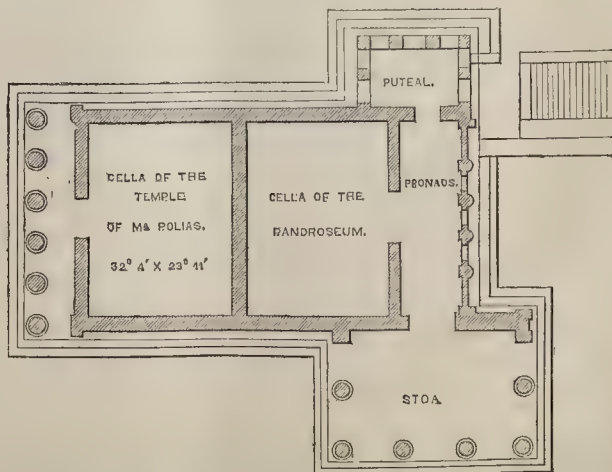
It would require a greater space than can be at present afforded to notice at large the opinion held by many writers, and which was derived from Vitruvius, that in the hut and in timber construction we see the origin of Grecian architecture. At some future period we may bring forward, *inter alia*, the arguments for and against this doctrine.

In the British Museum is a bust of Pericles, distinguished by the helmet which he usually wore to hide some peculiar conformation of his head. The face is full of a sweet intellectual expression, and it is pleasing to indulge in the idea that we behold a real portrait of that great man, and perhaps by the very hand of his friend Phidias.\* At all events, we must look with interest on the features of the master-spirit of his age, wise in council, persuasive in eloquence, equally great whether presiding over his countrymen in the field, or directing their energies in the embellishments of their native city.

"This was the ruler of the land  
When Athens was the land of fame,  
This was the light that led the band  
When each was like a living flame,  
The centre of earth's noblest ring,  
Of more than men, the more than king."

CAROLY.

\* Phidias made a statue of Pericles, which was placed near the entrance of the Propylæa.



PLAN OF THE TEMPLE OF ERECHTHEUS.



## INSTITUTION OF CIVIL ENGINEERS.

JUNE 25.—The President in the Chair.

A paper was read descriptive of the removal of the lighthouse on the north pier of Sunderland Harbour, by Mr. J. Murray, M. Inst. C.E. The lighthouse, which was built in 1802, was 76 feet in height and 15 feet in diameter at its base, slightly tapering upwards to the lantern, which was lighted with coal-gas with parabolic reflectors. It was built of polished stone and had within it a spiral staircase; its total weight was 338 tons, which being concentrated on an area of only 162 square feet, rendered the task of its removal in an entire mass a work of much difficulty and danger, especially when its great height was considered. Mr. Murray was induced to propose its removal, without taking it down, in consequence of the expense which would have been incurred in the establishment of a temporary light on the pier, the cost of building another lighthouse, and the success with which dwelling-houses had been removed entire in the United States. The decision was accelerated by a serious breach being made by the sea in the wall of the pier on which it stood, and in consequence, the work of removal was commenced on the 15th of June, 1841, by the masons cutting the holes for inserting the timbers for forming the cradle; those directly beneath the building were carried by 144 cast-iron rollers, travelling on 8 lines of iron rails, and the outer timbers, supporting the braces and struts, were placed upon slide-balks, which were lubricated with a mixture of soft soap and black-lead to diminish the friction. The power applied was by means of several drawing and pushing screws, and by three winches with ropes and tackle blocks, worked by eighteen men. On the 2nd August the mass was moved a distance of 28 feet 6 inches in a northerly direction, to place it in the line of the new pier. After changing the position of the rollers and slide-balks, to adapt them first to a curve of 647 feet radius, and then to a straight line in an easterly direction, the cradle with its load was propelled steadily forward at an average rate of 33½ feet per hour when in motion; the entire time of moving over 447 feet being 13 hours 24 minutes. Much time was of course occupied in taking up and relaying the rails and balks, and in preparing a solid foundation for them, as the mass advanced; so that it was not until the 4th of October that the lighthouse arrived at the extremity of the pier, where the foundation was prepared for it. The timbers were withdrawn gradually, the spaces being filled up with solid masonry, and the building was stated to have remained to the present time in a solid state without the slightest appearance of even a crack in the walls. A light was exhibited in the lantern as usual every night during its transit. The entire cost of executing the work was £27½, and it was shewn that an actual saving of 993½ had been made by adopting the plan of removal instead of building a new lighthouse.

A paper by Professor Hosking, of King's College, containing some suggestions for the introduction of constructions to retain the sides of deep cuttings in clays and other uncertain soils, was then read. These constructions were chiefly intended to be introduced in situations where, on account of the bad nature of the soil, open cuttings or tunnels would be expensive and dangerous; they consisted of buttress walls placed at intervals along the length of the line and opposite to one another, strutted at their toes by an inverted arch, and above by built beams of brickwork at given heights, discharging arches being turned from buttress to buttress to carry the beams. The buttresses were to be made the springing walls of longitudinal counter-arched retaining walls, and all the force exerted against them would be conveyed to the buttresses, and from thence to the arches and built beams. The author then gave a detailed estimate of the expense of forming an open clay cutting with slopes at 2½ to 1, and of the proposed constructions, the same data being taken in both cases, from which it appeared that the difference was nearly one-third in favour of the constructions.

It was stated by Captain Vetch that a similar kind of construction had been successfully used in the Mosely cutting on the line of the Birmingham and Gloucester Railway, and

General Pasley stated that Mr. Adie had introduced that kind of construction on the Bolton and Preston Railway.

A paper by Mr. J. Bremner, M. Inst. C.E., described the mode adopted by him for rebuilding the piers of Sarslet Harbour (Caithness, N.B.), after they had been twice destroyed by the sea, to whose action it is much exposed, the waves frequently breaking over the works at a height of 50 feet. The works required to be completed with great rapidity, as the season in which they could be carried on was very limited. Mr. Bremner therefore contrived several gigantic cranes, which were fixed at about 20 feet above high water mark; the longest commanded a radius of 115 feet, and by it a cargo of 20 tons of large stones could be unloaded from a barge and conveyed a distance of 230 feet in half an hour, and it afforded similar facility for laying the blocks of stone in their places in the building, as also for depositing materials in front of a breach which had been made by the sea in the new work, which without such efficient means would have been, as before, entirely destroyed. The machinery and general mode of building adopted by Mr. Bremner were minutely described, and some remarks as to the inefficiency of vertical pier walls for resisting the force of the waves in exposed situations appeared to attract the attention of the members, and but for its being the last evening of the session, and the time being required for the ballot for members, an interesting discussion would probably have ensued.

The President addressed the meeting on the merits of a few of the papers which had been read during the session, and at the ballot Sir John Rennie, Messrs. D. Stevenson (Edinburgh), G. M. Miller, and R. B. Grantham, were elected members; and Messrs. Lieut. Riddell, R.A., E. Hooper, W. Vanderkiste, H. Hensman, and R. Dunkin, as associates.

## SOMATOLOGY, OR THE ESSENTIAL AND CONTINGENT PROPERTIES OF MATTER.

BY ALEXANDER JAMIESON, LL.D.

(Continued from p. 322.)

SOLIDITY is the consequence of the irregular figure of the particles, and their great deviation from sphericity, by which free motion among them is prevented, and their cohesion better secured. Now the diversity in solids arises from the various degrees of strength in the limits of cohesion; and the same principles will give rise to a class of bodies intermediate betwixt solids and fluids, namely, the viscous, whose particles attract each other more strongly than the fluids and not so strongly as the solids.\* We here see how we may account for the following facts:—

Of the conversion of rock into clay, or a solid body into an elastic one, we have ample evidence upon the island of St. Helena, a volcanic production, situated in the unfathomable ocean, and not surrounded by shoals, as islands generally are. The rock of which this island is composed is of great variety, in some places resembling basalt in texture, colour, and general character; in other places it is extremely porous, vesicular, and cellular, indeed almost cavernous. Very often it has quite the appearance of a slag; while at other places a slaty structure is found, the imperfect strata appearing variously inclined. In its decomposition and conversion into clay, the rock shews much variety; for in the same mass some part is entirely decomposed and converted into clay, while another part is not in the least altered. The decay is greatest at the surface, where the rock is exposed to an atmosphere charged with more rain than the wettest parts of Devonshire; but this decay is not exclusively confined to the exposed parts. The clays which are formed from the decayed rock are of several colours, of which brick-red and pink-red are the most common: the latter produced perhaps by manganese. Owing to the facility with which most of these rocks decompose, the soil is generally deep. Even in the most barren spots in the neighbourhood of James's Town, there is no deficiency of soil.

The general fact ascertained in this detail of rock decomposing into clay is this: Solid bodies may be converted into those that are elastic, and by the mere action of the atmos-

phere are so changed; elastic bodies may be converted into solid ones, as we shall endeavour to prove by the following example:—

A block of gypsum or alabaster, dug from the quarry, will preserve any figure a sculptor may choose to chisel it into; but put the figure he has carved, with much art, into a kiln or oven, and subject it to a red heat, its symmetry and beauty will now be destroyed, and the figure reduced to a fine powder; but on being mixed with water, may again be moulded into any figure we please. In this state it is called plaster of Paris.

The hot springs of St. Philip, which supply the baths of Tuscany, are so strongly impregnated with alabaster, that artists take advantage of this to obtain impressions of bas-reliefs, by merely exposing their moulds to a current of the water until they become filled with the earthy deposit: these impressions, when taken out, are found to be as hard as marble, and are very beautiful. In the British Museum there are some casts of medals from the water of those springs.

You may satisfy yourself that water holds in solution mineral substances by the following simple experiment:—Fill a wine-glass half-full of prepared lime-water, and breathe into the fluid for a few minutes by means of a tobacco-pipe, reed, or glass tube. The lime-water will speedily become turbid, and a white precipitate will fall to the bottom of the glass. The reason of this is, that a carbonic acid gas is expired from the lungs, and combines with the lime in the water, forming a sub-carbonic of lime, which, not being soluble in water, is precipitated. The moulds in which the gems are formed at the springs of St. Philip may have perhaps some affinity for the gypsum held in solution by the water. To understand how water holds minerals in solution, we shall take leave in this place to give our readers some idea of the composition of water, considered either as hard or soft; for, by having a distinct idea of this chemical definition and of this fluid, and the tests by which to discriminate its qualities, we shall the more readily comprehend the subsequent reasonings in which water becomes a principal agent.

Water is composed of oxygen and hydrogen, but these gases do not permit any property to be perceived. These two gases are therefore combined at the point at which their reciprocal affinity exercises the greatest effect, and they are in that state which may be compared with that of a neutral salt, in which the acid and alkaline properties have equally become latent. In strict chemical language, water should be styled the oxide, or protoxide of hydrogen; but as the term by which it is known is much shorter, and more familiar, it is universally applied. The term water is of Saxon origin, but chemists call it the protoxide, to distinguish it from a second compound of the same elements, which is water impregnated with 662 parts of its bulk of oxygen. This is the dextoxide, or peroxide of hydrogen.

Water, then, being an oxide, possesses neither acid nor alkaline properties; and consequently, if it were always pure, there would be no room for the distinction of hard and soft. In nature, however, it is seldom or never found in a state of purity.

That which is least contaminated by the admixture of foreign substances, is rain, snow water. But even that is not entirely free; because it becomes deteriorated by the different vapours it encounters in its descent. Water obtained from this source, as well as from rivers, and by boring the earth to a considerable depth, is called soft; because it possesses qualities somewhat different from those of spring water, which is denominated hard.

Hard and soft water then differ in this respect: the former holds in solution metallic and earthy salts; the latter possesses none of these. Hence, hard water impregnated with these foreign compounds is unfit for washing, boiling esculent vegetables, dyeing, and many other purposes of domestic life. Carbonate of lime or chalk, and the sulphates of lime and magnesia, comprise also other contaminating substances found in hard water. Spring water is clear and of a grateful flavour by reason of the abundance of carbonic acid which it holds in solution.

Every one knows that chalybeate water holds certain mineral substances in solution;

\* Ency. Brit. IV., p. 52.



and this fact may be proved by a simple process. Take a few shillings and pieces of sheet iron, of the same size, if you choose; place these in a tumbler so as to form a pile or heap. Pour upon the whole some clear water; it will soon acquire the taste of iron, and become of a yellowish tint. In twenty-four hours flakes of oxide of iron will appear. We may thus easily make chalybeate water, and have a perpetual supply without going a mile from home. Copper will do as well as silver with the iron plates: but the oxide of copper, verdigris, is dangerous; whereas steel-filings or iron may be taken with safety, being often prescribed medicinally.

We have one remark to make before closing these observations upon matter; it is this: all our knowledge of the substances composing our earth, so far as it is related to the present subject, is either geometrical or philosophical; the first considers matter as being of some magnitude, or circumscribing space, and having some figure, thence called body, and is usually denominated *stercometry*, or the mensuration of magnitudes of three dimensions, length, breadth, and thickness; and the second comprehends all the properties of matter addressed to the senses, which may be styled physical or philosophical, because all the phenomena of nature are conceived to result immediately from them; as extension, solidity, inertia, and those apparently more active properties, gravity, magnetism, electricity, attraction, repulsion, elasticity.

These last are mechanical affections of matter; but its philosophical properties—distinguishable into general and specific—are such as universally adhere to every species of matter, and of which no art can divest them,—as *extension*, solidity, mobility, quiescence, inertia, figure, attraction, repulsion. Moreover, the ductility, fluidity, transparency, hardness, elasticity of matter, and of which we have in some measure already spoken, are discriminating qualities, ascertained principally by observation and experiment, though co-existent with all matter, independent of our observation or experiment. And who can tell what subordinate attributes the Creator hath impressed upon matter? And whether any inexplicable effect be owing to its immediate fiat, or some secondary material power, cannot be known; for the action of a pure spirit upon matter cannot be comprehended.

It has been argued by materialists, that we know nothing at all about what we call spirit; yet what do they know about matter except by its properties, which are manifested to their senses? Spirit is conscious of itself, and that consciousness is the sole ground of our belief in its being. What is the whole life of all human creatures, but one continual self-consciousness, varied in ten thousand times ten thousand ways! This spirit, united by life to material being, sees no spirit but itself, if I may so speak; but it sees living bodies like to that which it inhabits—warm in life—bounding with motion—characterized by gestures, looks, voice, speech responding to its own, in command, entreaty, or sympathy; and it believes these bodies to be the receptacles of spirits like itself—beings of will, love, wrath, compassion, tears. My senses, which take cognizance of matter, shew me nothing of its essence, any more than they do of the substance which thinks, or wills, or feels. The body, the domain of spirit, is matter, and all this glorious fabric, which we call the universe, is the work of infinite Power, Spirit,—to which we must aspire by holy contemplation, in a constant conviction that, at the verge and brink of this material world, in which we stand, there is an abyss unfathomable to all our thoughts. Unknown existences, incomprehensible, of an infinite world! Of what mighty powers may dwell there,—what wonders may be there disclosed,—what mutation and revolution of being, or what depths of immutable repose, we know nothing. Shut up in our finite sense, we are severed for a while, on our spot of the universe, from these vast, boundless immortalities. How near they may be to us we know not, or in what manner they may be connected with us—around us, or within us! This vast expanse of worlds, stretching into our heavens, many thousand times beyond the reach of our most powerful sight, assisted by the most powerful telescopes,—all this may be as a speck of darkness! And who, with powers fed on matter, and drenched

in sense, shall think to solve the question of what being may be beyond? Let us not by the measure of our sense circumscribe the possibilities of creation, while we pretend to believe in the Almighty; and if, where we cannot know, we must yet needs choose our belief, oh! let us choose with better hope that belief which more bumbles ourselves; and in bowed-down and fearful awe, not in presumptuous intelligence, look forth from the stillness of our souls into the silence of unknown being. Minds statelier than ours, when the kindling aspirations of intelligence had lighted the lamp of hope over the portals of immortality, have burst from their prison-house of clay, to be united in an eternity of unextinguishable joy with their original and commutual existences. And may speculations such as these cheer our spirits in the difficulties of science, and lift them up in high conception of that Power, through whose goodness we possess a revelation to guide us in labyrinths, otherwise inextricable, impervious, and hopeless.

This union of spirit to spirit in an endless hereafter is finely typified by one of the most obvious properties of matter—I mean attraction—and one to which our earliest notice is directed. No cement, that we know any thing of, holds bodies so firmly together as the mutual attraction which nature has imposed upon substances of the same class, genus or kind. And the opposite to this law is *repulsion*. But before we enter upon these topics, we shall take leave to explain some of the leading essential and contingent properties, which may thence serve as legitimate introductions to subjects of such vast and comprehensive inquiry as attraction and repulsion. The first of these, and that upon which we shall now enter, is divisibility.

#### PETROLOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 328.)

The term *AGATE*, in mineralogy, is applied to a class of gems, the most remarkable of which are generally arranged according to their colours, configuration, and peculiarities of composition. Of those with a white ground there are three species:—

1. The Mocha stone, as it is commonly but erroneously termed; for although some of these stones are to be found in the mountains of Arabia, near that city, yet the most beautiful and highly prized are brought to the chief towns of the Red Sea by the merchants from Cambay, this variety being exceedingly common in Upper India. It is the same called by some authors *achates*, having the resemblance of little branches of black leaves. It is produced from small coherent masses of matter, being an union of bodies, varying from each other in their qualities, but readily united by the common silica base. While within the bowels of the earth, this and other varieties seldom present other than a semi-crystalline state, slightly cohering, and very often honey-combed in the interior, although generally these little cells appear to be filled with a black earthy matter, being, as is palpably manifest in some of them, the decomposed matter of cryptogamus. Upon accidental or intentional exposure to atmospheric influences, on dry, gravelly soils, the silica base becomes gradually converted into calcedony, the cells fill up with the like material, and the loose black mould is therein enveloped, the whole aggregate becoming one and indivisible. The time required to effect these changes is regulated by climate and association, for the same body exposed to other than the above influences would pass into another form and become another species.

The Mocha stone exhibits a degree of translucency suited to its stage of change; at first it is opaque, but as the matter becomes more harmoniously disposed within the stone, it gradually becomes first of a flinty or milky-white appearance, and as it ripens (if this term may, with propriety, be applied to inorganic bodies), it gradually becomes translucent, acquiring beauty with age while in this state of nature. In the act of change, these stones very often break to pieces, the fracture revealing its hidden beauties.

2. The dull, milky-looking agate, so common to the Bemah, Godawarry, and other rivers

of the East Indies, and also in some parts of Europe; and 3, the lead-coloured agate, called the *phassa chates* by the ancients, are of the same family as the Mocha stone, although differing from it in the absence of mineralized plants. Those varieties also become more translucent in tropical countries on exposure to the atmosphere within shallow streams and upon the beaches, and pass by transition into that more beautiful gem, the white topaz, also common to the East Indies, Ceylon, Borneo, &c.

Of the agates with a reddish ground, there are four species enumerated. 1. An impure one, of a flesh-coloured white, having no pretensions to beauty, and evidently, as observed of previous varieties, imperfect in its change. Sometimes we find it, in its more perfect state, prettily varied or variegated with spots of irregular figures, having fibrillated edges. It is very common in Germany, was formerly wrought extensively into gun-flints, and it still forms an article of commerce for toys, snuff-boxes, and other trifles. 2. The agate of a pure blood colour, called by the ancients *hemachates*, or the bloody agate. 3. The clouded and spotted agate, of a pale flesh colour, called by the ancients the *cornelian agate* or *sandachates*. 4. The red lead-coloured agate, variegated with yellow, called by the ancients the coral agate, or *corallachates*. Of the agates with a yellow ground, there are only two known species, the one of the colour of yellow wax, called by the ancients *cerachates*; the other a very elegant stone of a yellow ground, variegated with white, black, and green, called by the ancients the *leonia* and *leonteceres*.

The ribbon agate, consisting of alternate parallel layers of calcedony, with jasper, quartz, or amethyst, occurs in porphyry and gneiss, and is also common to some of the rivers of India. The brecciated agate is a variety of the above, containing small portions of the former lying in a base of amethyst quartz; the most beautiful specimens of this are found in Saxony and Siberia. Fortification agates, found in Scotland and at Oberstein, on the Rhine, are also common in some of the provinces of Upper India. The moss agate is a variety of the Mocha stone, being formed of silica enveloping animal or vegetable objects therein, and which very often maintain their form in the mineralized state.

That the entombed material, representing plants and other natural productions, was in reality derived therefrom, is not only manifest from observations of agate in its various stages of change, but is also placed beyond a doubt by the discoveries of scientific men. Dr. McCulloch discovered in Mocha and moss agates, aquatic conservæ coated with iron oxide; but exhibiting their natural forms and colours. Mosses and lichens have also been detected in chlorite. In the possession of the Earl of Powis is said to be an onyx agate, set in a ring, which contains the chrysalis of a moth. Many of the agates, in like manner, with flints, preserve the form of the organic being from whence they have primarily been derived; thus, we find a large class of them termed *geodes*, which are hollow bodies, maintaining their shape of molluscous animals, and sometimes filled with liquid of crystallized bitumen. In the mountains of Arabia vast quantities of these nodules are sometimes to be observed in this state; but in the older strata they present interiorly crystals of quartz and other bodies.

Agates, from their great abundance, are in little request; but, independent of the extreme elegance and beauty of many specimens, and the very faithful representations of natural objects in others, they are wrought into many useful forms, and from their hardness and smoothness of surface, are valued by polishers, lapidaries, &c. But of the many surprising tales told of natural representations of men and animals, the greater portion may be considered fabulous, or what is more likely, as being the production of art rather than of nature, although many of them, particularly the moss agates, are what is so palpably manifest by the pictured form enclosed, the lapidified repositories of organic bodies.

Upwards of 1,000L. having been lately given for the erection of a People's College at Nottingham, there is a prospect of such an institution being erected.



## CHURCH-BUILDING INTELLIGENCE, &amp;c.

*The old Savoy Church in the Strand.*—On Monday week his Royal Highness Prince Albert, attended by Sir Edward Bowater, arrived at the old Savoy Church, in one of the private carriages, for the purpose of inspecting the interior, which has been handsomely redecorated at the expense of the Queen. He seemed highly interested at the old monuments, and praised the beauty of the workmanship of the interior.

On Sunday week the new north aisle of Weston-super-Mare church was opened for occupation. This addition to the church will afford accommodation for about 400 persons. It is in contemplation to erect a corresponding aisle on the south side, and the organ is either to be enlarged or a new one placed in its stead. The chancel is one of the most spacious in the county, and is terminated on the east by a stained window, presented by the Lord Bishop of Bath and Wells, a few years since, at the time the chancel was built by the present rector, the venerable Archdeacon Law.

*Removal of Pews.*—The dean and chapter of the Welsh cathedral of St. David's have ordered the pews that are in the nave of the cathedral to be removed, and the whole of it to be thrown open. Benches will be substituted.

The parish church of Melksham, Wilts, is about to be enlarged and repaired at an expense of upwards of 1,500*l.* The tower, now in the centre of the church, will be removed to the west end, and the increased accommodation to be secured will seat 400 persons.

A new German Lutheran church has been erected in Blenheim-street, Oxford-street, which is numerously attended by the young Germans resident in London, who had previously no regular place of worship.

*Eastwell.*—The venerable church of this parish has lately been repaired and beautified through the munificence of the Earl of Winchelsea.

The inhabitants of Mansfield Woodhouse, Notts, have it in contemplation to rebuild the north wing of the parish church, and to new pew the whole body of the church.

## RAILWAY INTELLIGENCE.

*Oxford, Worcester, and Wolverhampton Railway.*—A meeting of the supporters of this scheme was held in this city, on Saturday last. Amongst those present were Messrs. Barlow, Simmonds, and Tothill, directors of the Great Western Company, and Mr. Brunel, the engineer. The mayor was called to the chair, and a committee of management was named to meet that day fortnight. Messrs. Rufford and Wragge, of Stourbridge, were appointed bankers to the company; an extensive allotment of shares was made, and a resolution agreed to, to allow 4 per cent. interest on the deposits from the time of payment.

*Lancaster and Carlisle Railway.*—It has been stated that upwards of five thousand workmen are to be immediately put upon this line, but we believe we shall be nearer the mark when we state that twice that number of men will shortly be employed in this great work. A number of labourers are now in this town waiting for the commencement of the operations. The terms of the contract require, under heavy penalties, that the line should be opened on the 1st June, 1846.—*Westmoreland Gazette.*

*New Line of Railway between London and the North.*—We can communicate, from the best authority, that a new line between London and Lancashire is decided upon, and Mr. Locke is at this time engaged upon the surveys. This will cheapen the travelling, as well as increase it on our side of the country.—*Carlisle Journal.*

The act for the Bury and Rossendale Railway has passed the House of Lords. The contract has already been let to Messrs. Pauling, Henfrey, and Co., and the cutting will be commenced almost immediately.

It is intended to form a line of railway from the Fleetwood line to the fashionable watering-place of Blackpool. The distance is about three miles.

*Dublin and Cashel Railway.*—The House of Commons having, in favour of the progress of this measure, suspended the standing orders, the Bill has been read a second time, and ordered to be committed.

*Another contemplated railroad.*—It is in contemplation to lay down a railroad from Bath to Weymouth. The projected line to be connected with the principal intermediate towns, and to be designated the "South Union Railroad."

We hear that the prospectus of the line from Worcester to London, in connection with the Birmingham and London Railway Company, is in course of preparation, and will shortly appear.

## PATENTS RELATING TO ARCHITECTURE, ENGINEERING, &amp;c.

Granted between 25th of May and 26th of June, 1844.

[SIX MONTHS FOR ENROLMENT.]

CHARLES LOW, of Robinson's-row, Kingsland, for certain improvements in the making or manufacturing of iron and steel. May 25.

Charles Anthony Deane, of Poplar, for improvements in the constructing, propelling, and steering vessels. May 30.

Robert Hazard, of Clifton, near Bristol, confectioner, for improvements in baths. May 30.

James Fenton, of Manchester, engineer, for an improved combination or alloy, or improved combinations or alloys of metals applicable to various purposes, for which brass and copper are usually employed in the construction of machinery. May 30.

Edward Massey, of King-street, Clerkenwell, watchmaker, for improvements in apparatus for ascertaining the rate at which vessels are passing through the water, also applicable in ascertaining the rate at which streams or currents are running. June 1.

James Murdoch, of Staple Inn, Middlesex, mechanical draughtsman, for certain improvements in the manufacture of gas, and in the apparatus employed therein. (Being a communication.) June 4.

William Henry Phillips, of Bloomsbury-square, Middlesex, engineer, for certain improvements in the means and apparatus for subduing and extinguishing fire and saving life and property, and in obtaining and applying motive power, and improvements in propelling. June 4.

George Chapman, of Claremont-terrace, Strangeways, Manchester, engineer, for certain improvements in steam engines. June 4.

Joseph Cowen, of Blaydon Burn, near Newcastle-upon-Tyne, merchant, for certain improvements in making retorts for generating gas for illumination. June 4.

Paul Griffiths, of Holywell, in the county of Flint, millwright, for improvements in washing the products evolved from furnaces. June 4.

Joseph Woods, of Bucklersbury, London, civil engineer, for improvements in producing designs and copies, and in multiplying impressions, either of printed or written surfaces. (Being a communication.) June 6.

Edmund Morewood, of Thornbridge, Derby, merchant, and George Rogers, of Stearnedale, same county, gent., for improvements in coating iron with other metals. June 8.

Elijah Galloway, of Nelson-square, Blackfriars'-road, Surrey, for machinery for connecting axles or shafts, whereby when in motion they revolve at different relative velocities. June 12.

Thomas Farmer, of Birmingham, manufacturer, for certain improvements in the ornamenting of papier maché, and in manufacturing and ornamenting japanned goods generally. June 12.

Moses Poole, of Serle-street, Middlesex, gent., for improvements in wheels and axles. (Being a communication.) June 12.

John Swindels, of Manchester, manufacturing chemist, for several improvements in the preparation of various substances for the purpose of dyeing and producing colour, also improvements in the application and use of several chemical compounds for the purpose

of dyeing and producing colour not hitherto made use of. June 12.

Pierre Armand Becomte Fontainemoreau, of Skinner's-place, Saxe-lane, London, for a new mode of locomotion applicable to railroad and other ways. (Being a communication.) June 21.

Thomas Lever Rushton, of Bolton-le-Moors, Lancaster, iron manufacturer, for certain improvements in the manufacture of iron. June 21.

Christopher Phipps, of River, near Dover, paper manufacturer, for an improvement or improvements in the manufacturing of paper, and in marking, writing, and other papers, or in the machinery employed for those purposes. (Being partly a communication.) June 21.

Rees Davis, of Ystradgynlais, Brecon, gent., for improvements in the manufacture of iron. June 24.

William Worby, of Ipswich, for improvements in the manufacture of bricks, tiles, and other articles from plastic materials. June 24.

## SCOTCH PATENTS.

Granted between the 22nd of May and the 22nd of June, 1844.

Frederick William Etheredge, of Farnival's Inn, Middlesex, gentleman, for improvements in the manufacture of bricks, tiles, and tubes. Sealed, May 27.

William Basford, of Burslem, Stafford, brick and tile manufacturer, for certain improvements in the mode of manufacturing bricks, tiles, quarries, and certain other articles made or composed of clay and brick earth, and of burning and firing the same, and certain articles of pottery and earthenware. May 27.

William Johnson, of Richmond-hill, Surrey, Esq., for certain improvements in machinery for boring, cleaving, cutting, and dressing stone and slate, of such kinds as are, or may be used for building, and for ornamental purposes, and for paving of public and private ways. May 28.

John Taylor, of Duke-street, Adelphi, Middlesex, gent., for new mechanical combinations, by means of which economy of power and of fuel are obtained in the use of the steam engine. (Being a communication from abroad.) May 29.

William Walker, junior, of Brown-street, Manchester, hydraulic engineer, for improvements in warming and ventilating apartments and buildings. May 29.

James Fenton, of Manchester, Lancaster, engineer, for an improved combination of alloy of metals, applicable to various purposes, for which brass and copper are usually employed in the construction of machinery. (Being a communication from abroad.) May 31.

Joseph Cowen, of Blaydon Burn, near Newcastle-upon-Tyne, merchant, for certain improvements in making retorts for generating gas for illumination. June 5.

Robert Rennie, of Gourcock, near Greenock, of Renfrew, Scotland, civil engineer, for improvements in gridirons, frying-pans, and other cooking utensils, and heating apparatus. June 13.

*PICCADILLY IMPROVEMENTS.*—We hear that the long-projected improvements in Piccadilly, by widening the street from Hamilton-place to Devonshire House, by taking in Lord Coventry's gardens, in the Green Park, and part of the site of the late Green Park Lodge, are not likely to be carried into effect until next year, the Commissioners of Woods and Forests having, it is understood, resolved not to apply to Parliament for any bill during the present session for the above purpose.—*Herald.*

*THE BRISTOL DOCKS.*—There is every prospect of the locks being opened to a width sufficient to admit the largest class of steamers, the directors of the dock company having called on Mr. Brunel for an estimate for that object, the small lock at Cumberland Basin being in such a state as to require many thousands pounds even to restore it in its present form. The men employed upon the vessel in which the Great Britain was to be carried have all been taken off.



## Correspondence.

## PHOTOGRAPHY ON A CEILING.

A curious observation, apparently relative to photography, is communicated to the number for November, 1842, of the *Bibliothèque Universelle de Genève*, by a gentleman of Lyons, named Lotret. He says:—

"The ceiling of an inhabited room was composed of planks painted gray, which time had somewhat embrowned. There could be distinguished, in the part which was clearest, the trace of the beams against which the planks were nailed, and also the trace of a half-beam, added to one which had been broken: moreover, we could observe the trace of a piece of wood which had been concealed in the garret above, and placed obliquely upon two of the beams, about two inches distant from the planks. As much dust fell from the seams of the planks, I caused the ceiling to be papered, and at the end of a year, the same traces of beams shewed themselves on the paper. I then caused the planks to be removed, and a ceiling of plaster substituted. After another year, I remarked upon the plaster the forms of the beams, and, moreover, with equal clearness the images of the laths on which the plaster was fixed.

"Formerly, I had observed the same phenomenon in different houses, but without being able to discover the cause. I have often remarked, that the traces were the more conspicuous the nearer to the chimney, where the smoke had escaped into the apartment. But if the smoke is the cause, why does it deposit itself in greatest quantity upon the plaster which is not in contact with the wood? And where a piece of wood is placed above the ceiling, at a distance of two or three inches, why does the smoke deposit itself particularly on the mark of that piece of wood? These are facts worthy of being inquired into."

## TO THE EDITOR OF THE BUILDER.

SIR,—I beg to send a few observations relative to the striped appearance which commonly presents itself on the face of ceilings, shewing the semblance of beams and joists through the plaster. This, in my opinion, emanates from damp walls, occasioned either from the foundation being laid on damp marshy soil, or otherwise from the building being exposed to the south or south-west winds, which generally prevail in this part of the globe, three-fourths of the rain coming in one or other of those directions. The walls thus subjected to wet cause a dampness in the air that prevails throughout the building, but more especially between floors and ceilings where the primary cause of the circumstance under consideration most certainly originates. First, it may be naturally asked, in what respect will damp cause the occurrence? The reason is obvious; the damp generating from the wall being boxed or pent in between the floor and ceiling, descending and pressing on the crown of the plaster between the beams and joists, and, at the same time, each beam and joist preserving its own plaster, which is more immediately connected with it, from damp. So, in consequence, the plaster between the beams and joists receives all the damp, which in time penetrates to the face of the ceiling, inasmuch that the smoke in its ascent fixing and uniting itself to the damp part, only leaves the dry part under each beam and joist, which gives that marked and obvious difference, which we have often an opportunity of seeing.

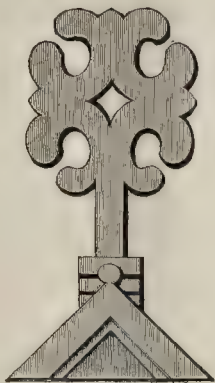
Secondly, should any one say that a house is damp and smoky too, yet the circumstance does not occur, I should say, the reason is because the floors above your ceiling are not air-tight, consequently the damp will evaporate; but where the floors are ploughed and tongued, or otherwise, in the course of time they have become air-tight through the sweepings of the room, or some other cause, when the predominant circumstance will most unquestionably occur.

Thirdly, now after what has been stated herein, we may fairly admit that the primary agent is the floor; for if the floor be air-tight, it repels the damp from all escape, which renders occupation safe; but, on the other hand, where the floors are open in the joints, the case becomes prejudiced of course, the

damp refuses that duty it otherwise would perform. The boarding of ceilings alluded to, the papering and painting, or all collectively, will, in my opinion, have a similar advantageous tendency, where the two elements exist, for the smoke in action with the damp is capable of producing one and the same effect. Under these peculiar circumstances, as a principal remedy, I should recommend the application of cement or tin-foil, which would bid defiance and effectually resist all damp with impunity; the final result would be the sure possession of a dry, spotless, and unblemished ceiling.

I am, Sir, yours, &c.,  
Woolwich, Kent. JAMES GREENWAY.

## CROSS ON THE EASTERN GABLE OF CHRIST CHURCH, BRECKNOCK.



SIR,—Perhaps you will spare a corner in THE BUILDER for the above fine old stone cross from the eastern gable of Christ Church, Brecknock. It is very finely wrought, and seems to have sustained no injury from time or any of the other usual causes of decay. It is sunk about 9 inches or a foot into the square base upon which it stands; and I recollect being informed by some workmen, who had occasion to remove it some years since, that it is above 6 cwt. There are many far richer specimens to be found; but I think few more chaste, and still expressing the primary form of this beautiful symbol of Christianity. The college, once a Dominican priory, stands at the east end of the town, and apparently, by the present remains both within and without, the chapel is as old as the time of Bernard de Neuf-Marché (corrupted to Bernard Newmarch), who is said to have been the founder of this place. There still remains part of its old gateway, a cloister, and the refectory of St. Mary's Chapel, with the ancient choir and nave for burying, the former of which (the choir) only is roofed, Henry VIII. converted it into a college under the name of the "College of Christ Church, Brecknock," and joined to it the College of Abergwyll, Carmarthenshire. It remained so until of late years, when it was removed to Lampeter; it consisted of the Bishop of St. David's, who presided as dean, a precentor, treasurer, chancellor, and nineteen other prebendaries. It has been for years in such a dilapidated state, that no regular service has been held in the chapel; but lately a slight movement has been made, through the instrumentality of the excellent bishop and archdeacon of this diocese, which has secured to it a new roof, but it has been again shut up for want of sufficient funds to proceed. When we consider that the interior is crowded with massive marble monuments, which are real gems of art, and doubtless worth some thousands of pounds, it is painfully unaccountable that such apathy should exist.

Three Bishops of St. David's have been buried here, Mainwaring, Lucy, and Bull. Bishop Lucy was the ancestor of the present worthy proprietor of Charlote Park, Stratford-on-Avon, George Lucy, Esq., a descendant of Sir Thomas Lucy, whose name is associated with the early history of Shakspeare. Of these monuments I shall at some

future time speak more lengthily, and perhaps send you a sketch of the interior.—I am, Sir, your most obedient servant,  
Berkeley-place, Brecknock, June 28, 1844.

## DRAINS IN HOUSES.

SIR,—Some time since I addressed a letter to Lord Lincoln, offering one or two suggestions as to the regulation of drains in houses, hereafter built, which I thought might be inserted, perhaps, in the New Building-Act. However, upon consideration, it occurred to me that his Lordship may find it will not be advisable to make law of them, and in such a case, it might not be out of place, could my ideas be made known, through the medium of your valuable journal, to builders generally. My suggestions are these, viz.: that in order to prevent the destruction and disturbance usually created by hunting for the courses of drains, for the purpose of repairs, they should be mapped on the lease, or on a separate parchment for that purpose; or that an iron brick, with the letter D cast on the face of it, should be inserted in the wall, immediately over the spot where the drain passes through, and thus might be seen at a glance where the ground required opening, without disturbing other parts unnecessarily, besides the saving of the time consumed in examining various places to find the drain.

I am, Sir, your obedient servant,  
5, Thorney-street, VINCENT YARDLEY.  
Bloomsbury.

## Miscellanea.

SIR DAVID WILKIE.—The monument to Sir David Wilkie is now erected in the church of Cults. It is truly an exquisite work of art, designed and executed by a man whose strength of mind, brilliant imagination, correct taste, accurate principles, and graceful position, are all fully brought out in the admirable and striking likeness of Sir David. The drapery, too, is in excellent harmony with the other parts of the monument. The inscription is as follows:—"Sacred to the Memory of Sir David Wilkie, R.A., Principal Painter in Ordinary in England, and Limner for Scotland, to King George IV., King William IV., and Queen Victoria. Born at Cults, 18th November, 1785. Died 1st June, 1841; buried at sea, off Cape Trafalgar. As the painter of domestic scenes, his works were the ornament alike of the palace and the cottage. Through life he was guided and animated by those sacred principles to which he had often listened, when a boy, in this place, from a father's lips. In order to acquire the accurate means of illustrating by his art the history of our Saviour, he departed for the Holy Land, and died on the homeward voyage. This tablet is erected by his affectionate sister in 1841." Sir David Wilkie is placed on the east, and the monument to his father and mother, by Chantry, on the west of the pulpit, each of them within a few inches of it.—*Scotch Paper.*

SOUTHEY'S MONUMENT.—The committee appointed at a public meeting of the friends and admirers of the genius of Southey, in October last, intend to erect a shrine upon a recumbent figure of Mr. Southey upon it, from a design by Mr. J. G. Lough. The subscription list is already signed by a great number of the most distinguished noblemen, prelates, literati, and others.

MONUMENT TO THE MEMORY OF GENERAL GILLESPIE, K.C.B., AT COMBER.—On Monday the 24th ult. the ceremony of laying the first stone of the monument, at Comber, to Major-General Gillespie, took place.

A statue is about to be erected at New Orleans, in honour of Benjamin Franklin. It is to be from the chisel of Powers, the American artist.

Workmen have been employed in affixing electrical rods from the base to the summit of the Duke of York's pillar in Carlton-gardens, to protect it from lightning.

A body of sappers and miners on Friday last commenced the erection of a scaffold upon Danbury church, for the purposes of the trigonometrical survey in progress throughout the county.

The great engine and machine manufactory of Maffei, at Munich, has been burnt, with almost all its locomotives.



**PROHIBITION OF "SMOKE."**—A Bill to prohibit the nuisance of smoke from furnaces or manufactories was some time ago brought into the House of Commons by Mr. Macdonald, Mr. William Beckett, and Lord Francis Egerton, and is now reprinted as amended by the committee of the whole House. The number of clauses is twenty-four. Occupiers of furnaces are required, under certain penalties, to prevent the issue of "opaque" smoke for more than a certain length of time in the twenty-four hours—that is to say, from any chimney from which is emitted the smoke of one furnace only, for a longer period in the whole than twelve minutes in every three consecutive hours; and from every chimney from which is emitted the smoke of two furnaces, for a longer period in the whole than twenty-four minutes in every three consecutive hours, and so on in proportion; forty-eight minutes in every three consecutive hours being the maximum. "Opaque" smoke is defined by clause 2 to be smoke not transparent at the point of its exit from the chimney. The Bill, however, will not pass this session.

**IMPROVEMENTS AT THE TOWER.**—The contemplated improvements at this ancient fortress, which have been laid before his Grace the Duke of Wellington, the Constable of the Tower, and been approved, will forthwith be commenced. The old armoury, which was destroyed by fire, has been cleared away to make room for the new barracks. The ditches are all well dried up, and sewers have been cut to carry off the soil. What was formerly a putrid and stagnant moat round the Tower will very shortly form a fine esplanade, gravelled over and planted with trees for the recreation of the garrison.

**METROPOLITAN IMPROVEMENTS.**—The Vauxhall Bridge Company have commenced building a pier on the plan of the one at the Southwark Bridge. Mr. Cubitt, the extensive builder, has erected a row of houses on the west side of the gas-works, called Curtain-road, which conceals that unsightly building. He has completed the road 60 feet wide alongside the water. The government will complete the remainder to Battersea Bridge.—*Morning Herald.*

The Hungerford Suspension Bridge is at length progressing rapidly towards completion; the whole of the eight patent wire lengths of rope have been carried over. Several of the directors were present, and witnessed the successful suspension of the first link of the massive chains.

**THE NEW CEMETERY.**—This picturesque spot will, in the course of a few months, be further embellished by the addition of a most elegant mausoleum, of beautiful design, the Messrs. Reeves having received instructions from the executors of Mr. Pratt (whose remains were a few weeks since deposited in the cemetery) to execute the same. We understand that the mausoleum will be composed wholly of Italian marble.—*Bath Herald.*

**THE PATENT METALLIC CEMENT.**—This cement, which has lately been so much introduced to the City, is now being used by Messrs. W. Cubitt and Co., on the new Gresham Club-House, adjoining Smith, Payne, and Smith's Banking-house, and has a very beautiful and stone-like appearance.

**COUNTY OF ESSEX GRAMMAR SCHOOL, FELSTED.**—The foundation of this institution is now settled, the funds having been correctly ascertained, and a scheme is in preparation for the future management of the school and charities. An upper and lower school are contemplated.

**TRINITY COLLEGE, PERTH.**—Operations have commenced on Mr. Patton's estate of Cairnries, now finally fixed on as the site. The contractor for the mason-work is Mr. Buchan, who carried on and completed the additions to Abercromby Abbey.

**THE NEW GAS BURNER IN PARIS.**—The column in the place du Carrousel, for making trial of an enormous gas burner, was terminated on Monday. It is of the Doric order, about 30 feet high. The pedestal is of cut stone, and the rest of common masonry.

**SOUTHAMPTON.**—The erections of the sheds and buildings at Northam on the show-ground for the Royal Agricultural Society occupy fifteen acres of land, being seven acres larger than those built at Derby last year.

**ANECDOTE OF LOUGH THE SCULPTOR.**—When Mr. Lough, the sculptor, first arrived in London, his purse was an exact antithesis to his mind; for the first was certainly trash, but the latter pregnant with the beauties of his art, which he has since stamped on his creations. He took lodgings in a humble habitation (a shoemaker's, we believe), and there commenced forming the clay which eventually became his "Milo rending the oak." This magnificent work is of large dimensions—not quite colossal, but certainly too large to be comfortable in an attic. The sculptor worked on and completed it all but the upper portion, which required greater height. How was this to be managed? He would not leave his work incomplete, but what could he do? The thought at last struck him to break through the roof of his apartment, which, after sundry qualms, he ventured to do. His invariable custom had been to keep the door of his room locked, and now came the awful moment to make known to his landlord the dilapidations which had occurred to his property. With fear and trembling the poor sculptor led him to the room, expecting the most summary legal punishment for the injury he had committed. When the shoemaker, however, beheld his work, he was so enraptured with its beauty, that he said not a word about the injured ceiling, and gave him a pair of razors—all the poor fellow had at the moment to offer—as a memento that the kindly feelings of a man in so humble a rank of life were thus called forth at the sight of Mr. Lough's first great production. We need hardly add in what value the gift is to this day estimated.—*Birmingham Journal.*

**ARTIFICIAL MARBLE.**—We learn from an American paper that a method of manufacturing marble has been discovered, which is pronounced superior to any other artificial stone or marble in use; it will supersede the use of lime mortar in the varied processes of plastering; and will be extensively used in stucco work, mosaic statuary, mantel-pieces, table-slabs, atmospheric and hydraulic cement, roofing of houses, paving of streets, &c. It will set or harden in six hours when applied to plastering houses. It will resist the action of atmospheric heat, damp, frost, &c., is susceptible of a high polish, and can be manufactured at a cost little exceeding ordinary lime mortar.—*Hull Packet.*

On Tuesday evening a new bell, weighing 25 cwt., was fixed in the belfry of St. Saviour's, Southwark. The tackling broke, and the bell fell from a height of 56 feet, crushing the stairs and banisters. The bell on being tried was found uninjured.

**THE IRON TRADE.**—In consequence of a strike, on the part of the workmen in Scotland, iron has risen from 3s. 6d. to 4s. per ton.

The price of gas is to be reduced from the 30th inst. to 7s. per 1,000 cubic feet by the leading gas companies in London.—*Standard.*

It is in contemplation to erect a bridge from Redcliffe back to the Grove, Bristol.

### Tenders.

TENDERS delivered for painting the whole of the exterior of the Licensed Victuallers' School, Kennington-lane.—June 27.

Weeks .....	£100 0 0
Webbs .....	94 10 0
Cooke .....	59 19 0
Odey .....	57 0 0
Saunderson .....	55 0 0
Davies .....	50 0 0
Johnson .....	49 0 0
Emmett .....	27 10 0

The lowest tender was accepted.

### NOTICES OF CONTRACTS.

For building Sewers.—Plans &c., Mr. Daw, Sewers Office, Guildhall. 9th July.

For the erection of a Building on the premises of the Workhouse of the parish of St. Mary, Newington.—Plan, &c., Mr. Edmunds, Surveyor, Bridge-street, Southwark. 15th July.

For certain alterations and additions to the Treadwheels, and for Air Pumps to be connected therewith, and also for certain Hand Crank Machines for hand labour at Norwich Castle.—Drawings &c., at the Castle.—Further information, Mr. Brown, County Surveyor, Norwich. 19th July.

For erecting a Farm House, &c., at Court-y-Graban, in the county of Radnor.—Plans, &c., Mr. Edward Fowke, at Glanhenwy, near Hay.

For erecting a Farm House at Trechende, in the county of Brecon.—Plans, &c., Mr. Fowke.

For reinstating Dwelling House and Buildings at Great Thurtow, Suffolk.—Further particulars, Messrs. Newton and Woodrow, Land Agents, Norwich.

### Current Prices of Metals.

June 28, 1844.

	£. s. d.	£. s. d.
SPELTER.—On the spot	21 10 0	21 15 0
per ton .....		
" For arrival ..	21 5 0	21 10 0
ZINC.—English sheet ....	0 0 0	30 0 0
QUICKSILVER .....	per lb.	0 4 6
IRON.—English bar, bolt, and square ... per ton	6 5 0	6 10 0
" Nail rods .....	0 0 0	7 5 0
" Hoops .....	8 0 0	8 10 0
" Sheets, single ....	0 0 0	9 0 0
" " double .....	0 0 0	10 10 0
" " treble .....	0 0 0	12 0 0
" Bars in Wales ..	5 10 0	5 15 0
" Pig, No. 1, Welsh	3 10 0	4 0 0
" No. 1, Clyde	3 5 0	3 7 0
" For, Swedish ....	9 5 0	9 10 0
STEEL.—Swedish keg, p. ton	16 0 0	16 10 0
" Faggot ..	0 0 0	17 0 0
COPPER.—Sheet and sheathing, p. lb. —	0 0 0	9 4
" Old .....	ditto.	0 0 8 1/2
" Tough Cake p. ton	0 0 0	82 10 0
" Tile .....	0 0 0	81 10 0
" Chili .....	72 0 0	74 0 0
TIN.—English, block, p. ton	0 0 0	3 13 0
" " bar .....	0 0 0	3 13 6
" Foreign, Banca ....	0 0 0	3 5 0
" " Straits .....	0 0 0	3 3 6
" " Peruvian ..	0 0 0	3 0 0
Tin plates, No. IC, p. box	1 7 6	1 13 0
" " No. IX .....	1 13 6	1 19 0
LEAD.—English pig (London) .. per ton	0 0 0	16 15 0
" (Liverpool) ..	0 0 0	16 0 0
" Spanish (London) ..	0 0 0	16 10 0
" American (London) ..	0 0 0	0 0 0
" " (Liverpool) ..	0 0 0	15 15 0
" Sheet (London) ..	0 0 0	17 15 0
" Red .....	0 0 0	21 10 0
" White .....	0 0 0	23 10 0
" Shot, patent ....	0 0 0	19 15 0

At Liverpool, the several descriptions of ENGLISH IRON are quoted at from 5s. to 7s. 6d. per ton, and TIN PLATES (IC. and IX.) 1s. per box, less than in London.

SPELTER on the spot has been in fair demand during the week, and several parcels have changed hands at 21s. 5s., 21s. 7s. 6d., and 21s. 10s., and there are no sellers now under 21s. 15s. For delivery in August and September, there is a seller at 21s. 10s., and no buyers above 21s. 5s.

ENGLISH IRON has undergone no alteration since our last. SCOTCH PIG IRON at Glasgow is rather easier this week, a parcel having been offered by a speculator at 64s., net cash, but the makers will not sell under 70s. SWEDISH IRON and STEEL continue flat, and lower prices have been accepted;—the former has been sold at 9s. 5s., and a parcel of the latter was sold at 16s. Holders now demand 16s. 10s.

COPPER and TIN have undergone no alteration. TIN PLATES continue in good demand.

ENGLISH and FOREIGN PIG LEAD still dull of sale.

SHORT and MAHONY, Brokers,  
1, Newman's-court, Cornhill.

### ADVERTISEMENTS.

**TRACING PAPER.**—SAMPLES forwarded by Post free.—WATERLOW and SONS, 65, LONDON-WALL, having devoted much attention to the manufacturing of the above article, have succeeded in producing a Paper superior to any yet introduced, combining the great requisites of clearness and a surface warranted to work well with pencil, ink, and colour. The following are the cash prices:—  
Double Crown ... 30 by 20, 8s. per quire. 2s. 10s. per ream.  
Double Dble. do. 40 by 30, 6s. " " 11s. " "  
Dble. Dble. do. 60 by 40, 13s. " " 11s. " "  
Outsides, half-price.

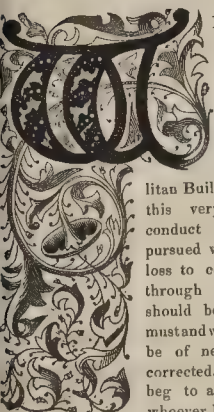
Whatman's Drawing Paper, and every article of Stationery used in the Offices of Engineers, Architects, Surveyors, Builders, &c., at the lowest prices for cash.  
WATERLOW and SONS, WHOLESALE STATIONERS,  
65, LONDON-WALL.



## The Builder.

NO. LXXV.

SATURDAY, JULY 13, 1844.



Wanted. Last week alluded to the irresponsible and injurious alterations which have been made in the proposed new Metropolitan Building-Act. Why this very condemnable conduct should still be pursued we are at a total loss to conceive; for if through misfortune they should be enacted, they must and will most certainly be of necessity as soon corrected. We, therefore, beg to advise the party, whoever he is, who causes this mischief, and so sets himself in opposition to experience and *bona fide* advice, to retreat in time, and not to so endanger a measure which is looked forward to with anticipations of beneficial working; to give up at once any view which would endanger the measure, and cease to irritate the building profession of London to continual outcries against the policy and good effect of that which all desire to see perfected. At present there is sad complaint, that as soon as one hole is mended another is made, and that a vast increase of trouble, expense, and anxiety is thrown upon the several interests and organs of our practical metropolitan architecture, and in fact, that however near the measure may be to consummation, there are still, from time to time, lodged in it fresh matters of irritation, and a vast new consumption of time and expense is the consequent result.

In Sec. 77 exists a great practical defect, through the allowance, in the case of new buildings, before survey and payment of the fees, of a month to elapse, and fourteen days to elapse in like manner in the case of additions, alterations, or repairs: the qualifying words, "*covered in, and all the walls thereof have been built to their full height,*" will be taken advantage of by builders of low rank, as similar provisions under the present Act have often been, such persons both evading compliance with the statutory restrictions, and payment of the fees, by means of leaving off a few slates, tiles, or bricks, so as to answer every summons by the words, "*The building is now finished; when it is finished,*" the provisions of the Act will be fulfilled, and the fees will be paid."

Stronger powers are required to compel compliance with the statute, in cases where buildings have been begun without notice.

We have received many humane suggestions relative to the preservation of buildings from the ravages of fire, the most obvious of which is the diminution of the quantity of combustible materials. We therefore urge most strongly upon the Legislature, that whereas thick walls, with timber in them, become no better than thin walls without it, and, in fact, often have

the effect of rendering buildings as dangerous as if destitute of party-walls,—that every encouragement should be given to safe and economical building, by the allowance of all external walls which are otherwise required to be as much as a brick-and-a-half thick, to be half a brick thinner, provided they have no wood therein; and all party-walls which would otherwise be two bricks thick, to be half a brick thinner, provided they also have no timber in them.

At the present price of iron in England, five tiers of wrought vat-hooping bond may be used for the same outlay as one tier of fir bond-timber, with the advantage of continuous chain across flues, and in the joints, without the slightest severance of the work.

We insert the following remarks made in a letter by Dr. Benjamin Franklin, upon the subject of combustible buildings and their improvement:—

"It appears to me of great importance to build our dwelling-houses, if we can, in a manner more secure from danger by fire. We scarcely ever hear of fire in Paris. When I was there, I took particular notice of the construction of their houses, and I did not see how one of them could well be burnt. The roofs are slate or tile, the walls are stone, the rooms generally lined with stucco or plaster, instead of wainscot, the floors of stucco, or of six-square tiles painted brown, or of flag-stone, or of marble; if any floors were of wood, it was of oak wood, which is not so inflammable as pine. Carpets prevent the coldness of the stone or brick floors offending the feet in winter, and the noise of treading on such floors, over-head, is less inconvenient than on boards. The stairs too, at Paris, are either stone or brick, with only a wooden edge or corner for the step; so that, on the whole, though the Parisians commonly burn wood in their chimneys, a more dangerous kind of fuel than that used here, yet their houses escape extremely well, as there is little in a room that can be consumed by fire except the furniture; whereas in London, perhaps scarcely a year passes in which half a million of property and many lives are not lost by this destructive element. Of late, indeed, they begin here to leave off wainscoting their rooms, and instead of it cover the walls with stucco, often formed into panels, like wainscot, which being painted, is very strong and warm. Stone staircases, too, with iron rails, grow more and more into fashion here. But stone steps cannot in some circumstances be fixed; and there methinks oak is safer than pine; and I assure you that in many genteel houses here, both old and new, the stairs and floors are oak, and look extremely well. Perhaps solid oak for the steps would be still safer than boards; and two steps might be cut diagonally out of one piece. Excuse my talking to you on a subject with which you must be so much better acquainted than I am; it is partly to make out a letter, and partly in hope that, by turning your attention to the point, some methods of greater security in our future building may be thought of and promoted by you, whose judgment I know has deservedly great weight with our fellow-citizens. For though our town has not hitherto suffered very greatly by fire, yet I am apprehensive that some time or other, by a concurrence of unlucky circumstances, such as dry weather, hard frost, and high winds, a fire then happening may suddenly spread far and wide over our cedar roofs, and do us immense mischief."

It has been suggested that water-closets, of proper construction, projecting from the rear or sides of buildings, should be legalized, on account of the hardship which at present lies against their erection; in spite of which, indeed, perhaps as many as fifty thousand have been erected within the metropolis, many of them secretly, without notice having been given to the district-surveyor, and many in violation of the present statute. A great many of these irregular buildings are not only built without walls, but many of them are composed entirely of wood, without even the resort to

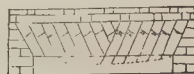
the technical evasion of making them as "rooms if any in the roof thereof," or the pretence of rendering these pieces of building all roof without walling.

The restricting workshops, breweries, and distilleries, to thirty-five squares, must be injurious.

We must again urge that, from the low state of architectural construction as found in ordinary actual practice, we have our fears relative to the policy of placing a paramount superintendence over the works of eminent architects: few architects, of very great eminence, would accept such an office; and there would be very gross indecency in an inferior in experience, technical learning, and in-born ability, having conferred upon him the graceless office of spoiling his superior's work.

Few people know, especially members of the Legislature, the real state of the architectural constructive knowledge, as actually brought to bear upon ordinary practical building. While the proposed Act contains many obnoxious provisions, which could only annoy the subject, without, in the slightest degree, improving the soundness of building, or preventing the devastating effects of conflagration,—none of those grand, practical, subverting errors, which have crept into building, are forbidden, or in the slightest degree attempted to be counter-acted or discouraged.

Of all the practical abuses which have arisen, none has wrought a more extensive injury, none has lowered the characters of English building more than this wretched thing, which



profligate folly has substituted for sound arches upon geometrical principles. This error, which is a corruption entirely of modern growth, has, indeed, been lashed with all the severity which it deserves; but of what use is such denunciation, without amendment take place? In spite of all that has been said against so wilful and perverse a practice, which lays the metropolis in ruins, the evil still goes on. In the line of the very improvement from Long-acre to the British Museum, from whence many sound, well-built houses have been removed, we yesterday observed the carcass of a new house, which contains fifteen of these things, and ere fifteen months elapse, that building will be shivered by fifteen cracks. The same folly has been commenced along the line of the northward continuation of Farringdon-street: scarcely one-third of such mock arches have ever escaped fracture. The treasurer of one of our metropolitan hospitals, a few weeks ago, shewed us the same folly in a new lodge then building for the establishment. We pointed out the defect—that defect was denied—but a single fortnight shewed a fracture in the work over each aperture. The new buildings near Paddington church are nearly all so erected, and are nearly all in a state of severance. St. George's Hospital was so set up, and though almost every window-head was repaired after being broken, almost every one of them still shews marks of fracture.

We have come to the resolution of never recommending the purchase or leasehold tenure of any building so faulty, unless the offending work be taken from over every aperture, and proper arches be substituted, or unless a sufficient cambered iron bar be placed under the soffit of each aperture. The expense of constant external repairs, the in-



jury to internal finishings of houses so set up, and the meanness and annoyance of such unsoundness pervading a man's house, and the whole metropolis, one would suppose, afford sufficient reasons for the non-repeating of such a nuisance, but such seems not to be the case. Rather than acknowledge the defect, and return to proper geometrical construction, which costs nothing at first, and saves much ultimate expense, crisp cements are resorted to, which increase the expense, and only change sham arches into bad brick lintels, which fracture with the slightest jar or settlement.

But though, again, some of little experience may say, seeing this serious evil, "then let each aperture be covered with stone;" to this we object as a rule, from such practice being, though costly, little to be depended upon. They greatly err who think a single piece of stone is proper for the covering of ordinary apertures in buildings.

Unless a stone used for the covering of an aperture be compressed in all its particles, it must be dissipated by the superincumbent weight; the pressing gravity must extend its particles; if a stone be not compressed, it must fracture, even by its own weight, so soon as the gravity is greater than its cohesive strength. This is found in modern practice to have occurred to a lamentable extent—an extent to which ordinary persons, who are no great observers, have not the slightest idea—buildings cheap and buildings dear have alike suffered from the almost universal fracturing which has taken place in buildings where dependance has been placed upon lintels of stone. The stone lintels of the windows of St. Mark's Church, Pentonville, are all broken; of those at the church in Bryanston-square, about three-fourths are broken; those of Westminster Hospital are nearly all broken; and in the most costly city company's modern hall, where no expense of foundation, or cubic strength of stone, has been grudged, there is no lack of similar fracture. Were a Parliamentary commission to be instituted for inquiry upon the subject, two things would create astonishment—one, the prodigious extent of this consumption-plague in modern buildings, public and private; and the other, the strange laying aside of plain practical science, which has led to this insane laxity.

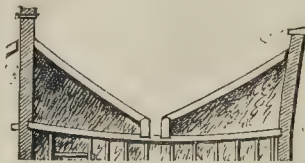
We may then be asked, how is this? what is its cause? where is the reason for it? The simple answer is, THE LOSS OF THE FREEMASONIC SECRET: in that secret lies the art of building soundly and economically; that secret is brought into use in genuine buildings of genuine Pointed Architecture, throughout a fabric, from its foundation to its top-stone, from its roof-summit to its base; the shrewd art of masonic compression, the causing every stone to press or gravitate to its neighbours, the keeping all tight, the cementing every thing by gravity—that sublime art which raised the thin sound fabrics of the middle ages, and keeps them firm, though very many of them are of mean, perishable materials, from the outsides of which time has pared away four inches of their subtle substance, and is still paring away more, while they stand defiant—that great secret, the knowledge of architectural dynamics—taught the mechanic the weight and position of every boss, abutment, pinnacle, flying-buttress, and other member of those time-defying erections.

We shall go no more at present into this part of the subject, but throw out boldly the requisite caution; only adding, lintels of stone,

if weak, break by their own weight; if strong, by the slightest motion at the foundation: lintels of wood, and all wooden breast-summers, cause by their shrinkage and compression fracture of the work above them. If any of these things be arched above, so as wholly to prevent subsidence and fracture of the superincumbent walling, the work is twice done, and all the expense and weight of the lintel-work, and other trumpery, had better be saved; for, indeed, a very small portion of wood is indispensable for fixing the absolutely requisite combustible finishings.

Building is not genuine unless it contain in its outward ornamental form the undisguised constructive principle. Pointed Architecture is purely so throughout—all architectural masking is extravagantly expensive, for the ornament of it bears nothing, and the substance has to be increased to bear not only itself, and to perform its abstract purpose, but also to bear all the added trumpery; therefore, in many cases, a double expense of materials, and more, is incurred. Pointed Architecture bears in itself the seeds of its own preservation.

The next great defect in ordinary house-building, which is left to correct itself, while there has been in the Bill a broaching of much unwholesome, petty interference with matters of form and good construction, which are the subject's, the architect's and the builder's inherent birthright,—the next crying evil, which completes the ruin of a very considerable portion of household architecture, and which is not in the slightest degree discountenanced by the present Bill, is that notorious abomination the V roof.



The ruin which the groaning instability of place-bricks, and the failure of breast-summers, false arches, and quartered partitions has begun, this completes.

Tenants, under ordinary leases, agree to uphold, support, and maintain such fabrics; such a roof, being like an open book, is, as long as it exists, attempting to fall flat; the two covers, instead of downwardly compressing the wall, make war laterally upon it. If two such roofs come together on opposite sides of a wall, they neutralize each other's improper effect, if equal; but if unequal, their difference of weight forms a destructive moving power. If such a roof, as in the case of a corner house, have no counter-abutment, the wall is most assuredly thrust over; the tenant, therefore, cannot uphold, though he has agreed to do it, such a wall: he may rebuild it, he may pay for it as a dilapidation, but he has, injuriously to himself, undertaken an impossibility. Again, such a roof has nearly all its weight thrown, not upon the walls which are capable of bearing it, but upon void, using the thing called a GUTTER-PLATE. Now, to make this sufficiently strong to perform its duty unflinchingly, it should be of enormous dimension; and even then, if of timber, it would shrink, compress, and sag, and so still derange the whole roof. Though the tenant has agreed to support the fabric, this he cannot do; the gutter-plate, with all its superincumbent weight of roof, bends prodigiously; it is generally in imagination supported by the quartered partitions of the house, but these are all deranged by the gravitation of the wretched roof-work, communicated by the gutter-plate to every part of the interior of the house: every floor gives way like a sheet; not a chair, a table, a chest of drawers, a bookcase, a wardrobe, or a bedstead, will stand upright, but hangs forward; every household vessel is defrauded of a portion of its available capacity, for tilted on one side, the contained liquid meets its brim while part of its intended measure is still vacant; gravy runs over one side of every dish and plate, and stains the table-cloth and furniture.

The tenant has agreed to maintain the house by and with all and all manner of need-

ful and necessary reparations, cleansings, and amendments whatsoever; but in vain does he have repairs done, in vain does he have doors and windows eased and rehung; gravitation constantly going on, as soon as the evil is remedied, it is renewed. In vain are ceilings repaired; they crack again as soon as mended: in vain is plastering cleansed; the gutter, following the sinking of the gutter-plate, often breaks by the derangement; the rain-water often, by this sinking, lies there stagnant, so that a few drops more make it overflow: thus, though he has been tired out by the frequent whitening of the ceilings, and the renewal of paper-hanging which has been destroyed, too, by the same radical defect, he still has, at the end of his tenure, to pay for dilapidations, on account of fancied neglects, and the fancied breach of a covenant which it is impossible to keep fulfilled: and often the tenant has to renew the chief timbers of a house which have become rotten through the running in of water from the deranged gutter. For these reasons, we advise all our friends to abstain from taking upon a repairing lease any house which has such a roof, and we advise that the Building-Act contain a clause forbidding the formation of any such roof, except in cases of strict necessity, and then only under the special allowance of the official-referees; and we recommend that all tenants should be excused from every repair consequent upon them.

The pretence, when these execrable and destructive roofs are formed, is, that they are economical, which is entirely false. Their first saving is one gutter, but against this is to be set the extra cost of the gutter-plates, and the great increase in the height of the walling; they seldom save much at first—often nothing—in the end occasion a triple expense—besides breaking and spoiling every ceiling and cornice, setting every flooring out of level, deranging every door and window, and putting out of adjustment almost every piece of furniture.

b.

#### BUILDERS' SOCIETY.

*Report upon the Metropolitan Buildings' Bill, as printed by order of the House of Commons, 17th May, 1844.*

In presenting to you a further report upon the Metropolitan Buildings' Bill, as now printed, in the form in which it is to be sent to committee in Parliament, your committee regret to notice that there is still about it too much of the minute detail to which they adverted in their last report, as characteristic rather of the specification of a particular work, than of the large and general provision which ought to distinguish a legislative enactment.

The tendency of this must necessarily be to occasion much present annoyance by interference with small and unimportant matters, and to throw great, if not insurmountable obstacles in the way of those improvements of construction and manufacture, which the temper and opportunities of the age are generally adapted to foster and bring out.

For the more clear exposition of these views, this report will first point out the various alterations which have been made in this last print of the Bill, and which appear to be unobjectionable, including those in which the recommendation of our last report appears to have been attended to; and then place together, in the order in which they stand in the Bill itself, those several matters which still appear objectionable, or to require modification; whether as the result of more mature consideration of the proposed enactments as they appeared in the former print, or arising from alterations now for the first time introduced.

Several small verbal alterations have been made, the effects of which are to render the parts in which they occur more definite, but, as they do not affect the provisions of the clauses themselves, it is not thought necessary to point them out. There are, however, some new features, so important in their character as to require specific notice.

No dwelling-houses are to be subject to special supervision.

The powers of all Commissioners of Sewers are to be saved.

Gas-works are not to come under the operations of the Act as noxious trades.



The natural order of numbering is to be restored to the rates of buildings, calling the first rates, and so on downwards. The official referees are prohibited from following private practice as surveyors. The unobjectionable alterations are as follows:—

*N. B. The alterations only are mentioned, that it will be necessary to refer to the Bill itself to understand their exact effect.*

Clause 10.—Power is given to the official referees to award compensation in all cases in which this Act interferes with existing agreements in building-leases.

Clause 17.—A power of forcible entry for demolition is added.

Clause 18.—A power to compel appearance summons is added.

Clause 22.—In this the adjoining owner's power is confined to modification, of which it is to signify his wish within two months.

Clause 32.—One month's notice to be given before rebuilding fence-wall, also that if adjoining owner use, he shall pay. Also that official referee may authorize a fence-wall being raised to more than 9 feet to screen any object wished to be shut out.

Clause 38.—One month's notice inserted, and power to extend footings on to adjoining ground added.

Clause 41.—The expense of making good pavement is added. Official referee to determine as to appropriation of surplus.

Clause 42.—Expense of survey added.

Clause 43.—The suggestion of report adopted.

Clause 46.—Owner more clearly defined.

Clause 51.—A new clause, saving the powers of all Commissioners of Sewers.

Clause 53.—The limitation of size for dwelling-rooms omitted, provided they are properly ventilated.

Clause 57.—Four days given instead of two for recognizances, and appeal to surveyor to have one month's notice.

Clause 58.—New clause—Provision for trial by jury at quarter sessions.

Clause 62.—Power to levy rate for compensation added.

Clause 63.—New clause—Gas-works exempted from the operation of the Act as noxious.

Clause 66.—Power to examine qualifications of surveyors, when candidates for districts, by official referees, Institute of British Architects, and Civil Engineers.

Clause 70.—Power given to magistrates to alter existing districts.

Clause 71.—Any surveyor acting before having made declaration, made liable to penalty.

Clause 77.—Notice to be from builder, owner or occupier.

Clause 84.—Revocation of power of official referee not to affect their awards.

Clause 85.—Power to official referee to take evidence on oath.

Clause 101.—Power given to justice to compel appearance by warrant.

Clause 109.—Exempting tenants-at-will, and directing services of notices to go on from party to party upwards.

Clause 114.—Power for official referees to give consent when legal incapacity prevents the proper persons from so doing.

Schedule B.—Structures underground are omitted.

The buildings of British Museum and St. Katherine Dock added.

Schedule C, Page 69.—Rules for ascertaining height are made to apply to buildings having no ceiling or tie-beam.

Rules for ascertaining stories.—"9 inches above footings" is inserted instead of "top of footings as the place to measure from."

Part 2, Page 70.—The suggestion as to ordering—calling the largest buildings first rates, and so on downwards—adopted.

The largest rate is called *extra first rate*, and the rates defined as follows:—

In reference to area.	In reference to height.
Extra 1st rate, above 14 squares, above 85 ft. high.	
1st rate, 10 to 14 " " 70 to 85 ft. "	
2nd rate, 6 to 10 " " 52 to 70 ft. "	
3rd rate, 4 to 6 " " 38 to 52 ft. "	
4th rate, 4 and under " " 38 and under.	

The alteration of stories, calling basement first story, abandoned. The thicknesses of walls regulated by distance from topmost floor downwards. This will have the advantage of

throwing out the thicker portions of walls in lower buildings.

In this part of the schedule there is an abandonment of the clause, throwing the larger rates into special supervision, so that all buildings in this class will be subject to district surveyors only.

Part 3, Page 71.—The superior area of warehouse class abandoned as a rule, and the height of walls only regarded in rating.

1st rate . . . 66 feet and above in height.

2nd rate . . . 44 to 66 feet "

3rd rate . . . 22 to 44 feet "

4th rate . . . 22 and under "

Part 4, Page 72.—Warehouses.—The stipulations as to stables altogether out. Warehouses are limited to 35 squares, unless they have party-walls or fire-proof portions.

Part 5, Page 72.—Is only such an alteration as to make this clause effective, after the revocation of the latter portion of schedule C, part 2.

Part 6, Page 73.—Altogether new; prescribing that stone staircases in dwellings shall be upheld by incombustible supports, and providing that all staircases and passages, &c. for public buildings shall be fire-proof.

Insulated Buildings.—Page 73.—The party-walls only kept in.

Schedule D, Part 1.—Page 74.—The rules as to footings made more general and clear.

Enclosing Walls.—A new feature providing a power to modify the provisions of the Act in cases in which rooms of unusually large dimensions may occur in buildings of the first or second class.

Part 2.—External Walls.—The provision as to wood not being allowed within 4 inches of centre of party-wall made more specific, and the use of wood for lintels virtually prohibited.

Parapets.—A new clause defining thickness of parapets; in effect same as old schedule, and rendered necessary by the rule of measurement being now made to begin at the ceiling of the topmost floor.

External Walls.—Party Walls.—The clause recommended in our report adopted almost verbatim.

Part 3.—Site of Walls.—The site is proportioned to the requirements of each side justly; and the recommendation of our report as to providing for payment for wall itself adopted.

Construction and Materials.—This clause is so altered as to further secure the centre of party-wall from being approached within 4 inches by any timber of any kind.

Schedule E.—Projections.—Official referee may allow them of any materials.

Wooden Sign-boards.—Sign-boards must not be fixed with the top more than 18 feet from the ground.

Timber or Wood-work.—No timber to be laid within 18 inches at least from surface of hearth.

A clause to provide for pargetting outside of flues, and preventing wood-work from being fixed until this is done.

Slabs and Hearths.—Any incombustible material now allowed, but 9 inches required solid under hearth.

Backs.—The thickness of backs to go 12 inches above head of mantel.

Close Fires.—To be 18 inches off wall instead of 24 inches.

Chimney Shafts must not be more than 8 feet high, unless bonded into second flue, or of extra thickness.

Schedule H.—Drains 50 feet instead of 30 feet. Cesspools omitted, and best outlet that can be obtained substituted.

Schedule I.—Width of alleys prescribed for those hereafter to be formed only.

The minimum width of streets increased from 30 to 40 feet, and if houses are higher, then the width of street must be the same as the height of houses.

Alleys to be 20 feet wide, and if houses higher, the width to be the same as height of houses.

Schedule L.—Fees moderated; an additional fee payable for every 35 squares of warehouse, and a fee for every separately rated building.

Fees for Special Services not enumerated, but limited to a maximum of 2*l*.

II. The clauses which, in the opinion of your committee, require alteration—are clauses 14, 15, 16, 21, 54, 55, 96, 97, 103; schedule C—parts 4 and 7; schedule D—parts 1 and 3; and schedules F and K.

Schedule B.—It appears that special supervision is here made to apply in some cases unnecessarily, viz. to the construction of an area wall to a common dwelling-house, or the retaining wall of, or the construction of a small bridge, and it seems hardly right that the Bank of England, and similar important establishments, with the advantages they are sure to possess of first-rate professional advice, should be restrained from making small alterations, without the trouble of first submitting drawings, &c. to official referees.

Clause 14.—This clause remains as in the old Act, and the same objections apply. The builder is compelled to cut away work, to enable the surveyor to examine whether the provisions of the Act have been carried out, but he has no power to compel the attendance of the surveyor, and is without remedy, if the expense and inconvenience attending this examination should have been incurred ignorantly or wantonly; and although the official referees are to award by whom the costs shall be borne, yet as the surveyor will be acting in the capacity of a public officer, enforcing the provisions of a public act, while the owner will be only protecting his private interests, it will be difficult to make out such a case as would shield an injured party, unless the provisions of the Act itself are of such a character as to impose control; your committee, therefore, recommend that in case of the examination proving that the Act has been regarded, the cost of the examination should be borne by the party ordering it.

Clauses 15, 16.—These clauses have two alterations in them,—one to declare that the official referee shall give his certificate within fourteen days, if he is satisfied, and another empowering the magistrates awarding penalties, to take into consideration the amount of risk run by the use of an uncertified building, and also the profit involved; the minimum of 5*l*. is struck out, so that a lower penalty may be awarded.

Your committee are still of opinion, that the lapse of time should give power of use, and that the official referee should be obliged to intimate his objection within a given period; this might be effected by making it his duty either to give his certificate of satisfaction, or to intimate that he is not satisfied within fourteen days, or if not, the building to be understood to be certified—as in cases of buildings of public resort, heavy losses might accrue from delay.

Clause 21.—In notices for survey and condemnation of defective party-walls, "four months" is now substituted for "six;" but this is objectionable; three months have been found practically sufficient, and the loss of an additional month is a heavy penalty, particularly as building operations are not usually begun until the spring, and four months are too large a portion of the working year; your committee, therefore, reiterate their recommendation that three months should be the period.

Clauses 54, 55.—Your committee still think, that it will be oppressive to prevent the erection of buildings within 50 feet of objectionable trades, as the effect would be to annihilate for twenty years 100 feet, i.e. 50 feet on each side of all butchers' shops, where sheep are killed in new streets, and the same as to any of the proscribed trades; and although the alteration made in this and the preceding clause, giving power to re-erect buildings accidentally destroyed, is, as far as it goes, an improvement, still it appears far better to determine that certain trades shall not be carried on within the limits of the Act, if the requirements of public health point out the expediency of such a course, than to put it in the power of individuals to inflict such injury on their neighbours as would result from establishing any one of these proscribed rules.

Clause 95.—A clerical error occurs here in the amount of contribution for the county of Kent, which is printed thirty for eighty.

Clause 97.—Fees are here provided, but not defined; and the result of passing this clause as it now stands would be to subject the metropolis and its environs to a tax of an indefinite amount; the fees should be made specific.

Clause 103.—New clause—Giving power of appeal from decisions of justices to quarter

\* [The present Act requires three months' notice, besides the time which may be consumed by ulterior proceedings.—Ed.]



essions, when the penalty inflicted is above 50l. This should be extended to all cases, whatever the amount of penalty may be.

**Page 72.—Openings in Party Walls.**—Your committee still think that the whole thickness of the walls in which the doors occur would be a sufficient distance for all practical purposes.

**Page 72.—Roofs.**—It is suggested that if curb roofs are proscribed, it would be well to enact that doors of exit should be provided in roofs, as otherwise a most important means of escape from fire will be taken away.

**Schedule C, Part 7.**—The recommendation of our report is to a considerable extent adopted, by giving power to official referees to allow of a detached green-house being built of any form; but it is suggested that the district surveyor might well be entrusted with this discretion, and would be a more accessible officer, as the official referee will have plenty of work, within a circle of sixteen miles diameter, without this.

**Schedule D, Part 1, Page 75.**—The word *squared* would be better omitted as not necessary, involving a small matter of detail that might interfere with the use of very unobjectionable materials; as, for instance, it would prevent the use of flints, and all rubble masonry.

**Walls generally.**—The footings to spread equally on both sides would be injurious, and useless, where an external wall is built against one already in existence, when it would involve loss of ground.

**Part 2.—External Walls.**—Here again the word *squared* had better be omitted, and some such general phrase as "incombustible materials" substituted. This is one of those restrictions which would interfere with improvements. The latter part of this clause would prevent the use of wood lintels, unless with discharging arches over them, but this is not objectionable.

**Breastsummers.**—The imposition of a detached story-post involves unnecessary expense and great inconvenience; indeed, in the public thoroughfares, where the largest surface of glass is the great object of the shopkeeper, the value of property would be deteriorated, and this applies equally to the return piers which are allowed in this print of the Bill.

**Schedule D, Part 3.—Division of Buildings.**—It is again urged that this clause ought not to have a retrospective operation.

**Part 3.—Party Walls.**—Construction and materials: the same observations apply as to the last clause.

**Openings in Party Walls.**—Those are now allowed in houses of any rate; but the good of this extension will be virtually neutralized by the walls being required to be such as are provided extra first-rates, when the joint area exceeds fourteen squares. This size will be almost certainly passed by the junction of any two houses, and the walls of first-rates would be abundantly strong.

**Recesses and Chases.**—These may be made anywhere, but the same objection applies here as to greenhouses, and it is recommended that they be placed under the superintendence of the district surveyor.

**Party Fence Walls.**—This requires defining more clearly.

**Schedule F.—Construction.**—The Act nowhere prescribes which is to be considered the first, second, or third story; and without this, this clause is not intelligible.

The prevention of the construction of new chimneys, unless their foundations are carried down, is still unaltered and most objectionable. The general arrangement of the better class of dwellings renders new chimneys almost imperative, immediately above the principal or one-pair floor of the house, which is usually allotted to the reception rooms; and if the supports of these chimneys are to come through the best rooms, much space will be occupied unnecessarily, and a heavy needless expense entailed; this also applies with equal force to houses the ground-floors of which are occupied as shops or warehouses; it is therefore strongly recommended, as in the last report, that this portion of the clause be expunged, and this is the more confidently pressed, because no case has been made out to require such a regulation, and its

† [And would virtually put out of use the restored masonry of the middle ages, such as lately used at the new church, Broadway, Westminster.—Ed.]

practical operation would be to prevent the construction of fire-places in upper rooms, and to this extent diminish their healthiness.

**Dimension and Materials.**—It is suggested that flues for smoke, if of metal, might be allowed as small as 4½ inches in diameter, and need not be so large as 8½ inches in diameter, this limit being the new feature of this clause.

**Steam-Engines.**—Shafts are to be regulated by official referee. This applies to buildings connected with machinery in which constant improvements are occurring. Small engines are frequently worked with common dwelling-house flues; and large engines are constructed by the most skilful engineers, whom it does not appear necessary or desirable to subject to this control.

**Fees for Special Duties.**—Cutting away of chimney-breasts: first and extra first-rate is 2l. 2s., but third and fourth-rates, 3l. 3s.: this must be a clerical error.

**Chimney-pots, Tubes, &c.**—This clause is altogether needless, and, as it now stands, somewhat absurd, as it prescribes that every pot must be fixed two feet into the brickwork in which it stands, a depth that in most instances would bury the ordinary chimney-pot.

**Schedule H.—Cesspools and Privies.**—This clause is needless, and could not be carried out without producing much private inconvenience, without any sufficient public benefit.

**Schedule I.—Carriage-way and Footway.**—It seems to be quite unnecessary to prescribe how the streets, &c. shall be paved, as this is in all cases sufficiently provided for by the local boards of pavements, and the requirements of each case can be better met by those who have the necessary local knowledge.

**Entrances to Alleys must be Two.**—This may be impossible, and if it were considered desirable cannot be made imperative, as the abutment on other property may quite preclude it, and it would be unjust to prevent the use of ground for buildings, only because it may not be possible to give access to both ends.

**Schedule K.—Back Yards.**—This clause is somewhat modified, but still objectionable, and it appears to be oppressive that in the denser parts of the metropolis, and those most valuable, this back area should be made compulsory—there is added to this clause, however, a new paragraph, curiously characteristic of the specification-like form of some of these schedules, which prescribes that every first-class building must have such a roadway to it as will admit a scavenger's cart. The effect of which would however be to prevent the construction of any alley.

**Lowermost Rooms.**—The provision requiring 6 feet out of a surface of 9 feet, the size prescribed for a window to open, would prevent the use of sash windows of the ordinary construction; it is therefore suggested that 4½ feet, or one-half the surface, should be substituted.

**Attic Rooms.**—This is a matter of detail, unnecessary, and not of sufficient importance to be retained; it is therefore recommended that it be expunged.

**Schedule L.—Fees for Special Duties,** page 86.—There appears to be a clerical error here, as the fees for low rates are larger than those for the higher.

In conclusion, your committee advert with pleasure to the improvement which marks each step of this measure; though they cannot but regret that a more enlarged and comprehensive view of the whole subject has not been taken, by which a wide and important general measure might be obtained, applicable to all buildings, and which might be made available, like the proposed power of extension of this Act, by an Order in Council, wherever the number of inhabitants of any given place exceed a defined number, with prescribed limits; and after the laborious investigation of the voluminous Bills which have been proposed, they are more and more convinced of the truth and justice of the remarks made in their report in an earlier stage of this business, 7th March, 1842, which they therefore repeat:—

"The excitement of public attention to this subject seems to suggest that the present is an opportunity which should not be allowed to pass without maturely considering how far it is practicable and desirable to form one general and comprehensive measure for the regulation of buildings, which may apply throughout the country, and so come into operation at once, wherever new neighbourhoods may arise, as in the case of Wolverton, on the London and

Birmingham Railroad; or large additions be made to towns already in existence, as in the case of Kingston, on the South Western Railroad; containing such precautions against the spread of fire as have been found by long experience to be salutary in the metropolis, giving general powers and direction as to the width and continuity of public streets and ways, and general limits as to projections, &c., without infringing upon any of the special regulations of local boards now existing, and having the management of any particular district of pavement or roadway; at the same time, avoiding whatever would unnecessarily increase expenses of the smaller classes of dwellings, and making all provisions so general in their character, as to admit of adaptation to the varying circumstances and different building materials of each several neighbourhood or county."

THOMAS PIPER, Jun., Hon. Sec.  
June 13, 1844.

## COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.—No. VII.

**COLUMN**—"A tapering cylindrical mass, placed vertically on a level stylobate, in some cases with a spreading congeries of mouldings called a base, and having always at its upper and smaller end a dilating mass called a capital." (Hosking.) Mr. Gwilt describes a column as "generally any body which supports another in a vertical direction."\* (Encyc. p. 954.) Some writers consider that the term *column* should only be applied when the shaft consists of a single block of stone, marble, or other material, and that when the shaft is formed of several courses it should be termed a *pillar*, from the Greek *πύλος*, "to bring together." Others again confine the word *column* to those which are circular on their plan, and apply the term *pillar* to square or polygonal supports.

The word is derived from the Latin *columna*, which appears from Quintilian to have been by the ancients pronounced *coloma*, and this leads one to think that it may be traced to the Greek *κόλυμα*, impedimentum, prohibitio, from the verb *κόλω*, prohibo, impedio, arceo, and as the latter word signifies to hold fast, to strain or tie hard, to keep in or hold together, to keep from, to save or protect, as well as to stop or to hinder, to debar, so a column may be truly said to support or keep a building from falling, to be a stay or prop.

"Do I look like a cudgel, or a novel-post, a staff, or a prop?" SHAKESPEARE.

The column is the most important member in architecture, and indeed no building, whether ancient or modern, into which columnar arrangements are not introduced, can be strictly classed among architectural compositions.

Columns are as various in their proportions as in their shapes and the uses to which they were applied. In those orders, however, which are called the classic orders, on which the Greeks first stamped the impress of genius, the proportions of columns are reduced to nearly an unvarying scale of rule.

In the earlier specimens of architecture, as among the Indians and Egyptians, less regularity is observed, and it is not unusual in some of their temples to find that no two columns are alike. The columns in the Indian excavated temples are sometimes polygonal, sometimes round, seldom tapering, but always massive, and of few diameters in height. They are seldom plain, their shafts being usually formed into vertical ridings, frequently divided by horizontal rings like the hoops of barrels; in this respect they resemble the columns of Egyptian temples, and, like them, have capitals of cushion-like and vase-shaped forms carved into imitations of the foliage peculiar to the countries.

The Egyptian columns were of colossal dimensions and thickly set together; the outer court of the great temple at Carnac contained,

\* The proper term is a *conical*, or a *conoidal* mass, rising from a platform: columns are rarely cylindrical, and if tapering with straight sides, are conical; they are frequently not placed perpendicularly, and in truth should very rarely be so placed, but leaning inwardly at their heads, they so gain both stability and elegance of effect, especially in circular buildings.—Ed.]



in the apt language of Denon, "a forest of columns."

In the Grecian-Doric order we see the first attempt to reduce the columns to uniformity and just proportions, and the column which at Corinth (the most ancient known example of that style) hardly exceeded four diameters in height, is beheld in the Parthenon extended to the perfection of beauty. The story of Vitruvius, that the ancients "measured a man's height by the length of the foot, which they found to be a sixth part thereof, and thence deduced the proportions of their columns: thus, the Doric order borrowed its proportion, strength, and beauty from the human figure,"—will not hold good unless we admit that a dwarf was taken as the standard of his race. And in allusion to another opinion, that timber construction afforded the first hints for columnar arrangements, Professor Hosking pertinently asks, "If the trunks of trees used in the structure of tents suggested the first idea of columns, and of the Doric in particular, as many contend, how is it that the earliest specimens are the most massive?"

In the Ionic the column is rendered still more slender than in the Doric order, and the climax of classical lightness was reached in the tall and graceful Corinthian. The assertion of Vitruvius that the proportions of the three orders were derived from those of a man, a matron, and a young girl, may afford some notion of their relation to each other, but will not account for their origin.

Engaged or attached columns are very seldom found in Greek buildings, but it is remarkable that one (and it is believed only one) example may be named in each of the three orders, viz. of the Doric, in the great temple of Jupiter at Agrigento (for which the colossal diameter, 14 feet, may account); of the Ionic, in the temple of Minerva-Polias, at Athens; and of the Corinthian, in the Choragic Monument of Lysicrates, also at Athens; in the last instance, however, the capitals are disengaged. These, therefore, are the exceptions to the strict rule of the Greeks, that columns should be entirely detached from the walls.

Among the Romans, the flanks of temples were frequently, though not always, pseudo-peripteral (false-winged), i. e., having columns attached to the walls of the cell, instead of standing out clear therefrom, as in the peripteral temples of the Greeks. The Ionic temple of Manly Fortune is pseudo-peripteral not only on the sides, but in the rear: and the Maison Carrée at Nîmes is also false-winged. The practice of using engaged columns, projecting either one-half or three-quarters of their diameter, as in the façade of St. Peter's at Rome, was extensively introduced by the Italian school of architecture, to which we are also indebted for the constant employment of order above order of columns, of which no example can be produced from the Greeks in their external arrangements.

The *Entasis*, or swelling outline, of the shafts of columns, and the flutings of columns, will be considered in separate articles, as will be the different arrangements in which columns are found in the porticos and temples of the ancients, and their intercolumniations.

Columns called *historical*, *commemorative*, *honorary*, or *triumphal*, are often used singly for memorials in honour of illustrious individuals or important events; examples of this practice, first introduced by the Assyrians in honour of their gods, are numerous: among the most celebrated are Trajan's Column, at Rome, designed by the famous Apollodorus; its diameter is 12 feet 2 inches, and its height 97 feet 9 inches, and including the lowest pedestal and the ancient crowning pedestal, is 125 feet high. It is of the Roman Doric style. On the summit was formerly a statue of the Emperor Trajan, which gave place to a figure of St. Peter, erected there by Pope Sixtus V. The Antonine Column, also at Rome, erected by the Emperor Aurelian, is of

the Roman Doric order; it is 13 feet 1 inch in diameter, and is, including its pedestal, 123 feet in height; on its summit was the figure of the Emperor Antoninus Pius, likewise removed, and replaced by a statue of St. Paul. Hence the sarcastic allusion of Lord Byron,—

— "and apostolic statues climb

To crush the imperial urn whose ashes slept sublime."

Both these columns are highly enriched with bas-reliefs, which are carried in a spiral direction around their shafts.

There is also at Rome a Corinthian column, seldom noticed by writers, erected in honour (and it is supposed in the life-time) of the Emperor Phocas; it is fluted, of Greek marble, 4 feet in diameter, and 54 feet high, including its pedestal.

Pompey's Pillar, at Alexandria, is a column of the Corinthian order, with a shaft, 9 feet in diameter, and 66 feet high, in one piece of well-polished granite; the height of the whole, including its pedestal, is 94 feet.

At Constantinople were two large triumphal columns; one in honour of the Emperor Constantine, long since destroyed; the other, of which one course of the shaft and the pedestal remain, was erected by Arcadius and Honorius in honour of their father Theodosius; this column was ornamented with bas-reliefs, after the manner of the Trajan column, which it also resembled in height and proportions.

The largest and most beautiful column of this kind is the famous "Monument," of Sir Christopher Wren's design; it is 15 feet in diameter, and its whole height 202 feet, of the Roman Doric order, and fluted, in which respect it has greatly the advantage over the Duke of York's Column, in Waterloo-place, which is about the size and proportion of the Antonine pillar.

To the memory of the immortal Nelson not less than three lofty columns have been raised in this kingdom, viz. one at Edinburgh, on the Calton Hill; one at Yarmouth (Nelson's native county), of the Grecian Doric order, fluted, 144 feet high, bearing a statue of Britannia; and one in Trafalgar-square, London, of the Corinthian order, and fluted, the enrichments of the capital being cast from bronze cannon; on its summit is placed a colossal figure (18 feet high) of the hero, by Bailey, cut in Craigleith stone. If any additional proof were required to be urged against the employment of columns standing alone as monuments (a practice wholly unknown among the Greeks), it may be adduced in the fact that the Nelson column is still incomplete for want of funds; had the really fine statue been placed near the ground, an open circular temple, with the plinth adorned with bas-reliefs, might have been erected over it, a shrine worthy of the effigy within, at less cost than that already expended upon the unfinished pillar. Mr. Gwilt observes very strongly on this subject: "In these days it is singular that no other mode than the erection of a column could be found to record the glorious actions of a Nelson. Such was the poverty of taste that marked the decision of the committee to whom that object was most improperly intrusted."—(Encyc. p. 214).\*

The Emperor Napoleon, among other architectural embellishments of his capital, erected in the Place Vendôme a copy of the Trajan column.

A *rostral* column is one whose shaft is adorned with beaks or prows of ships, and takes its name from *rostrum* (Lat.), a beak of a ship; such columns are considered as appropriate memorials in honour of naval heroes, or to commemorate sea-fights: the first of the kind was erected in the Capitol on the occasion of the defeat of the Carthaginians at sea, B. C. 260, by the consul Duilius Nepos. Augustus constructed four such columns with the prows of the vessels taken from Cleopatra at Actium, B. C. 31. At Rome, the platform in the Forum, whence the orators were wont to address the people, was called the *rostrum*, from its being decorated with prows of ships and naval spoils. The term is retained in

\* [And yet, notwithstanding the admitted inferiority of art, the one divine quality of loftiness naturally attracts public attention; it is this one quality which gains for the New Royal Exchange so many compliments, though, perhaps, in its details, the coarsest building of any considerable magnitude which has been erected in Europe for some centuries.—Ed.]

modern use to denote the place whence orators harangue an audience.

The *military* column was set up by Augustus in the middle of the Roman Forum, from which point, as from a centre, the distances of the several cities and places of the empire were reckoned: it was a short cylinder of white marble; its Tuscan capital supported a symbol of the globe, and the ball being gilt, the column had the name of *milliarium aureum*. It was restored by Vespasian, and also Hadrian.

The *colonna bellica* was a column at Rome, near the temple of Janus, from whence the consul proclaimed war by throwing a javelin in the direction of the enemy's country.

The Romans had also a *lactical* column (*lnc*, Lat. milk), erected in the vegetable market, which contained in its pedestal a receptacle for infants that were deserted by their parents.

Columns are either *plain* in their shafts, as are those of the Pantheon at Rome, or *fluted*, as was the usual practice with the Greeks.

*Calbed* columns are those in which the shafts are fluted, but whose channels are filled with astragals, which generally reach one-third of the height from the base; such are the columns in the porticos of St. Paul's Cathedral.

The *bundle* pillar is that which is composed of several small cylinders set round a core, and tied or banded together, of which we have many specimens in Egyptian architecture; in the Gothic style, such an arrangement is called a *clustered* column.

*Transparent* columns existed in the theatre of Scaurus, as mentioned by Pliny; they were of crystal. In the church of St. Mark at Venice are some columns of transparent alabaster.

*Diminished* columns are those which have no swelling, their shafts being tapered in a straight line from the base to the capital; this is usually the case with columns of a moderate size.

*Oval* columns are found in the Massimi Palace at Rome, and in the frontispiece of the church of Mercy at Paris.\*

*Twisted* columns are seen in St. Peter's, Rome, supporting the famous Baldacchino, or canopy of the confessional; they are made out of the bronze which formerly adorned the ceiling of the Pantheon, which (spared by the rude Goths and Vandals) was taken thence by Pope Urban VIII., and converted by him (who was of the Barberini family) into four columns, which gave rise to the bitter sarcasm,

"Quod non fecerunt Barbari Romæ, fecit Barberini."

In the cloisters of the church of St. Paul, at Rome, are columns "tortured into every variety of ugliness; some spiral, some twisted, some doubly twisted, some spiral and twisted at once, with the hideous addition of inlay."—(Forsyth.)

A *niched* column is that whose shaft enters with half its diameter into a wall which is hollowed out for its reception; such are seen in the portal of St. Peter's.

The name of the columns of Hercules is given to the mountain of Abyla on the African coast, and that of Calpe on the opposite shore of Spain, once united, as the fable runs, until separated by force of the hero's arm, that a communication might be made between the Atlantic and Mediterranean seas. G. R. F.

**ROCK-TOMBS.**—A discovery has been made at Inningerton, in the principality of Hohen-zollern-Sigmaringen, of twenty-two tombs, hewn out of the calcareous rock, lying together, and containing each a human skeleton of giant size. The head was, in every case, turned to the south, and on the breast was laid a heavy stone, round in form, and, on the side which touched the skeleton, blackened as if by the action of fire. There is no trace of either metals or clothes in the tombs, and the skeletons fell to dust on the slightest touch. The archæologists who have examined the tombs are of opinion that they date from a time anterior to the conquest of Germany by the Romans.

\* [The modern north façade of the church of St. Alphage, London-wall, has two modern Doric columns of an oval plan, built, we believe, by Sir William Staines, Lord Mayor of London, who lived in Barbican, and had a place of business in London-wall.—Ed.]

\* [This may be answered by the simple fact, that in early times of unartificial mechanism, all masonry was thick and low in proportion; as science advanced, the same outlay produced greater loftiness: this is the reason why the Romans so often used the Corinthian instead of the Doric order. Perhaps if the architects of the Parthenon lived now, they would discard all the present orders, retaining only that portion which is unrivalled in its sculpture.—Ed.]





INTERIOR VIEW OF THE DUTCH CHURCH, AUSTIN FRIARS.

This church measures within its walls about 149 feet long and 78 feet 6 inches wide; it is divided into nave (or choir) and aisles by eight detached columns on each side, each consisting of a cluster of four attached circular shafts surrounding an octagonal core-shaft, curved inwardly between the surrounding shafts in the form of the Roman cavetto moulding; above these rise nine arches on each side, but the centre is not carried up as a clerestory, but covered with a coarse roof, ceiled in five planes, with roughish tie-beams, exposed, and without tracery, having only plain bent knees reaching down to plain stone corbels. The aisles are roofed by slopes which are not far from horizontal, and are covered with lead. Like those of the Temple Church, London, the columns have settled considerably out of perpendicular, but not through the expansion of vaulting, for there is no vaulting here, but from some other cause; and the columns have not all been forced outwardly by a central upward expansion, for some of them lean on one side, southwardly, towards the centre, while those on the other side, following them, lean outwardly.

The capitals of these columns are smeared with black, which we were told was done as an act of mourning at the death of some principal personage connected with the church.

The windows of the church are designed in very fine taste, with rich flowering and inventive tracery, though their mouldings are over plain; we propose hereafter to give their details, and those who desire to imitate, can do that which ought always in such case to be done, viz., to improve them where they are inferior; therefore, while their general forms are retained, mouldings of a superior character may be substituted. The great western window, which has seven days or lights, divided by six mullions, is much superior to the lateral windows, which have each the condemnable number of four days, instead of the more elegant and symbolical arrangement of three such divisions.

In some of the windows, the glazing of which is in general plain, are some pieces of

rather modern stained yellow glass; in some places in them appear, on quarries of a lozenge form, the letters *th s*; in others, in Roman letters, the words *IESVS TEPL* accompanied by the date 1550; again, in others, on a bend-dexter of transparent white glass, the following inscription:—

THE TEPL OF OUR LORD IESVS.

The letters, dots, and border-lines being yellow. The buttresses between the windows project very far from the walls, in spite of which, and of the absence of any very great pressure, the walls have changed from their original position. At the west end of the church, occupying a portion of the first bay, is an imperfectly separated porch, at the sides of which lie two vestries; that to the north used by the elders of the church, and that to the south by its deacons; these contain some curious portraits, books, drawings, and prints of the church and its members, with some other curious property; and at the north and south angles of the west end of the church are two turret-staircases, which lead to the side roofs of the fabric. The porch is surmounted by a gallery, containing an organ and a library, and supported by curious grotesque Ionic columns with garlands of fruit and flowers. The gallery is inclosed in front by curious balusters, each of which has pendent from it a garland.

The altar, which occupies one bay of the centre compartment of the church, is raised 2 feet 8 inches above the general level of the church-flooring, and is ascended by a flight of stairs at each end, and by two other flights near the ends of the front; the altar is inclosed in front, and at parts of its ends, by an open balustrade of oak; the remainder of the ends are inclosed by very high wainscot paneling surmounted by rich carved open scroll-work, which may be seen in our view. At the back of the altar ranges a very curious description of carved wainscotting of a Dutch fashion, consisting of arched work and paneling: the same kind of wainscotting is continued all along the eastern and western

walling of the aisles, and along portions of the lateral walls of the church. The altar-piece itself, which reaches nearly to the roof, is of painted canvas, bearing an anomalous Ionic subject of not very good classical architecture, and, like the altars of the Church of England, the decalogue, apostles' creed, and dominical prayer. The communion-table is a prodigious piece of oaken wooden-work, no less than 29 feet long, and having benches all round it, provides accommodation for a great assembly to receive the Eucharist sitting. Of the whole interior of this vast church, only two bays, out of nine of the central avenue of the church, are fitted up with pews for the ordinary use of the congregation.

Some small parts of two other bays contain open benches. The whole of the aisles, which are about 22 feet wide, and all the remainder of the church, are left open. The pulpit, which is erected on the north side of the central avenue against the third column from the east, is a very curious piece of wainscot-work in the Dutch style, covered by a great sounding-board, with carved work and pendants. In the church is lying an extremely fine oaken carved pulpit, adorned with scroll-work and garlands, taken from the late neighbouring French church in Threadneedle-street, and for the purchase of which we were told the sum 100*l.* is required.

In the third bay from the east of the southern wall of the church is a comparatively modern porch, of the Elizabethan or immediately subsequent era. Surrounding the fabric are many achievement and fine mural monuments, and in the pavement are numerous carved flat grey marble, and other memorials of the dead; these are principally of merchants, who have been engaged in the Dutch trade.

The body of the church contains no heating flues or apparatus, but large braziers are used for that purpose, one of which is to be seen upon the floor in our view; the live charcoal is taken from thence and placed in earthen pipkins, which, being inclosed in wainscot-carved, open-work, square boxes, are, in winter, placed under the ladies' feet.



Opposite the pulpit is the seat of the Dutch ambassador, which is a kind of tribune fitted up in wainscot, with a canopy of modern Romano-Batavian architecture.

Less than a fifth part of this church is fitted up for the use of the congregation; and from the decline of the Dutch trade, scarcely half this accommodation is made use of. It is to be lamented that so fine a church, which, if restored, and its windows filled by stained-glass, would be so useful and magnificent a structure, calculated by enlivening service, by psalmody, and other reverential chants, to warm to devotion two or three thousand people, should be so cheerless and so little used; but we are pleased at finding the establishment well endowed with charities.



## SECOND LECTURE ON ARCHITECTURE

BY J. L. THOMAS.

*Delivered at the Literary, Scientific, and Mechanics' Institute, Brecon.*

MR. THOMAS commenced his second lecture on Architecture by a short recapitulation of the different epochs upon which he had treated in his first lecture, and then took up the subject at that period of literary darkness which, after the downfall of the Roman Empire, overspread all the nations of Europe, and when the arts, from their intimate connection with letters, were involved in the general obscurity. He thought that this grand revolution in the history of the world, though in appearance most disastrous, was ultimately productive of large and most extensive benefits; as it seemed to attract to one centre many nations who at a subsequent period radiated from this common axis to all parts of the globe, carrying with them not only a knowledge of the arts and sciences (which they must have acquired in that great school of learning), but also the spirit of Christianity, diffusing its holy and civilizing truths wherever they went; thereby exciting the devotional feeling to the invention of modes of architecture, of which there existed no ancient model. Before proceeding with a history of those styles, with their temporary modifications in England, the lecturer touched upon the previous state of the science in Britain before the Roman invasion, and exhibited a large drawing of the celebrated remains of a Druids' temple, supposed to be raised to the worship of the Sun, on Salisbury Plain, and proceeded to enumerate many other parts of the world in which such remains are found; proving that vast tracts were inhabited by some great original nation, possessing, with probably the same language, the same religion, manners, and customs; but of all those mighty nations whose events furnish important chapters in the history of the world, it has been permitted alone to the few inhabitants of the mountains and valleys of Cambria to preserve that original language unto the present day. Mr. Thomas then again adverted to the Roman invasion and the celebrity of the British architects and artificers in the third century; but after the departure of the Romans, the long train of miserable disasters in which they were involved left little room in their minds for the cultivation of those arts of peace in which they naturally delighted; and the Saxons, when they afterwards came amongst them, were more famous for their knowledge of the sword, and the temporary power and security it affords, than for acquisitions which in all ages of the world tended to dignify and establish a nation. After touching upon many of the interesting particulars connected with the early history of our country, bearing upon his subject, the lecturer arrived at the Norman Conquest—the numerous edifices erected, first for the purpose of subjugation, then for devotion; the increasing elegance of the structures as peace and security advanced, until the golden age of the style arrived, and continued from the middle of the thirteenth to the latter end of the fourteenth century, and afterwards rapidly declined, by that insatiable desire to produce something new and still more beautiful, when it had already arrived at excellence. He then illustrated the beauties of the style, esteeming it the most appropriate for sacred edifices, as, if it were not designed solely with

that object, it ripened into full beauty under the auspices of the church, and appeals in the most direct manner to the imagination of the observer, exciting in him those feelings of awe and emotion so peculiarly adapted to the purposes of the cathedral. On entering any of our celebrated religious edifices, although shorn of their original splendour, we are forcibly struck by their solemnity and gloomy grandeur, and the apparently interminable aisles and successive tiers of lofty arches tend to hallow and solemnize the feelings when they are viewed in the rich light admitted through emblazoned windows, which concealing the extent of the pile, and affording greater play to the imagination, display to advantage the clusters of slender columns as they shoot loftily up and are lost in the richness of the fretted roof, or the splendour of the elaborate groin, while the delicate carvings of foliage and fruit, tendrils and flowers, entwining each other in the capitals and mouldings, give a gorgeous dress and finish to the whole that can rarely fail of pleasing the most fastidious.

Mr. Thomas then alluded to the domestic edifices of this country, and commenced with castles, describing the manner in which they were generally planned and constructed; and noticed Caerphilly Castle, in Glamorganshire, as one of the finest examples of the kind in Great Britain, possessing an extraordinary variety of architectural characters, connecting the widely contrasted styles of rude feudalism with those of a later period, probably during the stirring times of the De Spencer, in the reign of the unfortunate Edward, the second from the Conquest. The strange forms in which fate has visited it are also very remarkable; the south-east tower, 77 feet in height, overhangs its base nearly 11 feet, and rests only on one part of its south side. Everywhere are deep marks of the desolation caused by battery and bombardment, and the unavoidable decay of age. But the ruins have a wonderfully grand effect, when closely visited or gazed on from the surrounding heights. It is then the astonished eye takes in at once every part of the gigantic pile. Then the savage dignity of its exterior bulwarks, its vast quadrangle, its broad battlements, its rugged buttresses, and profound fosses, are viewed with a feeling of awful admiration. We are almost induced to believe we live again the ages that are gone; that we are centuries older; and not only think, but feel with the past; we plunge deep into the secrets which seem buried in the mouldering mass beneath; the loneliness seems suddenly broken; the mailed soldier paces the terrace; the courts and halls are peopled with beings of bygone days; generation on generation passes rapidly along; and the mysteries of tradition colour the past periods of splendour, chivalry, and barbarism. The lecturer then adverted to the many great changes which took place in the constitution of our country, and the ultimate amalgamation of the two great conflicting interests of the Saxon and the Norman, when the fortress had become, in a measure, unnecessary for the protection of the invaders, and were, in many instances, dismantled and thrown down by their proprietors, or left to moulder in the rottenness of time; while they adopted for their residences the pleasing picturesque gabled manorial house, and the embattled mansion of the Tudors, of which there are specimens now extant. After describing the characteristics of this style, he passed on to consider the Elizabethan; when the noble Tudor houses, with their large pointed gateways, traceried windows, buttresses, battlements, and octagonal angle-turrets, richly carved pinnacles, and wreathed chimney-shafts, were mingled together with the architecture of Italy. The art was in this unsettled state when Inigo Jones brought himself into conspicuous notice by his ability as an architect; and the very ingenious manner in which he modified the buildings of his day is clearly shewn in many exquisite productions still remaining, which prove that he was possessed of no ordinary mind, and give him an exalted rank amongst the most illustrious of our countrymen.

The lecturer then passed on to another great era, the use of the Roman style, mingled by high science, by Sir Christopher Wren. He mentioned but one of his works, and thought that one sufficient in itself to stamp an immortality upon a nation—St. Paul's Cathedral; and after minutely describing the wonderful

edifice, said, "I shall conclude in the peculiarly beautiful language of a living author, 'It is the gem of Protestant churches,—an honour to the nation and its pure religion; of all the cathedrals in the world, by an especial divine favour, permitted to be the only one, which, like the *vesture of Christ*, was ever wrought in one texture throughout.'"

He then noticed the works of another celebrated man, Sir John Vanbrugh; and afterwards adduced a host of other famous names, amongst which were James Gibbs, James Stuart, and Sir William Chambers.

Mr. Thomas, after having concluded his historical account, commenced an analysis of the four ordinary periods or chronological divisions of the Gothic or Pointed mode, minutely describing the various characteristics of each style, and the times in which they flourished, and illustrating them by large detail drawings from some of our celebrated cathedrals, amongst which were many familiar subjects of local interest, being the principal features of a building, the doors, windows, niches, towers, and spires. They exhibited as plainly as the classic orders the easy gradation from massive rudeness in the Norman, to faultless proportion in the Decorated. He then contrasted the Grecian and Pointed modes in every minute particular, and by so doing proved the impropriety of attempting to mix them together. He eulogized the old English style as admirably adapted for country residences, where associations of an imaginative character come into play, and dictate a style more consonant with the surrounding aspect. Few that have seen these picturesque old mansions have not found their minds softened into tranquillity, and viewed in the rich setting sunlight of one of those warm and serene autumnal evenings, with its numerous ornaments of carved wood-work, its wreathed chimney-shafts, its large pointed windows, its solid castellated gatehouse, its panelled walls and buttresses, its time-worn pinnacles, and the variegated tints left by the breath of departed ages upon its walls, giving it the semblance of having grown old with the venerable trees by which it is overshadowed, blending it as mellowly with the scenery as if it constituted a portion of the natural landscape; such a picture forcibly recalls to the mind past scenes and days long gone by, intimately associated with some stirring passages of our national history. He then proved this description of habitation to be appropriate to every rank, from the palace to the cottage, and gave an interesting description of the noblest residence of our beloved sovereign, Windsor Castle.

Mr. Thomas concluded his lectures with a tribute to the high objects and advantages, in a moral sense, of a just cultivation of the art in connection with her two younger sisters, Painting and Sculpture. He thought it had risen above mere utility, to be an imperishable monument of our intellectual greatness; that they tend to carry the mind beyond the walks of ordinary life, to give it a respite from depressing cares and anxieties, and to awaken the consciousness of its affinity to purer and nobler elements. To those who think of nothing but mercenary aggrandisement, these flights of the mind, which have been the sole cause of the grandest works of human power, may appear extravagant; but all who properly appreciate sense, genius, and talent, know that it proceeds from no source other than the glorious working of the immortal intellect, which is gradually both powerfully developing itself, and exhibiting in those wondrous masonic creations the inestimable power and beauty of the mind.

The enthusiasm of the poet is not more exalting than the rich fancy of the architect, who sketches beyond what is present and visible, and soars after unseen and ideal imaginings. He beholds his name, in ages yet to come, associated with the mighty monuments of his workmanship, and fancies that posterity will feel the same enthusiasm in gazing upon his works with which he regards those eloquent memorials of former greatness. He then descanted upon the interesting pleasures of antiquarian pursuits in architecture, and pointing to a drawing of Stonehenge, alluded to the great and comprehensive truths which may be learned respecting the early inhabitants of the world, by comparing those remains with the numerous monuments of a

\* Essay on the "Decline of Science, &c. in Architecture."



similar nature in almost every quarter of the world; and then referring to the valuable remains of the Acropolis, in the British Museum, which so expressively speak of the palmy days of Pericles, the imagination at once takes flight and visits every celebrated nook and corner of which a Homer and a Virgil sang. Egypt, with its colossal witnesses of man's pride, and Palestine, with all the interesting scenes of the incarnation of the Deity, and all the memories and associations which such scenes naturally incite, were next brought under notice, and every spot of our own country, from its mountain fastnesses to its verdant valleys, was hallowed by mystic tradition or circumstances of historical celebrity, from the Teutonic altars of Odin and Thor to the purer house of prayer, with its heaven-directed spire.

Mr. Thomas concluded in nearly these words:—"Let us hope that now, when the spirit of inquiry stalks majestically through the whole land, that the noble and delightful science of architecture will be better appreciated and more properly analysed. When it will be viewed as one great medium, connecting the weary walks of ordinary life with purer element, as the only occupation by which man finds employment for the greatest physical energies, in connection with those higher excursions of the imagination for which he feels himself born, and which enables him to contemplate all his loftier ideas, to view the great end for which man was created, and to feel and test the vast power of that ethereal essence, which must endure beyond this bound of Nature and of Time. This supremacy of architecture, connected as it is with the two sister arts, Painting and Sculpture, and their capability of counteracting the evil and Epicurean effects of almost every pursuit in these days of cold, calculating utility, is more and more required as the world progresses. It is required to withstand the invasion of cold and artificial customs; it is required to spread our sympathies over all classes of mankind, to knit us by new ties with our fellow-creatures of every other nation, being the only art which admits of universal combination without betraying the depravity of our species; it is required to redeem man from those selfish, mercenary ideas to which human nature is naturally prone; it is required to bring out, increase, and soften the beauties of nature, for which purpose these expansive powers may have been implanted in our hearts; and above all, it is required as a powerful incentive to raise us above this world, and its poor enjoyments, to the contemplation of the great Architect of the Universe, and the acquirement of true happiness in a purer and holier atmosphere."

Mr. Thomas was repeatedly interrupted by the marks of approbation of his audience, having succeeded in investing his subject with suitable interest.

#### SUGGESTIONS ON THE CHEMICAL CHARACTERS OF CONTAGION, AND THE NATURE OF THE EXHALATIONS GIVEN OFF FROM THE WANT OF VENTILATION, DRAINAGE, AND SEWERAGE, AND IN THE CONFINED DISTRICTS AND ABODES OF THE POOR, &c.

BY MR. A. BOOTH, PROFESSOR OF CHEMISTRY, CHEMICAL ENGINEER, AND CONSULTING CHEMIST.

THAN drainage, sewerage, and ventilation, and the accumulated evils which arise from their neglect, there is no subject of greater importance in the whole range of hygiene. It is a matter of remark that in this country, and, in fact, many others, diseases have become greatly modified in their character; in many, from improved systems of diet, but in other instances, from more attention being paid to insure the purity of the atmosphere. The Pontine Marshes, near Rome, are allowed to remain untouched, productive of the most fatal malaria, and epidemical diseases of the most inveterate form, whilst in our own country, nearly every marsh has been drained, and ague is almost extinct. Sierra Leone owes its title of the Grave of Europeans to the marshy lands on which the luxurious vegetation of the tropical regions, with the numerous forms of animal life, putrefy and decay; and were we once to get rid of the cause, the effects would cease, and, in all probability, the country would be as healthy as our own. Chemical fumigating or disinfectant agents were tried, but

without effect, to neutralize the poisonous miasms on the late lamentable Niger expedition, by the use of chlorine gas. Next in importance to drainage, comes sewerage, to take off the decaying matters from our houses, and remove them from the spot where their decomposition would produce the most noxious results. Ventilation is of no less consequence in the removal of air already vitiated by respiration, or impregnated with the products of combustion, or the exhalations from decaying, decayed, or diseased bodies.

It is scarcely possible to say to what an extent a neglect of these important matters is the cause of disease in close and confined districts, where not a breeze of air comes in to disturb the still of the polluted atmosphere. The annals of medicine and the bills of mortality pourtray it too strongly to need any particular proofs; and when any old disease is revived, or new one introduced, it is sure to meet here with its first, and always its most numerous, victims. Notwithstanding some of the remarkable and anomalous careers of the distribution of these diseases, and the peculiar range that they take, it is always certain that these suffer most from epidemics. Many courts, alleys, and narrow streets in the metropolis (and doubtless in other towns), are, it is well known, never free from typhus fever, and the squalid appearance of the wretched inhabitants shews the very unhealthy character of the localities. Here we still find no sewerage; drains and gutters running down the middle of the streets; accumulated heaps of filth, and puddles saturated with all manners of decaying garbage, from which emanate gaseous compounds of the most noxious and subtle forms. Thus the pure atmosphere inhaled by the country peasant, which gives him the bloom of health, becomes saturated with poisonous matters of the most noxious kinds; nor are the effects confined to the districts in which the poor generally reside; for the incipient seeds of disease and death, wafted by the winds to considerable distances, reach the abodes of the heedless rich, who, insensate to their wants and sufferings, reside in more airy abodes and better ventilated districts. And when we look at the abodes of the poor, how much is there not to excite our sympathy and demand our exertion! Their houses have bad ventilation—their narrow courts want drainage—they have not water sufficient scarcely for domestic use, and still less for purposes of cleanliness. When the gardener wants to bleach a plant, he secludes it from the light; and here, almost immured in darkness, a most baneful influence is exerted on their health. One solitary room, with no convenience, is the only place in which all their processes of cooking and domestic economy are performed;—it is at once their sleeping-room, their kitchen, their workshop, and their constant abode. They cannot ventilate the room by opening the window, fearful of the descending smuts from an adjoining chimney. The luxury of white-washing their walls, by which adherent matters and incipient disease might be destroyed, and their deficiency of the light of heaven in some measure compensated for in its reflection, is denied them. The keeping of pigs, donkeys, and domestic animals, adds but to the accumulated evils; and, apart from the moral associations engendered, what a fearful share have not the condition and abodes of the poor in the contamination of the atmosphere, and the consequent propagation of disease!

These observations may lead us more successfully to the consideration of miasms,—those unseen and subtle causes of disease, the existence of which we reason by analogy, and of which much has been said, although little is known. We know that decomposing animal and vegetable matters produce carburetted, sulphuretted, and phosphuretted hydrogen gases, with ammonia and its compounds;—we may collect and submit these gases to experimental observation, though it is probable that others still exist, although in a state too recondite for investigation by our present resources. The last few years have added to our list of gaseous products *cyano-gen*, a compound of *nitrogen* and *carbon*, which is the basis of Prussic acid, the most suddenly fatal and destructive of all poisons, which gas is also highly poisonous even in a very dilute form. The effect of unseen exhalations, but of the existence of which we are assured by

reference to other senses, is very different on the human constitution. Amongst these we recognize odours; which, as every organic compound is defined in its nature and composition, we may also consider to be chemical compounds, guided by the same laws as characterize substances which we can see, feel, taste, or handle. So convinced were the ancients of this, that they applied them as medicinal agents; and now some attribute to the odour of a cow-house, or the exhalation of newly-ploughed earth, a curative influence in consumptive cases. From inhaling the odour of beef the butcher's wife obtains her obesity; and that most disgusting of all trades, cat-gut manufacture, is amongst the most healthy of employments. So there are exhalations which have a noxious effect, and which we equally assume to be chemical compounds, not only affecting the body itself by its immediate influence, but acting upon a large body of an impure atmosphere, which it either changes by virtue of a certain chemical action, or this merely acts as a diluent for the more extensive propagation and diffusion of the poison. The situations in our towns where *epidemics* and *contagious* diseases mostly prevail are notoriously those which are most filthy and dirty; and the individuals chiefly attacked, those who, being most careless in their habits, may be supposed to carry around them an atmosphere most easily susceptible of impregnation. This view of the constitution of miasm is supported by reference to those substances, or chemical re-agents, which have attained reputation as disinfectants. Amongst these are chlorine and nitric acid, two most powerful chemical agents.

Vinegar and camphor have long held repute as prophylactics; and, however ridiculous it may appear, we should not discard at once and without inquiry what has been the belief of ages, handed down to us probably as those were, the long experience of past times. Now vinegar is a powerful chemical solvent, and camphor assists in the solution of many substances which are with difficulty soluble. Charcoal in a minute state of division has a strong absorbing power for colouring matter and gaseous substances, so that if some be introduced into a jar of gas it will disappear. We have it in this minute state of division in the smoke of the burning brown paper, the popular purifier of the sick room. Heat is used in the fumigation of the clothes of persons infected with the plague, and if it destroy the *fomites*, it is by the separation of those elements which form the poisonous compound of contagion. If these substances are effectual, it is from their chemical action, and that energy can only be exerted upon chemical substances. The great improvements which have taken place in the public health have been chiefly owing to the means which have been adopted to preserve the atmosphere from contamination with these compounds of known and presumed existence. Three or four centuries back, houses were built in as close and narrow a space as possible, and land was economized as much as possible in their erection—no means were afforded for cleanliness or ventilation—drainage was not thought of, and hence the plague, sweating-sickness, and other fatal disorders and epidemics incidental to those periods were treated but as matters of course. Modern chemistry, however, teaches us the composition of air, and how to respect its purity; that pure air is essential to all the functions of life, and that whatever affects its purity must possess an injurious effect upon the constitution. We learn from it that stagnating ditches, stinking cess-pools, open drains and crowded bed-rooms, cannot long remain without producing disease—that they elaborate noxious gases, the formation of which must be prevented before we can secure immunity to health. We find that houses cannot be near each other, nor rooms over-tenanted, without a palpably injurious effect—that mistakes still exist which require rectification; but we cannot hope to obtain a remedy until the public are become more alive to the evils from which they suffer. Committees of the House of Commons have unequivocally condemned "interment in towns," and the "nuisance from smoke in the chimneys of furnaces," and yet no legislative enactments have been directed to remedy or remove these noxious evils, prejudicial to a great extent in the local contamination of the



atmosphere. Whilst on this subject, we may refer to the desirableness of promoting by every means the provision of pure air, particularly for the poorer classes, a subject recently taken up with effect in the promotion of public walks and parks. The squares and parks of London have been emphatically called its lungs, and in order that the overgrown metropolis may breathe more freely, it is necessary that the surface of these lungs should be increased to keep pace with its growing dimensions. By so doing, not only do we supply pure air to the inhabitants, but we invite their attention to exercise, to moral improvement, and to the bettering of their social condition.

The free currents of air which are necessarily in constant circulation from its proximity to the majestic Thames, and the storms which destroy the equilibrium of the atmosphere by putting in motion its elements, have been considered (and not improperly) as a great cause of the salubrity of the metropolis. Amongst other conservative agents in its purification, there is no doubt but that of watering the streets is one, from the quantities of water distributed throughout the atmosphere in its evaporation. This as it ascends will carry up with it into the atmosphere, and above the reach of mischief, the various decomposing and decomposed organic matters floating about, and which otherwise allowed to remain, would be productive of contagious miasms. We recognize the additional purity or freshness of the atmosphere by following a watering-cart as we do after a shower of rain, and the same effect is recognized in a newly-cleaned or scoured room. Here, independent of the influence of the brush in removing substances, the decomposition of which would fill the atmosphere with impurities, the evaporation of the water would produce the same effects as in watering the streets, in cleansing the air of the room. This shews the necessity of an adequate supply of water being provided for purposes of cleanliness, a deficiency too palpable in the crowded courts and habitations of the poorer classes. In watering the streets, we may observe the obnoxious practice which has been pursued in some districts in the use of the water accumulated in the sewers, which must be highly objectionable in the diffusion of noxious malaria.

The general use of wood paving may justify an inquiry into the circumstances as to how far its adoption may not be injurious to public health. No doubt can be entertained of the prejudicial effects resulting from the accumulation of decayed and decaying organic matters in the streets, giving rise as they do to various gaseous and volatile compounds, and the removal of which is most desirable; nor of the injury to property, from the dust given off by the abrasure of granite or stones. When the blocks are taken up for repair, they will be seen to be impregnated for some inches below with black matters absorbed from the surface, consisting of decomposing organic matters. The wood is likewise susceptible of absorbing water, which it may retain in its pores, or in the interstices, and when dry weather supervenes, this will necessarily evaporate, carrying with it in solution into the atmosphere the volatile matters given off from these organic compounds. In this view I am supported by Dr. Copland, who, at a recent meeting of the Westminster Medical Society, gave it as his opinion that the general use of wood pavement would have a tendency to maintain and propagate that low form of typhoid fever which has recently been so prevalent in the metropolis, and almost defied the treatment of medical men.

St. Thomas's-square, Hackney,  
July 1st, 1844.

#### WINDOW DUTIES.

To the Right Hon. the Earl of Lincoln.

MY LORD,—With every disposition to give your lordship credit for sincerity, in your endeavours to reform the Building-Act, or rather to put the laws relating to buildings in unison with the spirit of the age, I must beg to call your lordship's attention to a subject affecting the sanitary condition of the inhabitants of large towns, an object deemed of the greatest importance by all right-thinking persons, and not only felt by yourself in common with many of your colleagues, but openly avowed by your lordship: and here I would awaken your lordship's attention to the fact, that the propo-

sition I am about to submit is not calculated to cause any material diminution of revenue, if any, and would confer a boon on thousands—indeed a boon so great, that it would more than outbalance a hundred-fold any trifling diminution of revenue. The proposition I have to submit is, a slight amendment of the Window Duties-Act, by extending the exemption to ten windows, instead of seven; and this, although asked on the part of the poor and the humblest of the middle classes, might be equitably extended to houses of every class, on the first ten windows. I would remind your lordship that persons in affluent circumstances do not pay as rent more than one-tenth of their income, whereas the description of persons above alluded to pay more than a fifth of their income for rent, and, in innumerable cases, very much more. Most persons know that the smallest six-roomed houses require, for their comfortable occupation, at least nine windows, namely, one to each room, one over the door, and two to the staircase; this, I say, my lord, is the least number of windows that should exist to a house of such a description, and yet it is a notorious and a melancholy fact, that not more than one house, in one hundred of this nature, has more than seven windows, that being the number allowed by the exemption clause. Your lordship and the Chancellor of the Exchequer, I saw by a report in the newspapers, required (from a deputation on the window duties, who waited upon you) information as to the sanitary condition of the poor in other countries.

Now, my lord, I will state one fact, fearlessly defying contradiction, that in France, where a window-tax exists, there is not in that country one single window less than would have been if no duty existed, and this is owing to the moderate scale of the duties. And on one of the occasions when I was in the Chamber of Deputies in Paris, a member having incidentally stated he had understood that an enormous quantity of windows were bricked up in England, owing to the excessive duties, the assertion was received by the members with incredulity; nor was it believed till the minister, who had been appealed to, confirmed the fact—“*They manage these things better in France.*” Perhaps it may be owing to the second article of the French Charter of July, 1830, which declares, “*That all persons shall contribute to the necessities of the state, in proportion to their means.*” To put the window duties on a rational and equitable footing would be worthy of any ministry, and is necessary before the pretended anxiety for the public health will be considered other than as cant and humbug. Allowing the exemption on ten windows for every house, great and small, I would impose a duty of five shillings on every window above that number. Why, my lord, should the eighth window of a house, broken out to make it barely habitable, be subject to a duty of sixteen shillings and sixpence, and all windows above 180 be liable to one shilling and sixpence only? Perhaps your lordship may some day receive the answer from the ten-pound voters, refusing to intrust any ministry with a tax alike destructive to our domestic architecture, private morals, and the public health.

I have the honour to be, my lord, your obedient servant,  
A LOOKER-ON.

London, June 19.

P. S.—No zinc plate expedient will answer, as a greater fold of light is required, as well as ventilation, to prevent the accumulation of filth and dirt, the natural resting-places for which are dark corners.

#### ST. MARGARET'S CHURCH, WESTMINSTER.

To the Inhabitants of St. Margaret's, Westminster.

GENTLEMEN,—Permit me to call your attention to the fact, that efforts are still being made to effect the destruction of your venerable parish church, and to remove it from the site it has occupied for 790 years. I much fear a committee of the House of Commons was prevailed upon yesterday, the 4th July, to recommend this scheme of church desecration.

I have, in my works on church building and on Westminster improvement, and by other means, endeavoured to expose the shallow pretences of the destructionists; and, as I have brought over some of the most influential persons to my views, I flattered myself that my efforts had been successful, when, to my asto-

nishment, a letter appeared a short time since in THE BUILDER, announcing “the pleasing intelligence”—“the pleasing intelligence”—“that St. Margaret's Church was immediately to be pulled down and rebuilt on another site, both which, and funds for the purpose, had been obtained.”

Let me epitomise the reasons against this measure which I have given elsewhere at length: “That persons greatly err who would regulate Gothic architecture on Greek principles;” “that Gothic architecture does not exhibit itself naked and bare;” “that it delights in bold, striking, and picturesque irregularities”—“veiling itself with walls and screens and towers;” “therefore appears best as an accumulation of buildings;” “therefore, the abbey church and St. Margaret's gain by juxtaposition;” “while the grandeur of the ancient edifice is increased by comparison with the more modern structure which stands beside it;” “that when the new palace of legislation is completed, St. Margaret's will be absolutely necessary to effect a harmonious union between that and the abbey;” “that St. Edward did not think the position of St. Margaret's would injure the effect of his darling abbey church;” “that its removal would involve the destruction of another of history's landmarks, a document of stone which cannot lie, attesting the antiquity of your parish;” “that instead of your venerable temple, founded by St. Edward, rebuilt by Edward I., and again by Edward IV., you would probably get a mere brick and plaster apology, on a par with those vulgar modern churches which are the laughing-stock of ecclesiologists.” But is mere taste, or rather the want of it, fit to be put in competition with the desecration of a spot on which your ancestors worshipped for nearly eight centuries? Or are ye on these matters below that nation of savages who, when urged to emigrate, replied, “But what shall we do with the bones of our forefathers?”

Inhabitants of Westminster, rouse yourselves to resist the architectural barbarians. Your ancestors rose *en masse*, and successfully resisted the Protector Somerset and his myrmidons, when they attempted the destruction of St. Margaret's. The present most excellent Dean and your gifted Rector are utterly opposed to the project of removal; put yourselves under their legitimate guidance. “Remove not St. Margaret's, restore it to its pristine beauty as left to ye by the illustrious Edward,” and you will never more hear the senseless cry of removing St. Margaret's to obtain a better view of the Abbey Church. Perhaps the best of all methods to unite St. Margaret's with the Minster would be the erection of a tomb-house, or cloister, for the reception of those mural monuments which disfigure the interior of the Abbey Church, the expense of which the accession of new monuments would probably defray. As an architectural antiquary, I have now done my duty, let the guardians of the fabric do theirs.

Park-street, July 5. WILLIAM BARDWELL

#### SOCIETY OF ANTIQUARIES.

JUNE 20.—Richard Yates, Esq., of St. Andrew's-hill, Doctors' Commons, was elected a Fellow of the society.

Mr. Brown exhibited a small seated idol of pure gold, found on the margin of the lake of Guatavite, situated on the summit of a ridge of mountains about eight leagues from Santa Fé de Bogota, the capital of Columbia. This lake, previously to the conquest of New Granada by the Spaniards, was by the natives of that country considered sacred, and they were accustomed at certain periods to throw into it their treasures as offerings to their deities. The scenery around the lake is magnificently romantic, and well calculated to make a powerful impression on the human mind. By the remains still to be seen of extensive works, it is evident that various attempts had been made by the Spaniards to drain the lake, and it is on record that about eighty years ago so much gold was got out, that the quinto to the crown amounted to upwards of eighty thousand dollars. At that time also an emerald of immense value was found, and sent to Madrid. A company has of late been formed in Bogota for the express purpose of effecting the draining the lake, and from the judicious measure



adopted and the progress already made, there is no doubt it will be accomplished. This golden idol, which formed part of the collection of his Royal Highness the Duke of Sussex, was found near the margin of the lake, and was presented to James Hamilton, Esq. by General Santander, Vice-President of Columbia.

Mr. C. Roach Smith exhibited—I. a drawing of a fresco painting in Godshill Church, Isle of Wight, by Mr. John A. Barton, representing Christ crucified on a tree or shrub, with mottoes on the side, one only legible, *Gra pro nobis Domine.*

2. Drawing of a fresco of a late date, found in pulling down Mr. Mason's house in Chichester.

3. A Runic almanack belonging to Mr. Crafter, of Gravesend, formed of several wooden leaves strung together.

4. A rubbing of the brass of Margery Arundell, in Anthony Church, Cornwall, communicated by Charles Spence, Esq., of Devonport. The inscription is as follows: "Hic jacet Margeria Arundelli quondam d'na de Est Authon' filia Warini Erchedeken militis qui obiit xx<sup>to</sup> die Octobri A° d'ni M<sup>c</sup>ccccxxo cuius a'x'e p. pieietur deus."

John Adey Repton, Esq., F.S.A., communicated a drawing of an ancient vessel found in 1843 in digging the foundation of the Savings Bank at Chelmsford, and presented to the Chelmsford and Essex Museum by Mr. James Moss. It is supposed to have had two handles (one of which is lost), and each was also a spout. Its only ornament is a row of nail-head knobs.

Sir Henry Ellis, secretary, exhibited an oblong brass box containing a dial, a mariner's compass, and various tables, formerly called a Viatorium or German ring. The present specimen is marked B. S. 1587, and belongs to J. B. Heath, Esq., F.S.A., the Sardinian Consul-General.

A. J. Kempe, Esq., F.S.A., exhibited a copy by Albin Martin, Esq., made by permission of the Duke of Sutherland, of an ancient portrait now in his Grace's gallery at Sutherland-house, said to be that of Cardinal John Kempe, Archbishop of Canterbury, who died A.D. 1453. Mr. Kempe entered, on the authority of a MS. in the British Museum, some length into the memoirs of the cardinal, who was born at his paternal seat of Ollantigh, in the parish of Wye in Kent, A.D. 1380. He noticed his acts of munificence and those of his nephew, Thomas Kempe, Bishop of London, to Merton College, Oxford, his diplomatic employments, as *custos privati sigilli* in the reign of Henry V., and as lord chancellor in that of Henry VI. The authenticity of the portrait of Cardinal Kempe rests on the authority of Walpole, who probably inserted in his catalogue of the collection at Strawberry Hill such account as he had received with the picture. Mr. Kempe pointed out that certain panels which have been associated with this portrait and that assigned to Cardinal Beaufort were not by the same hand. One of these panels, representing a man in the act of adoration in a stable, bears the arms of Tate impaling Boleyn; another is said, in Walpole's catalogue, to represent Humphrey, Duke of Gloucester. Mr. Kempe's paper was accompanied by a diagram, shewing that this last panel was part of a group depicting "The Wise Men's Offering;" that the centre part of the composition, the Virgin and Child, was wanting; that the man kneeling in a stable was certainly Joseph, and completed the picture. The two panels said to represent Beaufort and Kempe, whatever the authenticity of their designation, were certainly distinct and by another hand. Mr. Martin's copy of the portrait attributed to Cardinal Kempe is a very spirited and faithful delineation of the original, which, as a work of art of the 15th century, has considerable merit.

The society then adjourned to the 14th of November.

**THE IRON TRADE.**—As an instance of the increasing briskness of the iron trade, we may mention that the shipping agent at Newport of a large establishment on the Hills, in one day last week, received by post advices of charter-parties for cargoes to be shipped amounting to 3,000 tons of railway iron. The rails are chiefly for Charleston, South Carolina.—*Monmouth Merlin.*

ARCHITECTURAL GEOMETRY, No. VI.  
STAIRCASE SCROLLS AND CURTAILS.

TO THE EDITOR OF THE BUILDER.

SIR,—In looking over the notes to correspondents in No. 43 of *THE BUILDER*, I find "A POOR CARPENTER" asks for the methods of describing scrolls and curtains for staircases: I therefore venture to send you the accompanying draughts. But permit me to say that correspondents, making such inquiries, should state the dimensions of the openings, upon which the proper sizes of scrolls and curtains do indeed materially depend; those, which I submit are  $\frac{1}{2}$  inch to the foot, so that their lines may be easily enlarged for actual practice.

Fig. 1 is for an eleven-inch example of a scroll, to be drawn from eight centres, which are shown by fig III., and are to be found in the following manner, viz.:—strike a circle 14 in. diameter; within which, from six equidistant points in the circumference, draw two intersecting triangles, and number their points 1, 2, 3, &c.; then draw lines round the polygon, continued indefinitely; and beginning at 1 as a centre, strike, with a radius of 64 inches, a circular curve line from the continuation of the line 1-2, till it meets the continuation of the line 2-3; then move the com-

passes to 2, and strike from thence the curve from the line 2-3 to the line 3-4; and so proceed till the scroll is complete, the radius growing less with each remove, and the involution being thus caused. Then draw the line A A to the centre 3; set the pitch-board, fig. VII., parallel with A A lines; draw the ordinates or the dotted A B, A C: then square off the pitch-board at C C: take off the distance from A A to C C on the pitch-board: and so proceed till the face-mould, fig. II., is complete.

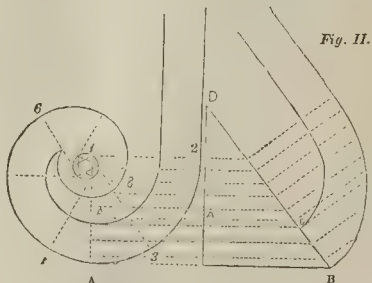
To obtain the falling-mould (fig. IV.), lay down on the pitch-board the lines 1, 2, 3; two inches from the bottom draw A A: at the point 3, measure from A to 5 on the scroll; set the same at A A of the falling-mould; A 2 the same; then divide the whole into equal parts in order to ease the curvature.

Fig. V. shews a curtain-step; the outer dotted line on the same figure shews the handrail; and the inner dotting indicates the pattern for the veneered block or riser.

Fig. VI. shows the mode of obtaining the centre for a nine-inch scroll, and fig. VIII. the same for an oval scroll: the numbers will direct the order of proceeding.

I am, Sir, your humble servant.

J. BELL, Joiner, Derby.

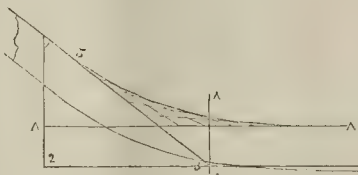


*Fig. 1.*

Fig. VII



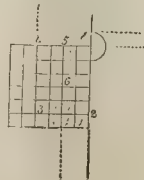
Fig. III



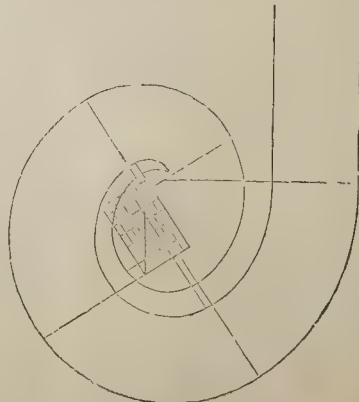
*Fig. IV.*



*Fig. V.*



*Fig. VI.*



*Fig. VIII.*



## CHURCH-BUILDING INTELLIGENCE, &amp;c.

*Opening of a New Church at Shirebrook, in the Parish of Pleasley.*—The ceremony of the opening of a new church in the hamlet of Shirebrook took place on Wednesday, the 19th ult. The church is in the Norman style, and is erected on a plot of land, the gift of the rector, the Rev. J. Holden, at the eastern extremity of the village of Shirebrook. The walls are of freestone, within and without. The bell is suspended over the western extremity, at which part of the church is the doorway. The interior is fitted with neat open stalls of oak, capable of accommodating from 250 to 300 persons. On entering the church, a font, in keeping with the style of the building, first arrests the eye, for which the church is indebted to the liberality of Mr. Joseph Nicholson, of Shirebrook, by whom it has been presented. The roof is oak, supported by beams, &c. The pulpit and desk occupy the south-west corner of the church, communicating with the vestry by a doorway in the eastern wall of church. The altar is a raised recess approached by steps from the nave. On each side is an oaken chair with a crimson cushion, one of which was presented by Mrs. Lucas, of Warsop Park, and the other by E. W. Wilmot, Esq., of Worksop. At the back of the communion-table is a crimson curtain, occupying the place of the ancient records. The whole of the furniture of the altar was presented by the ladies of Shirebrook. The eastern window consists of two lights; in the centre of the northern is a cross flory gules, the intersection or, around which, in a lozenge, is the following legend, taken from the Litany:—"By thy cross and passion, by thy precious death and burial, by thy glorious resurrection and ascension." In the southern light is a cross, as in the other, with a lozenge, containing the inscription: "I am the living bread that came down from heaven. If any man eat of this bread he shall live for ever." In the upper part of the northern light is the sacred monogram "I H S." At the top of the other light is the emblem of the Trinity, two interlaced triangles. The trifol above contains the emblem of the Holy Spirit. In the centre of the western window is a Latin inscription, from the pen of Dr. B. S. Kennedy, head master of Shrewsbury School. The architects of this little church are Messrs. Pateon and Hine, of Nottingham; Mr. Lindley, of Mansfield, the builder. The cost of the erection is about 600*l*.—*Doncaster Gazette*.

The late William Stevenson, Esq., of Stamford, has bequeathed 4,000*l*. for building a church at Deeping Fen; 200*l*. for keeping the same in repair; and 5,000*l*. for the purpose of providing an income for the minister.

## RAILWAY INTELLIGENCE.

*Leeds and Thirsk Railway.*—At a recent meeting of the provisional committee of this railway, the attention of Mr. Grainger, the engineer, was directed to an observation made by a Mr. Cabray, at a late meeting of the York and North Midland Railway Company, with reference to this railway, to the effect that a gradient of 1 in 95 would be attended with great danger—that it would have to be wrought by a fixed engine, and that it was the intention of the Leeds and Thirsk company to work some portion of it by ropes. That there may be no misunderstanding as to the expression used, we quote the report of the meeting. It is in these terms:—"Mr. Barstow asked Mr. Cabray, the resident engineer of the York and North Midland Company, whether a declination of 1 in 95 would not be attended with great danger? Mr. Cabray said no doubt of it. It would have to be wrought by a fixed engine; the company, he believed, proposed to work it by ropes." To the statement respecting the working any part of the line by ropes, he (Mr. Grainger) gave the most unqualified contradiction; it is not now, and never was, his intention to recommend any such thing. In regard to the danger apprehended on a gradient of 1 in 95, and the alleged necessity for working any part of this line by a fixed engine, he stated his opinion to be decidedly opposed to that of Mr. Cabray. In support of his opinion he referred to the Manchester and Liverpool Railway, the inclination of which, in approaching Rainhill

from Liverpool, is 1 in 96, and the descent in proceeding towards Manchester 1 in 89. He also referred to that part of the Grand Junction Railway, which adjoins Warrington, which is 1 in 85; to the Great Western Railway, upon which there is about four miles of 1 in 100; to the Eastern Counties Railway, where there is two or three miles of 1 in 100; to the Carlisle and Newcastle Railway, upon which there is about four miles, 1 in 106, with bad curves; to the North Union line, upon which gradients of 1 in 100 will be found in four or five different places. On the Bristol and Exeter line, too, the gradient of four or five miles was very little above 1 in 100. On the Gloucester and Birmingham line there is a gradient of 1 in 36, and on the Edinburgh and Glasgow there is a gradient of 1 in 42. Upon all these lines locomotive engines are now the only power employed in working the traffic both as to goods and passengers, and some of them have been so for the last ten or twelve years, and no complaint has been made as to their safety. As respects lines which have obtained the sanction of the legislature during the present session of Parliament, he said he might refer to the railway upon the west coast of England (which is to form the only connecting link between the Lancashire railways and those in the west of Scotland), upon which for several miles the gradient is 1 in 75, and Mr. Locke has no intention of working it either by ropes or fixed engines, or otherwise than by locomotive engines; and as to danger in so doing, it never had been mooted. Other lines in the south of England might be mentioned, but instances sufficient have been given to shew that the views of engineers have very recently undergone a new change respecting the mode of working, as well as the safety of steep gradients.—*Doncaster Gazette*.

*Eastern Counties Railway Extension.*—The works of this railway will shortly be commenced in good earnest. We understand, during the past week, Mr. Hardy Wells, the surveyor, on the part of Messrs. Crowder and Maynard, the solicitors to the company, has served a great many notices of taking the land for the works, and that Messrs. Woolley, from the Tithe Office, and Mr. Saunders, of Derby, are engaged to complete the purchases of the land that is necessary. We believe that the purchases in most cases will be amicably settled. Mr. Angerstein, one of the largest owners, is already settled with. The works of the Norwich and Brandon line, near the latter place, were commenced on Monday last.—*Ipswich Journal*.

*Ramsgate.*—A petition has been numerously signed by the inhabitants of this town, in support of the South-Eastern Railway Company's branch to Hastings. At present the journey from here to Hastings is very tedious, being nearly two days in the passage, having to go *via* Dover, Romney, Winchelsea, &c., or by London. The railway company's surveyors have commenced operations to enable them to take the level of the line; they have cut away about a yard wide of the standing crops between this place and Minster, and also between here and Margate.

*Railway Station at Ely.*—A large quantity of implements and materials have reached Ely within the last few days, and workmen are employed in building workshops, stables, &c. Preparations on an extensive scale are being made for the carrying on this undertaking: the double rail is to be carried on from Ely to Norwich, and the gage made so that the same carriages may go on to Yarmouth. The exact place for the station at Ely has not yet been determined upon, but it is said that it will be near the bridge, beside the Newmarket road.

*Railway from London to Maidstone.*—The London and Dover Company have directed Mr. R. Stephenson to survey the country between their Bricklayers' Arms Branch and Gravesend, and between Gravesend and Maidstone; also from the South-Eastern line to Rye Harbour; for which lines they intend to apply to Parliament next session.

*The South Devon Railway Bill* has now become law. The House of Lords, we understand, amended the Bill in several instances, as suggested by the Admiralty surveyor, Mr. Walker, with the assent of the other House. These alterations, it is estimated, will increase the cost of the line by 100,000*l*.

*Railway Legislation in France.*—The *Presse* of July 3 says:—"All the peers and deputies who have co-operated in the formation of railway companies have, we are assured, given in their resignations." The *Patrie* of yesterday evening doubts the truth of this statement, the Chamber of Peers not having yet sanctioned the amendment of M. Crémieux against deputies being connected with railroad companies.—*Galignani*.

*The Orleans Railway.*—The Orleans Railroad Company is establishing the electrical telegraph between the passengers' station at Paris, and the warehouse for goods and the workshops at Ivry.

*Bristol and Gloucester Railway.*—The connecting link between the Northern and Western Railways is at length completed.

It is proposed to open a railway from Highbridge to the city of Wells.

## Correspondence.

SIR,—The letter of "A Subscriber," in No. 73 of *THE BUILDER*, relating to the Derby Asylum, tells more tales than its author really intended; and although he has neither given his name or address, the puff-direct in the second paragraph is more than a proof from whose pen it emanates. The object of this letter is to tell you, Mr. Editor, what you already know has been the case in other instances, that this competition was really *no competition* at all, for it was well known to more than one party resident at Derby, who was to have the prize, even before the committee sat to decide; which is probably the reason why the said committee did not "even divide, but were unanimous for its adoption," as your "Subscriber," in the innocence of his heart, lets out. Your "Subscriber" further states that it is "certainly a very excellent plan." Indeed! and are all the "large and elaborate drawings" so far behind Mr. Duesbury's, as not to merit even a look from the committee? Mr. Duesbury I have known for some few years; I therefore know both him and his family connections, and can tell, as well as he does, which way the wind blows in the town of Derby.

Nearly all Mr. Duesbury's friends and relatives reside in or near Derby, and as they are intimately connected with all the families in the place, of respectability, they have ample opportunities of benefiting their *protégé* by getting a committee that will be very docile and unanimous in selecting the plan that was *wanted* to be chosen. I ask you, is there nothing in the fact, that the same party should have the only two public works at Derby that has been competed for in the short space of four or five years? The real fact is, that this competition has been got up precisely in the same way that many others have, the successful candidate being known *even before* the committee met to decide!

The last paragraph contains a complaint about the heavy expense which young architects unnecessarily put themselves to in getting fine pictures, instead of real, sober, legitimate drawings, in a plain architectural style; and I am sorry to say that the pictures (for I will not say drawings) which the Royal Academy seem to take most delight in fostering are precisely the kind of which your "Subscriber" complains; plain drawings, in nine cases out of ten, being rejected from the Academy, to make room for splashy pictures, with little or no architecture in them.

Competing now-a-days is a mere farce in most cases, and I am much surprised that young architects will give themselves the trouble, as well as incur a heavy expense, in the vain hope of success or employment; for a few years' experience would inform them that, in most cases, a *pet* is selected, and carried triumphantly through, against both the better skill and better drawings of his opponents.

As I am not an architect, I have no personal interest in the matter in question, but as I detest all jobs, I have given you my sentiments on the Derby competition.

I am, Sir, yours, very truly,

A SECOND SUBSCRIBER,  
(but no Competitor).



## THE NEW BUILDING-ACT.

SIR,—Be pleased to accept my best thanks for the insertion of my letter relative to the above subject. I think your proposition, as to the examiners for the new district surveyors, most excellent, for the very good and sound reasons you have given: a certificate from such a court, so constituted, would be valued by the profession, the surveyor himself, and the public generally, more than fifty from such a society as that of the Institute of British Architects; and as to the Civil Engineers, I think they have quite enough to do, particularly just now, to properly attend to their own important affairs (made so certainly by their own glorious exertions), without interfering with such intricate matters as those embraced in a Building-Act. It is a deep move on the part of the I. B. A. to couple themselves with such a well-established society as that of the Engineers; and I hope those members of the profession, not belonging to the Institute, will see through it, and call to mind the old proverb that "drowning men catch at straws."

As small street houses will cover more space, and be more expensive to erect, the tenants will of necessity be obliged to let off as much as possible, to enable them to pay the additional rent; the consequent evil will follow of overcrowding them with inhabitants; therefore, it will be important, when erecting them, to embrace any means of cheap ventilation. I venture to throw out the above hint, with the hope that some regulations for this desirable purpose may be inserted in the new Bill.

I remain, Sir, your obedient servant, M. P. S. In THE BUILDER, No. 35, is a plan described for this purpose.

## FELT ROOFING—SMELL OF TAR.

SIR,—I have tried the Felt-roofing recommended some time since in your periodical, and find it a most excellent and serviceable article for the purpose. But I find this evil in it—the material with which it is directed to be painted is gas-tar mixed with lime, the smell from which is sickly and offensive, and affects the air of the interior of the buildings covered with it. Can any of your correspondents furnish a recipe for removing the smell?

If the felt were painted instead of tarred, there would still, I imagine, be a smell arising from the asphalt itself, rendering it an objectionable covering for dwellings.

I remain, Sir, your obedient servant,  
Folkstone, July 8. K. D.

## Miscellaneous.

THE COMMISSIONERS OF SEWERS AND THE THAMES EMBANKMENT.—Since the recent inundations of the river Thames on the inhabitants of the south shore, the commissioners have betaken themselves to the only method of removing the evil—namely, the sinking of the sewers and drains many feet below the present level. The fact is notorious along the neighbourhood of Bankside, that long before the tide overflowed the quays and wharfs, the cellars and streets in the rear were filled with water, which came up through the several drains and cesspools, not only causing the greatest alarm and confusion, but inflicting much injury on the public health. The commissioners have at length been made sensible of this evil, and several hundred men are now actively employed in this most necessary undertaking. Mr. Rose, the architect of St. Saviour's, states that the whole of the mischief done both to health and to property by the supposed overflowing of the south bank of the Thames is attributable alone to the long-neglected and defective sewerage.

BRISTOL—SOUTHERY.—Some friends and admirers of the late poet-laureate, residing in Bristol and its neighbourhood, of which city the poet was a native, are desirous of marking the sense they entertain of his worth and genius, by the erection of a monument in the Cathedral. The Mayor, the Bishop of Gloucester and Bristol, Lord Jeffery, W. S. Landor, Esq., and J. Cottle, Esq., have headed a list of contributions.

YORK MINSTER BELLS.—Two of the bells, which complete the Beckwith peal, arrived at York on Saturday morning last.

RIVER DUN IMPROVEMENTS.—These improvements progress very satisfactorily. The company's workmen, numbering nearly one hundred, have commenced re-building the bridges on the line of the canal from Sandall to Stainforth. There are five bridges, and these for the future will be made of wood, and swing, in order that vessels in full rigging may be able to pursue their course along the river without any interruption. On the completion of the bridges, the passages in the canal underneath the bridges will be widened. The various bridges between Thorne Waterside and Goole have also lately received considerable improvements, especially Goole Bridge, which will now admit of the steam-packets passing to and fro with a space of eight feet to spare, where formerly there was only a few inches, to the great danger at that time of the steamers plying on the river. The River Dun Company are in treaty with the proprietors of the Stainforth and Keadby Canal for the purchase of their canal, which would give a still better communication with Hull and Doncaster. The present draught of water in the river Dun is about six feet three inches, and in the Keadby Canal seven feet. This, however, could easily be raised three feet, by taking eighteen inches from the bottom and laying it upon the tops of the banks. It is presumed, if the River Dun Company should purchase the Keadby Canal, they will make a short canal in order to join the Dutch river, which would lessen the distance between Hull and Doncaster considerably. The distance is at present, either *via* Thorne Waterside or the Keadby Canal, about fifty-two miles.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—The first wing of this institution, of which Prince Albert laid the first stone on the 11th ult., is now in progress. It is so planned as by successive additions to accommodate from 100 to 250 patients. The interior arrangements having, after very mature deliberation, been adopted by the medical officers and approved by gentlemen of experience in such matters, it is expected that the new hospital will offer facilities for treating consumption which no other institution possesses. In the warming and ventilation, the temperature will be made to approximate to different climates, and the atmosphere of particular apartments will be impregnated with various gases and vapours. A chapel, designed by the same architect, F. J. Francis, Esq., will be attached to the hospital.

YORKSHIRE ARCHITECTURAL SOCIETY.—On Tuesday week, a meeting of the committee of the Yorkshire Architectural Society was held in the society's museum, Minster-yard, York. At two o'clock in the afternoon, the meeting was opened to the public. The Venerable Robert Isaac Wilberforce, Archdeacon of the East Riding of Yorkshire, in the chair. A paper was read by the Rev. Charles Whately, rector of Rise, upon the architecture of Swine Church, and a highly interesting detail of an ecclesiastical ramble in the northern part of Yorkshire read by J. W. Huggall, Esq., of Oulton, being one of a party of three who recently visited the churches in that riding. The society having fitted up a large room belonging to the Dean and Chapter of York, will henceforth hold quarterly meetings in that city, the next meeting being fixed for the 24th of October.

ANCIENT RELICS.—The men employed in excavating the new road to Leckhampton-hall, on Tuesday last, in removing a tumulus, discovered the skeleton of a man, with his teeth entire. From a helmet and several portions of armour being found with the bones, it is conjectured to be the remains of a Dane, who from the manner of sepulture must have borne distinguished military rank, and which had rested in the peaceful grave for nearly one thousand years. This conjecture is the more probable, as some few years since a skeleton was disinterred at Shurdington, over which a stone with an inscription denoting who remains it covered was found.—*Cheltenham Examiner*.

York Minster was re-opened on Friday week, after having undergone a complete restoration.

The whole line of coast from Dover to the Land's End is to be surveyed, with a view to its fortification.

WINCHESTER.—It is recorded by Dr. Milner, the learned author of the History and Antiquities of Winchester, that the cathedral which existed before the present structure was commenced by Bishop Walkelyn, about the year 1080, extended some feet further to the west. This statement is now verified in a curious manner: from the long-continued drought, the grass growing over the spots where the foundations were presents the appearance of being burnt, and the plan of the foundations is as distinctly visible as if but just marked out. A similar result is produced in the meadow adjoining the College, called "the Elizabeth Mead," where the ground-plan of a church or chapel is clearly and distinctly defined by the burnt appearance of the grass. In this meadow formerly stood a College dedicated to St. Elizabeth, and a Chapel of St. Stephen. The plan of the building now visible is therefore that of St. Stephen's Chapel, or of the Church of the College of St. Elizabeth.—*Wiltshire Independent*.

KILMERSDON.—THE EMPEROR TRAJAN.—A silver coin of this reign, in excellent preservation, was lately dug up at Cherry Garden Farm, the residence of Mr. William Ford. The bust of the Emperor is executed in a remarkably bold and striking manner, surmounted with the initials S.P.Q.R. It must have been struck off soon after Trajan conquered the kingdom of Dacia, and added it as a province to the Roman empire, A.D. 103, as the word Dacia is on the coin, also his titles of Augustus, Germanicus, and Optimus Princeps—the last "the best of Princes," awarded to him for his virtues. On the reverse is an elegant figure of a female at full-length, probably his Empress Plotina Pompeia. The die must have been a beautiful specimen of workmanship, far surpassing any that our mint can produce.—*Somerset Gazette*.

## Tenders.

TENDERS delivered for erecting a Grand Stand on Northampton Race-course.—J. Elliott, Architect.—June 23, 1844.

Whitney .....	£1,500
Fisher .....	1,368
Harris .....	1,477
Smith and Son .....	1,445
Robinson and Sparkes .....	1,265

TENDERS delivered for building nine third-rate Houses in the Old Kent-road, for John Gurney.—J. Bird, Esq., Architect.—June 29, 1844.

Harris .....	£5,900
Hall .....	5,619
Ashbey .....	5,495
Hains .....	5,494
Lawrence .....	5,287
T. Bursenshaw .....	4,971
Hadnutt .....	4,867

TENDERS delivered at the Board Room, Mount-street, for the erection of Industrial Schools at Little Chelsea.

Armstrong and Smith .....	£9,400
Gillot .....	9,192
Dixon .....	9,127
Cashell .....	8,980
Bird .....	8,798
Reid .....	8,770
Herbert .....	8,690
Hicks .....	8,655
Higgs .....	8,584
Elgin .....	8,468
Winsland .....	8,389

## NOTICES OF CONTRACTS.

For certain alterations and additions at the Workhouse at Stamford Rivers, Chipping Ongar.—Plans, &c., at the Workhouse. W. Baker, Clerk. July 22.

For erecting two Chapels, Entrance Lodge, and necessary outbuildings, at the Cemetery now in progress on the Southampton Common. Mr. Doswell, Albion-place, Southampton. July 18.

For the erection of a Building on the premises of the Workhouse of the parish of St. Mary, Newington.—Plan, &c., Mr. Edmonds, Surveyor, Bridge-street, Southwark. July 15.

For certain alterations and additions to the Treadwheels, and for Air Pumps to be connected therewith, and also for certain Hand Crank Machines for hand labour at Norwich Castle.—Drawings &c., at the Castle.—Further information, Mr. Brown, County Surveyor, Norwich. July 19.



# The Builder.

NO. LXXVI.

SATURDAY, JULY 20, 1844.



**D**URING the time which has elapsed since public view was first given of the

Cartoons and Frescos which are now exhibiting in Westminster-hall, for a shilling each on Saturdays, and gratis at all other times, from 9 o'clock in the morning till 7 in the evening, we have up to the present time, by the

honourable duties of following important architectural legislation, been unable to go into the merits of these works of art, which have been sent in, in order that a selection might be made of artists fit to have intrusted to them the care and honour, and, we trust, substantial profit, of decorating the new Houses of Parliament.

In the meanwhile, that selection has been made, and will, on the whole, we deem, be satisfactory. There are other artists among the exhibitors whose works are meritorious, and they may perhaps, upon further consideration, have been confided to them some portions of the quantity of work, huge as we trust it must necessarily be.

The following is an account of the selections which have been made:—

The final meeting of the Commissioners of Fine Arts for the present season took place on Friday week, at Gwydyr House, Whitehall; when the opinion of that body on the merits of the respective artists contributing to the exhibition of fresco paintings and other works now on view in Westminster Hall, was formally pronounced by the selection of six individuals from among their number, whom it has been determined to commission to execute works on given subjects, for the decoration of the new Houses of Parliament.

The commissioners present were Viscount Palmerston, Lord Mahon, Lord Colborne, Mr. Macauley, Mr. Gally Knight, Mr. Hawes, and Mr. Vivian. His Royal Highness Prince Albert, the President, and the other absent commissioners, having previously recorded their opinions in favour of the artists selected, no difficulty arose from their non-attendance, and some preliminary business having been transacted, the names of the successful competitors were declared as follows:—

Charles West Cope, Hyde Park-gate, Kensington-gore.

John Calcott Horsley, 1, High-row, Kensington Gravel-pits.

William Dyce, 1 A, Royal-terrace, Adelphi. Daniel Maclise, 14, Russell-place, Fitzroy-square.

Richard Redgrave, Hyde Park-gate, Kensington.

William Cope Thomas, 27, Baker-street, Portman-square.

Mr. Cope, the first-named gentleman, received a first-class prize of 300*l.* for his cartoon of the "First Trial by Jury," in the exhibition of 1843. He has only one subject in the present exhibition—a fresco marked No. 53 in the catalogue, and entitled "The Meeting of Jacob and Rachel."

Mr. Horsley received a second-class prize of 200*l.* in 1843 for his cartoon of "St. Augustine Preaching to Ethelbert, and Bertha, his Christian Queen." He has two frescos in

the present exhibition—the one, No. 9, entitled "Prayer," the border to which was designed and painted by Mr. Owen Jones; and the other, No. 63, entitled "Peace."

Mr. Dyce's name did not appear in the catalogue of the cartoon exhibition last year, but he has a subject among the frescos now exhibiting. It is marked No. 66 in the catalogue, and entitled, "Two Heads, from a Composition, representing the Consecration of Archbishop Parker in Lambeth Chapel, A.D. 1559."

Mr. Maclise, the well-known artist, contributes to the present exhibition a fresco, unpretendingly described in the catalogue, "No. 74, The Knight."

Mr. Redgrave, a name also not appearing in the catalogue of 1843, is the artist of No. 51, among the frescos now exhibiting. It has excited considerable notice, and is entitled "Loyalty: Catherine Douglas barring the Door with her Arm to withstand the Assassins of James I. of Scotland."

Mr. Thomas was a successful competitor in 1843, having received an additional premium of 100*l.* for his cartoon of "St. Augustine preaching to the Britons." He contributes to the present exhibition three subjects: a cartoon, a fresco, and an oil painting, respectively marked—Nos. 52, 54, and 55.

The following is a copy of the circular addressed to each of the artists selected by her Majesty's Commissioners to execute certain designs for the decoration of the new Houses of Parliament:—

Whitehall, July 15.

"SIR,—I have to acquaint you that her Majesty's Commissioners on the Fine Arts, with the sanction of the Lords Commissioners of her Majesty's Treasury, have resolved that six arched compartments in the House of Lords, each measuring 9 feet 3 inches wide by 16 feet high to the point of the arch, shall be decorated with fresco paintings; that the subjects of such fresco paintings shall be illustrative of the functions of the House of Lords, and of the relation in which it stands to the sovereign; that the subjects of three of the said fresco paintings shall be personifications or abstract representations of religion, justice, and the spirit of chivalry; and that the three remaining subjects corresponding with such representations, and expressing the relation of the Sovereign to the Church, to the law, and, as the fountain of honour, to the State, shall be—the Baptism of Ethelbert; Prince Henry, afterwards Henry V., acknowledging the authority of Chief Justice Gascoigne; and Edward the Black Prince receiving the Order of the Garter from Edward III.

"I have further to acquaint you that the commissioners have resolved, with the sanction of the Lord Commissioners of her Majesty's Treasury, to employ six artists, selected by the commissioners from the present exhibitors in Westminster-Hall, to prepare designs for the subjects abovementioned, and that the commissioners have selected you as one of the six artists to be so employed, under the following conditions:—

"You are required to prepare a cartoon, being a design for one of the aforesaid subjects. The size of the cartoon is to be 9 feet 3 inches wide, by 16 feet high to the point of the arch, and 10 feet 3 inches high to the springing of the arch (outlines in lithography, shewing the form of the arch in the compartments referred to, may be obtained at the architect's office, New Palace-yard). You are further required to prepare a coloured sketch, not less than 18 inches in its shortest dimension, of the entire design represented in your cartoon, and a specimen of fresco painting, not less than 3 feet in its shortest dimension, representing a part of the design in the full proportion.

"You are required to send in such cartoon, coloured sketch, and specimen of fresco painting, during the first week in June, 1845, for exhibition, to Westminster-Hall.

"You are to be remunerated for the works aforesaid with the sum of 400*l.*; but the commissioners do not bind themselves to employ you finally on the fresco paintings in the House of Lords.

"I have further to acquaint you that the six subjects are distributed among the six artists as follows:—

"The subject of Religion is given to Mr. Horsley.

"The subject of Justice is given to Mr. Thomas.

"The subject of Chivalry is given to Mr. Maclise.

"The subject of the Baptism of Ethelbert is given to Mr. Dyce.

"The subject of Prince Henry, afterwards Henry V., acknowledging the authority of Chief Justice Gascoigne, is given to Mr. Redgrave.

"The subject of Edward the Black Prince receiving the Order of the Garter from Edward III. is given to Mr. Cope.

"I have further to acquaint you that, although the six subjects are required to be undertaken by and among the six artists, the artists are at liberty to exchange subjects; and that, although the commission given to each artist is for one only of the aforesaid subjects, each artist is at liberty to treat any other of the said subjects, in addition to the one subject, which he is commissioned to undertake.

"I have further to acquaint you that a general competition is invited among artists for designs for the same subjects, to be prepared by the time before specified; and that the six commissioned artists are not allowed to be competitors for the premiums offered for such designs.

"I am, Sir, your obedient servant,  
"C. L. EASTLAKE, Secretary."

It will be observed, from the last paragraph of this letter, that a general competition is invited; and as an encouragement to artists who have not been selected, the commissioners offer three premiums of 200*l.* each, for the best subjects produced. Thus another exhibition, perhaps exceeding in interest those already opened, will take place in the summer of next year. Advertisements, also, have been issued, offering premiums amounting to 3,000*l.* for designs painted in oil.

On the whole, those who have had their fears relative to the execution of fresco will, we imagine, not be disappointed, either by the exhibition or the selection. We think some one grand subject, requiring the expression of vast space and multitude, the management of the long-drawn perspective of cathedral architecture, or the gigantic effect of Druidical remains, should be given to John Martin, so that posterity may have preserved, in an honourable place, some good picture of that clever man's work.

With regard to fresco painting, we think a great improvement might be made upon it by rendering it in fact fresco-mosaic, the whole substance, except the rough under-ground-work of the plastering, being worked to the shapes of the cartoon with different coloured plasters, and with only the finer parts of the finish done in fact in fresco; this would prevent, in a great measure, the damage by chipping, whereby some of the trial-pieces have already suffered.

In the cartoons, we observe the same defect as in almost every thing else which has been exhibited for selection for the Houses of Parliament, viz. a want of propriety to the purpose in architecture and ornament. How very defective our schools of painting and sculpture are in this particular we must lament, because while this is the case, great danger exists that patrons will force upon the architect, against the sternness of his firm taste and belief, subjects which sin by being inappropriate for the purpose. In fact, designers, painters, and workers generally, now Gothic architecture has been so much revived, require to be in many cases re-educated, in order to do their work in a style right for such purposes.

We now proceed to give our own judgment upon the subjects of trial.

1. Encounter between Cæsar and Cassivellanus on the Banks of the Thames, second invasion. (Cartoon.) 15 ft. wide, 9 ft. high. By Henry Melling.

This subject is well painted, forming a



busy historical scene; though, perhaps, the faces of the figures do not sufficiently exhibit the excitement of battle.

5. Landscape and Figures, recollections of Naples. (Fresco.) The arabesque border in tempera. 8 ft. wide, 6 ft. 7 in. high. By Augustine Aglio.

This fresco has a depth of colouring, a sparkling brilliancy of light, contrasting effectively with shade, and a delicacy of execution, which, although the subject be not one suitable to the purpose, shews it to be, as far at least as outward appearance, apart from the question of durability, goes, the best in the exhibition. While viewing the perfect beauty of the mountain and sky distance, in which there is a total freedom from that disagreeable, unnatural, and forcibly strong effect which is but too prevalent in frescoes, the beholder forgets the meaner taste, the injurious and destroying effect of the more gaudy arabesque bordering which surrounds the work.

9. Prayer. (Fresco.—The border designed and painted by Owen Jones.) 3 ft. 2 in. wide, 4 ft. 2 in. high. By John Calcott Horsley.—The artist received a premium of 200*l.* in 1843, for a cartoon representing St. Augustine preaching to Ethelbert, and Bertha, his Christian Queen.

This fresco is, on the whole, well painted, though the figure has an unfinished effect, especially in the drapery, and this effect is exaggerated by the gorgeous richness of the border, which is beautifully executed, yet somewhat unsuitably for the architecture, being a cross-breed between the Byzantine and the Moresco styles.

14. The overthrow of the Druids. (A study in oil for fresco.) 14 ft. 11 in. wide, 9 ft. 11 in. high. By E. Butler Morris.—Suetonius Paulinus finding that the island of Mona, now Anglesey, was the chief seat of the Druids, he resolved to attack it, and to subject a place which was the centre of their superstitions. The British women and priests were intermingled with the soldiers, running about with flaming torches in their hands; and tossing their dishevelled hair, they struck terror into the astonished Romans. But Suetonius exhorting his troops, impelled them to the attack, drove the Britons off the field, burned the Druids in the same fires which those priests had prepared for their captive enemies, and destroyed all the consecrated groves and altars.

A very proper subject, but the effect of the figures of Britons is injured by the appearance of fright not being kept up in the faces; indeed, one figure, while its limbs exhibit the effect of intense fear, has a countenance which betrays rather satisfaction, and even a feeling of extreme beatitude rather than extreme terror.

15. (Cartoon) 6 ft. 10 in. wide, 6 ft. 5 in. high. By George Page.

"Others more mild,  
Retreated to a silent valley, sing  
With notes angelic to many a harp,  
Their own heroic deeds and hapless fall  
By doom of battle: and complain that fate  
Free virtue should enthrall to force or chance."

MILTON'S PARADISE LOST, Book ii.

Good, though the faces of the figures are too much alike.

19. Discovering the Body of Harold. (A study in oil for fresco.) 6 ft. 8 in. wide, 9 ft. 8 in. high. By E. Butler Morris.—"Two Saxon monks, Osgod and Ailrik, deputed by the Abbot Waltham, proceeded to the heap of slain that had been spoiled of armour and of vestments, and examined them carefully one after another, but he whom they sought for had been so much disfigured by wounds that they could not recognize him. Sorrowing, and despairing of succeeding in their search by themselves, they applied to a woman whom Harold, before he was king, had kept as his mistress, and entreated her to assist them. She was called Edith, and poetically called the Swan-necked. She consented to follow the two monks, and succeeded better than they had done in discovering the corpse of him whom she had loved."

Of considerable merit, the colouring subdued; differing materially from the gross unartistic and unharmonious contrasts which pervade much of the ancient Roman, Byzantine, and modern Italian frescoes; but the effect of torch-light is not sufficiently sparkling and brilliant.

23. A study. (Fresco.) 2 ft. 4 in. wide, 3 ft.

high. By Augustine Aglio, jun.—Shews good workmanship.

25. Council of Ancient Britons. Nucleus of the British Parliament. (Oil painting.) 11 ft. 1 in. wide, 8 ft. 10 in. high. By Wm. Riviere.—"The glory of the forest was once a simple acorn; in like manner (under Divine Providence) this mighty empire, from its rude and primitive state, has become the greatest among nations. Seated under an oak, and listening to the counsel of a Druid, is represented an ancient British chief. On either side, the bard and counsellor. Reclining at his feet, a youth, whose office is armour-bearer. Dogs, used in war, and ancient Britons form the auxiliary group. The Druids, who were their priests, possessed great authority among them; thus the bands of government, naturally loose among that rude and turbulent people, were happily corroborated by the terrors of their superstition."—HUME'S HISTORY OF ENGLAND.

Of considerable merit. In this cartoon the propriety of brilliant light, and depth of shade, and the effect of gradation of tone, are better preserved than in any other oil-painting or cartoon in the exhibition. It requires alteration to be made in some of the figures, the attitudes of which are too much in the Grecian-god-style.

27. Alfred the Great. (Oil painting.) 4 ft. 2 in. wide, 4 ft. 2 in. high. By Alex. Christie. A capital performance; though the monarch is over-burthened with a heavy folio volume and other accoutrements, and the surrounding frame has the common defect of being too glaring.

28. A wounded Greek. (Fresco.) 3 ft. 3 in. wide, 4 ft. 3 in. high. By F. P. Stephanoff. The artist received one of the additional premiums of 100*l.*, in 1843, for a cartoon, representing the Brothers releasing the Lady from the Enchanted Chair of Comus.

"Oh, woman, in our hours of ease,  
Uncertain, coy, and hard to please;  
When pain and anguish wring the brow,  
A ministering angel thou."

A beautiful and painter-like performance; yet though deep in colouring, perhaps a little too sketchy for the purpose.

36. Head of Alfred. (Fresco.) 2 ft. 8 in. wide, 2 ft. 6 in. high. By Harold John Stanley.—Clever.

37. Study for a Head of David. (Fresco.) 2 ft. 5 in. wide, 3 ft. high. By S. A. Hart.

"Unto Thee I lift up mine eyes,  
Thou that dwellest in the Heavens."  
123rd PSALM, verse 1.

Managed adroitly.

39. The Trial of Canute. (Cartoon.) 14 ft. 10 in. wide, 10 ft. high. By John Martin.—"Canute, from his warlike ability surnamed the Brave; from his renown and empire, the Great; from his liberality, the Rich; and from his devotion, the Pious. Canute seems to have been one of those men who feel that they are born to merit the approbation of future generations, and whose actions become sublimer as their name seems likely to be perpetuated. He lived to posterity as well as to his country. It was in this strain that having, in a moment of intemperance, killed a soldier, and by that criminal deed violated a law which he had enforced on others, he assembled his troops, descended from his splendid throne, arraigned himself for his crime, expressed his penitence, but demanded a punishment. He proclaimed impunity for their opinions to those whom he appointed his judges; and, in sight of all, cast himself humbly on the ground, awaiting their sentence. A burst of tears at his greatness of soul bedewed every spectator. They respectfully withdrew to deliberate, as he had required, and at last determined to let him appoint and inflict his own punishment. The king accepted the task. Homicide was at that time punishable by a mulct of forty talents. He fined himself three hundred and sixty, and added nine talents of gold as a further compensation."—SHARON TURNER'S HISTORY OF THE ANGLO SAXONS, chap. 10.

The painter has, in this cartoon, produced his usual effect of great space, and of a vast multitude: the architecture, too, with Saxon column and arcade continued in long perspective, betrays the hand of this artist; but there is some want of the dignified effect of repose, which, in historical subjects, should accompany the action; the treatment is too dra-

matical for English history, and some of the figures are too short and fat to be elegant.

47. Wat Tyler. (Cartoon.) See No 28. 12 ft. wide, 8 ft. high. By F. P. Stephanoff.—"Tyler having ordered his men to retire till he should give them a signal, feared not to come into the midst of the royal retinue. He there behaved with such insolence, that Walworth, the mayor of London, not able to bear his rudeness, drew his sword and struck him to the ground, where he was immediately dispatched by the king's attendants. The rebel prepared for revenge, and the whole company would have been sacrificed to their fury, when Richard, with extraordinary presence of mind, turned to the enraged multitude, and cried, 'What is the meaning of this disorder, my good people, are you angry that you have lost your leader? I am your king, I will be your leader.'"

A good cartoon; painter-like, but, perhaps, too busy in effect.

48. A Study. (Fresco.) 4 ft 9 in. wide, 5 ft. high. By E. Armitage.

49. A Bohemian Fortune-Teller. (Fresco.) 4 ft. wide, 5 ft. 1 in. high. By E. Armitage.

These figures are finely brought out by intense blue back-grounds, yet their effect is unsatisfactory and unpainter-like.

51. Loyalty. Catherine Douglas barring the door with her arm to withstand the assassins of James I. of Scotland. (Fresco.) 3 ft. 11 in. wide, 8 ft. 2 in. high. By Richard Redgrave.—"Unattended even by a body guard, and confiding in the love of his subjects, James was residing within the walls of the Carthusian Monastery at Scone, which he had founded and endowed. Graham, of Stathearn, seized the occasion and brought down a party by night to the neighbourhood. Seconded by traitors within, he gained possession of the gates and interior passages. The king's first intimation was from his cup-bearer, William Straton, who, on leaving the chamber in which the king and queen were at supper, found the passage crowded with armed men, who answered his cry of alarm by striking him dead. The noise reached the royal chamber, a rush of the assassins followed, and Catharine Douglas, one of the queen's maids of honour, springing forward to bolt the door of the outer apartment, found the bar had been clandestinely removed; with resolute self-devotion she supplied the place with her naked arm."

A good single figure, with a clever sketch for the whole subject, to consist of two compartments besides the subject of the fresco.

53. The Meeting of Jacob and Rachel. (Fresco.) 4 ft. 9 in. wide, 7 ft. 4 in. high. By C. W. Cope.—"And Rachael came with her father's sheep; for she kept them. And it came to pass when Jacob saw Rachel, the daughter of Laban, his mother's brother, that Jacob kissed Rachel, and lifted up his voice and wept. And Jacob told Rachel that he was her father's brother, and that he was Rebecca's son; and she ran and told her father."

A good subject, treated in a painter-like style.

52. The Throne of Intellect. (Cartoon.) 17 ft. wide, 9 ft. 6 in. high. By William Cave Thomas.—(This Artist, who is professor of fresco painting to the College of the Freemasons of the Church, received one of the additional premiums of 100*l.* in 1843, for a cartoon, representing St. Augustine preaching to the Britons.)

This beautiful cartoon, which is principally painted in neutrals, has gained for its artist the approval of the commissioners. The principal figure betrays a wonderful air of thoughtful intelligence, and an effect of sublime philosophy, truly inimitable.

54. Philosophy. (Fresco.) See No 52. 5 ft. 3 in. wide, 7 ft. 9 in. high. By W. C. Thomas.

This fresco is of the principal figure in Mr. Thomas's cartoon, and is very fine in effect; though we think what it has gained upon the cartoon by colour it has lost by the background of gilding, which, in addition to its lowering the tone of brilliancy of the colouring, being upon the plastering, has a rough and Dutch-metal-like effect.

55. The Throne of Intellect. (Oil painting.) See No 52. 17 ft. wide, 9 ft. 10 in. high. By W. C. Thomas.

This is the same design as No. 52. The



figures are in the style of Raphael, something too light, and as if prepared for the browning of time, and for a situation not over light; perhaps the extreme beauty of the separate figures outvies the merit of the whole composition. In drawing, in fresco, and in oil, this painter shews himself to be a man to be employed.

59. The Building of Oxford University. (Fresco.) 8 ft. 2 in. wide, 6 ft. 2 in. high. By Marshall Claxton.—"Alfred founded the University of Oxford, and endowed it with many privileges and revenues; he invited over the most celebrated scholars from all parts of Europe."—HUME'S HISTORY OF ENGLAND. A beautiful work; with colouring over-strong, seemingly purposely for the fading of time.

60. The Parting of Sir Thomas More and his daughter Margaret Roper. (Fresco.) By S. A. Hart.—"When Sir Thomas More came from Westminster to the Tower-ward again, his daughter, my wife, desirous to see her father whom she thought she should never see in this world after, and also to have his final blessing, gave attendance about the Tower Wharf, where she knew he should pass by, before he could enter into the Tower. There tarrying his coming, as soon as she saw him, after his blessing, upon her knees reverently received, she hasting towards him without consideration or care of herself, pressing in amongst the midst of the throng and company of the guard, that with halberds and bills went round about him, hastily ran to him, and there openly in sight of them all, embraced him and took him about the neck and kissed him, who well liking her most natural and dear daughterly affection towards him, gave her his fatherly blessing, and many godly words of comfort besides. From whom, after she was departed, she, not satisfied with the former sight of her dear father, and like one that had forgotten herself, being all ravished with the entire love of her dear father, having respect neither to herself nor to the press of people and multitude that were there about him, suddenly turned back again, ran to him as before, took him about the neck, and divers times kissed him most lovingly; and at last, with a full heavy heart, was fain to depart from him; the beholding whereof was to many of them that were present thereto so lamentable, that it made them for very sorrow thereof to weep and mourn."

Very fine; the colouring and depth of tone good.

62. Milton dictating to his Daughters. (Fresco.) 8 ft. 1 in. wide, 5 ft. 6 in. high. By John Bridges.—(The artist received a premium of 100*l.* in 1843, for a cartoon representing Alfred submitting his Code of Laws for the approval of the Witan.)

"Of man's first disobedience, and the fruit  
Of that forbidden tree, whose mortal taste  
Brought death into the world, and all our woe,  
With loss of Eden, till one greater Man  
Restore us, and regain the blissful seat,  
Sing, heavenly Muse."

"What in me is dark  
Illumine; what is low, raise and support;  
That to the height of this great argument  
I may assert eternal Providence,  
And justify the ways of God to men."

An extremely beautiful composition—by singular coincidence having three figures much in the same position as those of Mr. Thomas's subject.

63. Peace. (Fresco.) 8 ft. 2 in. wide, 6 ft. high. By John Callcott Horsley.

A picture of sweet repose, in Raphael's style, over-light.

64. Death of Thomas à Becket. (Cartoon.) 9 ft. 7 in. wide, 12 ft. 4 in. high. By J. Cross. A very fine subject.

66. Two Heads, from a Composition representing the Consecration of Archbishop Parker in Lambeth Chapel, A.D. 1559. (Fresco.) 3 ft. wide, 2 ft. 5 in. high. By Wm. Dyce.

Of great merit; yet, perhaps, not sufficiently finished for a near view.

68. King John signing Magna Charta. (Fresco.)—The border painted in encaustic by William A. Parris. 7 ft. 11 in. wide, 11 ft. 4 in. high. By E. T. Parris.—(The artist received a premium of 100*l.* in 1843, for a cartoon representing Joseph of Arimathea converting the Jews.)

A very fine subject; perhaps over rich, and in manner less quiet than Mr. Thomas's design.

The gilding and other ornamental work surrounding the picture, though mayhap over rich, are however, in taste better for the purpose than most which have been exhibited.

74. The Knight. (Fresco.) 6 ft. 2 in. wide, 8 ft. 2 in. high. By Daniel Maclise.

A fine subject, with rich colouring, which is, however, too much broken up into deep shady portions; it is painter-like, but falls of the harmony and repose shewn by Mr. Thomas's works.

75. Justice. (Fresco.) 4 ft. 2 in. wide, 6 ft. 3 in. high. By James Henry Nixon.

Colouring and finish good, but the outlines of the small figures not sufficiently subdued.

80. Luna and Endymion. (Fresco.) 8 ft. 3 in. wide, 5 ft. 5 in. high. By E. V. Rippinghille.—(The artist received one of the additional premiums of 100*l.* in 1843, for a cartoon representing the Seven Acts of Mercy.)

Very beautifully painted, though not a subject proper for the purpose.

We shall next week again take up the subject, and more particularly that of the sculptures, now exhibited with the cartoons and frescos, though a selection in this particular has also been made, as will be seen by the notice to that effect here subjoined. **e.**

#### ROYAL COMMISSION OF FINE ARTS.

In addition to the selection of six artists to execute designs for frescos in the new Houses of Parliament, it will be seen from the subjoined interesting document, that her Majesty's Commissioners of Fine Arts have chosen three sculptors from among the number contributing to the exhibition in Westminster Hall, whom they recommend for employment on such works as may be hereafter required for the purposes of decoration in the New Palace.

The letter runs thus:—

"Whitehall, July 9, 1844.

"We the undersigned, having inspected the models for sculpture submitted to us in Westminster Hall, are of opinion that the exhibition is highly creditable to the country. We have recorded our judgment on the merit of many of the works of the exhibitors; but not being at present in possession of sufficient information as to the extent of the decorations in sculpture which may be considered desirable in the Palace at Westminster, or as to the time when such decorations may be required, we have thought it expedient to limit our present selection to those artists whom we consider have especially distinguished themselves in the exhibition referred to; and we hereby recommend the following artists—viz., W. Calder Marshall, John Bell, and John Henry Foley, for employment on such works in the Palace at Westminster, and for such remuneration as may hereafter be determined. At the same time, we wish it to be understood that the present selection does not by any means imply the exclusion of other sculptors, whether they may or may not have exhibited specimens of their ability on the present occasion.

"ALBERT.	"C. S. LEVEVRE.
"SUTHERLAND.	"R. PEEL.
"LANSDOWNE.	"J. R. G. GRAHAM.
"LINCOLN.	"T. B. MACAULAY.
"ABERDEEN.	"H. G. KNIGHT.
"PALMERSTON.	"B. HAWES, jun.
"MELBOURNE.	"L. ROGERS.
"MAHON.	"G. VIVIAN.
"ASHBURNTON.	"T. WISE."
"COLBOURNE.	

Mr. Marshall has two works in the present exhibition, marked respectively in the catalogue No. 100 and No. 165, the one a full length of "Geoffrey Chaucer, the father of English poetry," and the other a figure of "Eve."

Mr. Bell contributes two models of sculpture—the one, No. 106, favourable known as "The Archer, or Eagle Slayer," and the other, No. 134, a figure of Jane Shore. Mr. Bell also exhibits a cartoon (No. 81), entitled "The Angel of the Pillar."

Mr. John Henry Foley has also two subjects, Nos. 155 and 156, the first being the figure of a youth at a stream, and the second a group of "Ino and the Infant Bacchus."

#### THE NEW HOUSES OF PARLIAMENT.

The Select Committee, appointed to inquire into the present state of the building of the new Houses of Parliament, and to report thereon to the House, have, pursuant to the order of the House, examined the matters to them referred, and have agreed to the following report:—

Your committee have examined Mr. Barry as to the progress already made in the buildings of the new Houses of Parliament, and have endeavoured to ascertain from him the probable time that will elapse before the whole of the works can be completed, and the period at which the two Houses may be occupied for the transaction of public business.

He has stated to them, that, were it urgently required, the Houses, and a certain number of committee-rooms, and other offices, might be prepared for occupation at the commencement of the year 1846; but your committee do not feel themselves justified in affirming that such occupation could take place without inconvenience to the members, or impediment to the further progress and satisfactory completion of the building; and they think it right to observe, that the general arrangements for ventilation cannot be completed till the commencement of the year 1847.

Your committee have examined the Speaker, the Clerk of the House, and the Sergeant-at-Arms, as to various alterations which have been lately proposed in the interior arrangements of the House of Commons, and of some portions of the building immediately adjoining, and have to report that Mr. Barry will be able to adopt several valuable suggestions, which the experience of the officers of the House have enabled them to offer, without any increase of the expenditure already authorized.

Your committee have examined various parties as to the course hitherto adopted by Mr. Barry, with reference to alterations of the interior arrangements shewn in the plan approved by committees of both Houses in 1836. They impute no blame to Mr. Barry for that course, and have every reason to believe that all the alterations hitherto made have conduced to the convenience and general effect of the building; but looking to the misapprehension that appears to have prevailed as to these proceedings hitherto, they are prepared to recommend that in future Mr. Barry should make a half-yearly report of the progress of the works to the Commissioners of Woods and Forests; and should also submit to that board any alterations which may hereafter be deemed advisable, and accompany such report with plans of the alterations proposed.

Your committee further recommend, that as several alterations, entailing more or less expense, have recently been sanctioned by the Government, the Chief Commissioner of Woods shall, at the commencement of the next session of Parliament, lay upon the table of the House of Commons a statement of the total estimated cost of the building, according to the latest plan approved.

Your committee also suggest that a plan, prepared by Mr. Barry under their direction, and exhibiting the present state of the building, and the alterations adopted up to the present time, shall be signed by the Chief Commissioner of Woods, and deposited in the libraries of both Houses.

June 4, 1844.

TRAFALGAR-SQUARE.—The Earl of Lincoln and Mr. Young have introduced a bill to provide for the care and preservation of Trafalgar-square, in the city of Westminster. It enacts, that Trafalgar-square, and all the works now being, or which may be hereafter erected thereon, shall be vested in the Queen's Most Excellent Majesty, her successors and heirs, as part and parcel of the hereditary possessions and revenues of her Majesty in right of her Crown, within the ordering and survey of the Court of Exchequer. The care and management of the square, and of all the works therein, are invested in the Board of Woods and Forests.

On Wednesday last, Mr. T. Duncombe presented a petition from the distillers of London, praying that they might be exempt from the operation of the Metropolitan Buildings Bill.



## METROPOLITAN BUILDINGS BILL.

HOUSE OF COMMONS, TUESDAY, JULY 16.

The Earl of LINCOLN moved that the House go into committee on this Bill.

Mr. HAWES said that a paper had been laid on the table that morning containing more than a hundred alterations which were to be proposed. Now, he must protest against being called on to decide on all these alterations until he had heard something by way of explanation of those amendments. If he did not get a satisfactory explanation, he would oppose the Bill in all its details, and move the "previous question."

The Earl of LINCOLN said, that a more unfair ground of objection he had seldom seen, for nearly the whole of the alterations were merely verbal alterations, not at all affecting the principle of the measure; and, let him add, that he had, contrary to the general practice on such occasions, printed the whole of them for the information of hon. members. The hon. member for Lambeth had no later than last night informed him of his intention to move a variety of amendments to this Bill, but he had not informed him of the nature of even one of them. He regretted the opposition of the hon. member, but he should proceed with the Bill.

Mr. HAWES contended that many of the noble lord's proposed alterations were substantial and grave, and would require mature deliberation. He looked upon the bill as a complete warfare upon the whole trade of the metropolis, inasmuch as it interfered with every kind of building, great or small, and if the Bill had been in force at the time when those great undertakings, the docks and railway sheds, termini, and bridges were erected, they could not have been built under a heavy penalty unless the permission of the Commissioners of Woods and Forests were first obtained. If any person used any such building or bridge by walking over it, he would be subject to a penalty of 500*l.*; and any such building, bridge, dock, warehouse, or shed, having been built without such permission previously obtained, would be deemed a nuisance which the Commissioners of Woods and Forests would have power to abate by pulling down. Another provision of the Bill imposed a penalty of 50*l.* on any man employed in the erection of such buildings. On all these grounds he should move the previous question as an amendment to the motion for going into committee.

Mr. MACKINNON supported the amendment, and contended that, though the Bill contained many good points, it was in many others of its provisions directly the reverse of the recommendations of the committee from which it professedly emanated.

The Earl of LINCOLN said that the opposition of the mover and seconder of the amendment formed an apt illustration of the remark that extremes meet. The one hon. member objected to the Bill because, as he said, it went too far, and actually made war on the trade of the metropolis; while his seconder complained that it did not go far enough, and did not carry out some of the most useful recommendations of the committee. The noble lord went on to shew, that every practicable means had been adopted in the Bill for promoting the cleanliness, and, of course, the health of the metropolis; and that it interfered not with any private interest, further than was necessary for the protection of the public. The hon. member for Lambeth complained of what he termed the ridiculous minuteness of the Bill. No doubt the hon. member was a great critic in his way, but there was no style of phraseology would please him, as long as it emanated from the government. If the details of the Bill were so plain, as that all who ran might read, as he contended was the case with this Bill, still, there would be no pleasing him as long as the details were those of the government, and, of course, they must be wrong. The hon. member had not proved any one of his objections. His was simple allegation, and no more. He objected to having many public buildings, such as the theatres, included in the Bill; but did he recollect that a theatre had tumbled down, occasioning the death of some eight or nine individuals? Had a proper survey by competent architects been made, that accident could never have happened, nor could the accident at the ter-

minus of the railway at the Bricklayers' Arms have occurred had such a Bill as this been in operation. As to the question of patronage which had been created by the Bill, he defied the hon. member to bring in such a Bill with fewer appointments to carry it out. There were two referees, who must be architects, a registrar, and a clerk, which were not one-fourth the number of persons who had been considered by many to be necessary for carrying out the Bill. With respect to many minor objections urged by the hon. member, he would decline any notice of them until they went into committee, which was the proper place for their discussion.

Mr. TUFNELL objected to the Bill on the ground that it was an unwarrantable, because an unnecessary, interference with private property. He also objected to a Bill containing such various detail being brought in at this period of the session.

The house then divided, when the numbers were—

For the original motion ..... 39  
For the amendment..... 5  
Majority .....—34

The house then resolved itself into committee on the Bill. A number of the clauses were agreed to, and some verbal amendments added.

WEDNESDAY, JULY 17.

The Metropolitan Buildings Bill was further considered in committee, and all its clauses from clause 55 were agreed to.

Schedule A was amended and agreed to.

Schedule B being put from the chair,

Mr. HAWES protested against the manner in which the present Bill had been hurried on by the noble lord, notwithstanding his intention to propose some amendments in it was known. It was a mode of legislating upon measures of the utmost importance which was any thing but satisfactory; and he hoped that what he had said would go forth to the public. He did not despair, however, of throwing out the Bill in the other House (hear), where, at all events, it would have more attention than here. He had attended during the morning sitting in hopes of being able to bring on his amendments, but he had been called away, and, during his absence, the Bill had been thus hurried forward. He had no right, strictly speaking, to complain of the noble lord opposite, but he certainly did think, under the circumstances, that a little courtesy was due to him with respect to the progress of the measure. It was most unusual to press forward Government measures on a Wednesday, which was generally devoted to private business and motions. He, however, would not be diverted from his intention, but would propose his amendments on the bringing up of the report.

The Earl of LINCOLN hoped the hon. member would preserve that equanimity which he had displayed on a former evening respecting this measure. The hon. member could have no fair ground of complaint, for he (Lord Lincoln) had informed him that the Bill would be proceeded with on Wednesday. If the delay occasioned by the threatened proceeding were prejudicial to the measure, the hon. member would alone be to blame for it.

Mr. HAWES expressed his readiness to take the blame on himself.

The Earl of LINCOLN.—The hon. member had certainly expressed his intention of bringing forward some amendments, but it could not be expected that public business could be suspended or the progress of a most useful Bill jeopardized to meet the convenience of one hon. member. There never was a Bill which had received more mature consideration from all parties best able to judge of its merits than the measure before the house had done. It had been for two successive sessions on the table of the house, and it had been discussed in all the carpenters' and builders' societies on repeated occasions; so that there was no foundation or even excuse for the hon. member's observations. The government had no desire to smuggle the bill through the house. It was no party measure, nor had they any interest in it beyond the public good.

The schedule was then agreed to.

Schedule C, No. 2, being read,  
Mr. HAWES proposed, that instead of the words "official referee," there should be inserted "district-surveyors."

The Earl of LINCOLN objected, as the

functions of the district-surveyors were strictly confined to ministerial offices.

The committee divided, when the numbers were,—

For the original words ..... 25  
For the amendment ..... 10  
Majority .....—15

On our readmission into the gallery, we found that Mr. HAWES had proposed another verbal amendment,

On which the committee divided. The numbers were—

For the amendment ..... 5  
Against it ..... 29  
Majority against the amendment —24

During our absence from the gallery (there not being 40 members present on the division) we understood that the Speaker resumed the chair, and several members having entered along with the right hon. gentleman, a house was made, and the proceedings of the committee were continued.

Mr. HAWES said he had no wish to obstruct public business; and certainly he had no right to complain of the conduct of the noble lord opposite (Lord Lincoln). At the same time he must say he thought it would have been more courteous if this Bill had been postponed till a later period of the evening. It appeared from this schedule that no person could erect so paltry a building as a greenhouse, within twelve or fifteen miles of London, without coming to Whitehall to ask the official referees to approve the plan. He thought this was a contemptible regulation. He would add, that he considered the Government ought to have taken care that a larger number of members should be present during the discussion of a Bill of this importance.

The Earl of LINCOLN said, he had before stated the reasons which had induced the Government to require that the plans should be submitted to the official referees, in preference to district-surveyors. The hon. member for Lambeth (Mr. Hawes) divided the House on that question, and his (Lord Lincoln's) impression was, that the hon. member took the division for the purpose of destroying the House.

Mr. HAWES begged to assure the noble lord that such was not his intention.

The Earl of LINCOLN begged the hon. gentleman's pardon. He must remind the hon. member that in some instances conservatories were erected in places of public resort, where any defect in their construction might be attended with great danger.

Mr. HUMPHREY wished to know whether the official referees were to determine what description of brick or of glass should be used in the construction of such buildings?

After some further conversation, it was agreed that the subject should be discussed on bringing up the report.

The schedule was then agreed to.

On schedule D,

Mr. HAWES objected to a portion of the schedule which gave to the official referees the power of determining the materials of which the foundation of external walls should be composed.

The Earl of LINCOLN said, that the hon. member for Lambeth must not suppose that the House was now legislating on this subject for the first time. This schedule, which related solely to the materials used in the construction of external walls, greatly modified the existing law, the provisions of which were most stringent.

The schedules of the Bill having been gone through,

Mr. HAWES felt it his duty to say that the summary of the Bill was highly creditable to the Board of Woods and Forests for the manner in which it was got up.

The CHAIRMAN reported progress, and the House resumed.

The Earl of LINCOLN said, he would fix the report for 12 o'clock to-morrow.

Mr. HAWES objected to the Bill being pressed on at this railroad speed. He hoped the amendments would be printed, to give time for their being read.

The Earl of LINCOLN said, every one of the amendments had been printed and circulated yesterday, and were of a purely technical and verbal nature. He would not hesitate to accede to the request of the hon. member if he did not think the delay would be the means of defeating the Bill.



Mr. Hawes said, unless the noble lord was prepared to say that the Bill would be defeated if the report were not brought up to-morrow, he must persevere and press for delay.

The Earl of LINCOLN said, unless he could send the Bill up to the House of Lords on Friday, he knew that strong opposition would be made to it on account of the period of the session, and an attempt would be made to defeat the Bill on that ground.

Mr. HUMPHREY said, this Bill was a most obnoxious Bill, and he would not allow it to pass unless the report were to be brought up on Monday, to give time for the amendments to be read. It was now 10 o'clock at night, and the idea of sitting at 12 o'clock next day to pass the Bill! There would hardly be a house. There were then, out of 658 members, but 15 present at the discussion of the Bill. He was very sorry hon. gentlemen were kept waiting for their dinners, but dinner was of no consequence to him. (Laughter.) He should divide the house on the question that the report be received on Monday. It was only fair.

The CHANCELLOR of the EXCHEQUER said the Bill had been fully considered, and he hoped the hon. member would withdraw his opposition to its further progress next day.

Mr. HUMPHREY.—No. I will divide the house.

The Earl of LINCOLN said, in the present state of the house, that would adjourn the house. The hon. member had paid very little attention to the Bill, and knew nothing about it.

Mr. HUMPHREY.—I beg your pardon.

The Earl of LINCOLN would tell the hon. member, that he would not consent to his proposal. The hon. member had not the power which he supposed he had. He should allow the house to be counted out, and the question would come on as a dropped order next day.

Mr. HUMPHREY said he had paid great attention to the Bill, and considered it to be an obnoxious Bill. He could not be in that House from 12 o'clock in the day till 12 o'clock at night. He should certainly count out the House.

The Earl of LINCOLN said, the hon. member should have the extreme satisfaction of taking the unfair advantage which he had done, and he (the Earl of Lincoln) would fix the report for 12 o'clock on Friday.

Mr. HUMPHREY did not think it fair to be charged by a member of the government with taking an unfair advantage. If he had had a large majority with him, and the noble lord had been opposed to the Bill, would not the noble lord have taken the same advantage? The Bill ought to be circulated, free of cost, like a newspaper (laughter), and fully discussed. Why had not the noble lord all the government down to support him? If the noble lord's supporters were present, and hon. members on his (Mr. Humphrey's) side of the house were where they ought to be, would the noble lord charge him with taking an unfair advantage?

The Earl of LINCOLN.—No.

Mr. HUMPHREY.—Then why do you now?

The Earl of LINCOLN.—Because you stand alone.

Mr. HUMPHREY.—Am I to be blamed for that?

The CHANCELLOR of the EXCHEQUER gave the hon. member great credit for standing alone. (Laughter.)

The report was then ordered to be received on Friday, at 12 o'clock.

#### DAMAGE BY FIRE METROPOLIS (NO. 2) BILL.

The Earl of LINCOLN said, he intended to abandon this Bill for the present year in consequence of the representation of the vestries of parishes. Although they did not disapprove of the regulations in the Bill, and were prepared to admit that considerable improvements on the present system were effected by it, yet several parties had pressed on him that there might be much more economy if the whole of the regulations were placed under one superintendence and a general fire brigade like that which existed in Paris and other places were established. By this means not only would the system be more efficient, but it would also entail much lighter burdens upon the ratepayers. He was not prepared to affirm that

proposition, but thought the suggestion so valuable that he should abandon the Bill for the present year, for the purpose of obtaining information from Paris and other towns on this subject. If this suggestion proved not to be available, he should then reintroduce the Bill.

Mr. HAWES hoped the noble lord would consider not only the means of supplying fire-engines, but also water. His belief was that more destructive fires took place from the want of water than from the want of fire-engines.

The Bill was then withdrawn.

#### COMPLETION OF STONE-BUILDINGS, LINCOLN'S-INN.

These magnificent chambers, built by Sir Robert Taylor, and entirely faced with Portland stone, being at present deficient of their southern wing, are forthwith to be completed. To such persons as are not acquainted with this well-known pile, we merely intimate, that they are externally of the Corinthian order, and are (some details excepted) by all persons, except those who originate or follow the bad criticism of the day, much to be commended: as seen from the extreme length of Lincoln's-Inn-Fields (over the beautiful terrace now cut up for the erection of the new Hall and other buildings, and the wall of which is celebrated for containing some workmanship from the very hand of "Rare Ben Johnson"), the pearl-like effect of their beautiful stone throws into shade every competing object; their simple, plain continuity, surmounted by the richer, though still plain, entablature of the order, shews how superior an effect plain, bleached, enduring masonry has to frippery, falsely called architecture. A little further on may also be seen the exquisite Portland stone masonry of the upper part of the great gable of Lincoln's-Inn Chapel; which, contrasting with the wretched clay-coloured stucco, with which nearly all the remainder of that building was some years since invested, puts the right-minded in an almost fixed humour to forswear the use of all other materials.

#### DESTRUCTION OF ANTIQUITIES OF IRELAND.

It is much to be regretted that the society lately established in England, having for its object the preservation of British antiquities, did not extend its design over those of the Sister Island—which are daily becoming fewer and fewer in number. That the gold ornaments which are so frequently found in various parts of Ireland should be melted down for the sake of the very pure gold\* of which they are composed, is scarcely surprising; but that carved stones, and even immense druidical remains, should be destroyed, is indeed greatly to be lamented. At one of the late meetings of the Royal Irish Academy, a communication was made of the intention of the proprietor of the estate at New Grange, to destroy that most gigantic relic of druidical times, which has justly been termed the Irish pyramid, merely because its vast size "cumbereth the ground." At Mellifont, a modern corn-mill of large size has been built out of the stones of the beautiful monastic buildings, some of which still adorn that charming spot. At Monasterboice, the church-yard of which contains one of the finest of the round towers, are the ruins of two little ancient stone Irish churches, and three most elaborately carved stone crosses eighteen or twenty feet high. The church-yard itself is overrun with weeds; the sanctity of the place being its only safeguard. At Clonmacnoise, where some forty years ago several hundred inscriptions in the ancient Irish character were to be seen upon the grave-stones, scarcely a dozen (and they the least interesting) are now to be found; the large flat stones, on which they were carved, forming excellent slabs for doorways, the copings of walls, &c. It was the discovery of some of these carved stones in such a situation, which had the effect of directing the attention of Mr. Petre (then an artist in search of the picturesque, but now one of the most enlightened

and conscientious of the Irish antiquaries) to the study of antiquities, and it is upon the careful series of drawings made by him that future antiquaries must rely for very much of ancient architectural detail now destroyed. As to Glendaloch, it is so much a holiday place for the Dubliners, that no wonder every thing portable has disappeared. Two or three of the seven churches are levelled to the ground; all the characteristic carvings described by Ledwich, and which were "quite unique in Ireland," are gone—some were removed and used as key-stones for the arches of Derry-bawn-bridge. Part of the church-yard has been cleared of its grave-stones, and forms a famous place where the villagers play at ball against the old walls of the church. The little church called St. Kevin's Kitchen is given up to the sheep, and the font lies in one corner, and is used for the vilest purposes. The abbey church is choked up with trees and brambles, and being a little out of the way, a very few carved stones still remain there, two of the most interesting of which I found used as coping-stones to the wall which surrounds it. The connection between the ancient churches of Ireland and the north of England renders the preservation of the Irish antiquities especially interesting to the English antiquarian, and it is with the hope of drawing attention to the destruction of those ancient Irish monuments that I have written these few lines. The Irish themselves are unfortunately so engrossed with political and religious controversies, that it can scarcely be hoped that single-handed they will be roused to the rescue even of these evidences of their former national greatness. Besides, a great obstacle exists against any interference with the religious antiquities of the country, from the strong feelings entertained by the people on the subject, although practically, as we have seen, of so little weight. Let us hope that the public attention directed to these objects will have a beneficial result, and insure a greater share of "justice to Ireland"—for will it be believed, that the only establishment in Ireland, for the propagation and diffusion of scientific and antiquarian knowledge—the Royal Irish Academy—receives annually the munificent sum of 300*l.* from the government? And yet, notwithstanding this pittance, the members of that society have made a step in the right direction, by the purchase of the late Dean of St. Patrick's Irish Archaeological collection, of which a fine series of drawings is now being made at the expense of the Academy, and of which they would doubtless allow copies to be made, so as to obtain a return of a portion of the expense to which they are now subjected? Small, moreover, as this collection is, it forms a striking contrast with our own National Museum, which, rich in foreign antiquities, is almost without a single object of native archaeological interest, if we except the series of English and Anglo-Saxon coins, and MSS. Surely the progressive history of the arts of our own country deserves a place in the British Museum, and yet this has not hitherto been afforded to it: in this respect, even the Ashmolean Museum at Oxford must take precedence; whilst in Ethnographical collections, the little museum of the British Institution may be cited as an example fit to be followed; for strange indeed does it seem that, with the exception of the few specimens brought home by Capt. Cook from the South Sea Islands, the national museum of our country, whose intercourse with every quarter of the globe is so immense, is destitute of specimens of the manufactures, carvings, paintings, &c. of the inhabitants of almost every part of the world. The Chinese Collection, at Hyde Park Corner, and Mr. Catlin's collection, ought not to be allowed to be broken up. These would form a fitting nucleus for an Ethnographical addition to the British Museum.—*Athenæum.*

SINGULAR DISCOVERY.—A discovery of extreme interest has been made within the last ten days, in a fen about five miles from Cambridge. A man employed in digging turf, about five feet from the surface found, embedded in the soil, an ancient armlet or bracelet, of the finest gold, weighing upwards of 5 oz. It consists of five spirals, 3 inches in diameter, and of beautiful workmanship, exhibiting an interesting specimen of the art of the ancient Britons, which it is presumed to be.

\* One recently discovered, and now in the possession of the Rev. Dr. Todd, is equal in weight to not fewer than 200 sovereigns.



VIEW NEXT THE COURT OF THE ENTRANCE TO THE BRITISH MUSEUM.



## ENGLISH DOORWAYS.—No. 3.

ENTRANCE, NEXT THE COURT, TO MONTAGUE HOUSE.

OUR accompanying view is taken from the court-yard of Montague House, now forming the older portion of the British Museum, and represents the inside of the southern entrance from Great Russell-street, Bloomsbury, the outside of which we gave in No. 73.

The present subject forms in truth part of the Ionic colonnade, which traverses the whole southern side of the court-yard, and is indeed detached, except by its ceiling and roof, from the outer portal itself, a porter's lodge in part intervening between the doorway and the avenue of the colonnade. The whole mass of the gateway, internal and external, is surmounted by an octagonal turret, finished upwardly by an ogive cupola; which, according to our print, though in outline, from the nearness of the view, somewhat harsh, is not, as seen more remotely, without elegance of shape: with some reforms in its transomed and mullioned windows, and other parts, it might be successfully employed again in picturesque works. The interior of the gateway had in its masonry, while the cupola is principally of wood; and its carvings, though coarse and common-place, are not altogether destitute of merit; and we may hereafter, among our specimens of scrolls and brackets, take an example from this subject.

When we give an interior view of the whole

court and buildings of this ancient mansion, we shall go more into detail. el.

## TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLLSON.

"The gloomy pine, the poplar blue,  
The yellow beech, the sable yew,  
The slender fir that taper grows,  
The sturdy oak with broad-spread boughs."

1. As it is of the highest importance that those interested in building should be familiar with the nature and properties of the materials used therein, and with none more necessarily than those upon which the carpenter and joiner have to operate, we shall endeavour in this paper to bring together such data as shall forward that desirable object with reference to timbers, confining our attention to such as are actually comprehended under the title of building-materials.

2. The term **TIMBER** is used to imply wood prepared for the purposes of building, and comprises a considerable variety, both in genera and species: before proceeding, however, to that mature stage of the subject, it is our duty to inquire, if not into the botanical niceties, at least into the general nature, of its growth.

3. In the first place, then, with regard to structure, it has to be observed that the transverse section of a tree presents numerous concentric rings encircling the medulla or *pith*, and encompassed by the *bark*, and which rings or layers being counted from the pith outwards, give of the tree, as has been ascertained, its age in years,—one ring being formed every year. The process of formation is this:—the fluid called *sap*, which is necessary to the growth of the tree, rises in a watery but yet saccharine state from the roots, becoming

enriched as it ascends; and during which stage of its progress it bears the name of *common sap*; undergoing then a change in its nature, during the production and growth of the leaves and young shoots, it descends in a less liquid state, now *proper sap*, between the last formed ring and the bark, and there forms a new layer of wood, the bark during its descent expanding and leaving a space to receive it.

4. The ascent of the common sap is chiefly through the newest wood, which is more soft and porous than the older central part—the density in young trees existing in regular gradations, from the heart outwards, diminishing but in those which have reached maturity divided only into two, each nearly uniform throughout,—the inner being called *heart-wood* and the outer *sap-wood*. Of these, the former contains little fluid and no vegetable life; and being the least liable to decay, is therefore the most perfect wood,—the latter is soft and perishable in its nature, abounding in saccharine and fermentable principles; thus affording the very food for worms, whose destructive inroads hasten its natural tendency to decay.

5. Before leaving this part of the subject, let us direct more minute attention to the annual rings and other phenomena observable in the transverse section. The rings are very distinct in some woods, from being uniform in their texture and colour, while in others they are found to be compact in one part and porous in the rest. Of the first description mahogany is a familiar example, and one of the latter structure is ash: besides these there are the resinous woods, in which the porous part is found to be filled with resin or gum, presenting in the layers one part dark, compact and hard, while the other is lighter and softer. In addition to these characteristics in the annual rings, there may be distinguished in every wood except the palm-tree, traversing rays, the same which appear



to divide the circular section of the tree into minute sectors, having pores in them, and which in the resinous woods are filled: also, in some woods, larger rays, usually silvery and light in their colour, and which, when the wood they are in is cut and planed in an oblique direction, present those changing flowers which appear in the finer sorts of oak: these rays are generally termed the *silver grain* of the wood, but are more distinctively denominated the lesser and larger transverse septæ, or medullary rays.

6. Woods are variable in quality according to the nature of the climate and of the soil, as also in a considerable degree to the aspect in which they are situated. Trees grown slowly in open, dry, and exposed situations are more fine and close in their annual rings, and more substantial and durable, than those which are grown in close and shady forests, or rapidly reared in sappy or moist places, the latter being broad and soft in their rings, and very subject to decay; and their pith is not always quite in the centre, for the layers are variable also from the situation of the principal roots, or the circumstance of the soil on one side being more favourable to growth than that on the other; or one side of the tree may be more dense from more hardy exposure; the rings may also depend individually for their thickness on the degree of vegetation which takes place in the particular years of their formation.

7. The age and season for felling are subjects which call for the deepest consideration, but do not always receive that attention which is due to their importance. Timber-growers, in their haste to supply the market, too often fell trees that have not arrived at maturity, the heart-wood being therefore imperfect, with much sap-wood, and of course little durability, and, unfortunately, they are the more readily led to do so on account of the increase in size being very slow after a certain age. Felling should not be too early, for the reasons above contained; neither should it be in the decline of the tree, when its elasticity and vigour are lost, and the wood has become brittle, tainted, and discoloured, with the pith gone and the heart in progress of decay. Maturity is the period when the sap-wood bears a small proportion, and the heart-wood has become uniform and compact. It must be obvious, however, that it is a worse fault to fell wood before it has acquired thorough firmness, than when it is just in the wane and its heart may exhibit but the first symptoms of decay; for in the former there is no perfectly-enduring timber to be got, while in the latter the greater part is in the zenith of its strength. This is in regard to the *age of the tree*, and now with respect to the *season of the year* it should be felled, we must take into some consideration the *barking*.

8. It happens unluckily that the best times for felling are the worst for separating the bark for tanning, and the consequence is, that the value of the latter in some kinds of trees is such as to lead to the cutting down of timber at very improper seasons. The best time for felling is midsummer, when the leaves are fully expanded, and the sap has ceased to flow, and the extraneous vegetable matter intended for the leaves has been dislodged from the trunk of the tree, by the common sap leaving it in a quiescent state, and free from that germinative principle which, from being more saccharine and fermentable than the proper juices which form the wood, is readily excited by heat and moisture, and if the timber were cut while it remained, would subject it to rapid decay and to the operations of worms. The period during which the vegetation is at rest generally extends from about midsummer, or the middle of June, to the middle of August, when the autumnal vegetation, or the operation of forming the nutritious matter for the foliage, &c. of the succeeding year, begins. In the winter months there is another cessation, and mid-winter is therefore also chosen as a time for felling, and receiving, indeed, a preference: but as the only peculiar recommendation which that time possesses is the facility which it affords for gradual seasoning, by which timber is rendered less liable to split and get distorted, and slow drying being generally available at any season, under shade or shelter, midsummer appears, for many obvious reasons, the most expedient.

9. During these periods of rest, so favourable for felling, the bark adheres closely to the wood, being neither separated from it by

the descending sap nor by the vegetable deposit which forms in the sap-wood; and, as has been already mentioned, those seasons during which the bark hangs loosely on the trunk are the least advantageous for cutting it down. Under this dilemma a mode is practised of stripping the bark from the standing tree early in spring when the sap is rising, and felling after that sap and the vegetable matter which it carries off along with it are expended in foliage, and the latter has died away. This practice has been found advantageous in every respect, as it at once insures obtaining the bark in a perfect state, and renders the sap-wood by exposure almost equal to the heart-wood in hardness and durability. When this method is not adopted, it is well either to pierce the trunk some time before felling, to drain out the sap, or, immediately on its being felled, to set it on end for that purpose.

10. The next consideration is the mode of rendering the timber fit for use, and the time which can be afforded for that purpose. There are natural and artificial means of seasoning, both of which have their recommendations; but the former has certainly the right of preference, as it gives greater toughness, elasticity, and durability, and therefore should always be employed in preparing timber for carpentry.

11. When there is time for drying it gradually, all that is necessary to be done, on removing it from the damp ground of the forest, is to place it in a dry yard, sheltered from the sun and wind, and where there is no vegetation; and set it on bearers of iron or brick in such manner as to admit a circulation of air all round and under it. In this situation it should continue two years if intended for carpentry, and double that time if for joinery; the loss of weight which should take place, to render it fit for the purposes of the former, being about one-fifth, and for the latter about one-third. If it is to be used round, it is good to bore out the core; as by so doing the drying is advanced, and splitting prevented, with almost no sacrifice of strength. If it is to be squared into logs, it should be done soon after some slow drying, and whole-squared, if large enough; as that removes much of the sap-wood, and facilitates the drying, and prevents the splitting, which is apt to take place when it is in the round form, in consequence of the sap-wood drying before the heart, from being less dense; also, if it may be quartered, it is well to treat it so after some time, as the seasoning is by that means rendered more equal. It is well also to turn it now and then, as the evaporation is greatest from the upper side.

12. To prevent timber warping, it should be well seasoned before it is cut into scantlings; and the scantlings should be cut some time before they are to be used, in order that the seasoning may be as perfect as possible; and if they can be set upright, so much the better, as then they will dry more rapidly; and as the upper dries sooner than the lower side, they ought, therefore, to be reversed at intervals.

13. When there is not time for gradual drying, the best method that can be adopted, especially for sappy timber, and if strength is not principally required, is immediately on felling to immerse it in running water; and, after allowing it to remain there about a fortnight, to set it in the wind to dry. This renders timber less apt to crack and warp in drying, and less subject to be worm-eaten, especially the more tender woods; but it must be altogether under water, as partial immersion is very destructive.

14. Of steeping generally, whether in cold or warm water, it must be observed, that it dissolves the substance of the wood, and necessarily renders it lighter: therefore, the less that is necessary of it, the better; indeed, it is known that, notwithstanding wood that is completely submersed remains good for a very great period after the water has dissolved a certain soluble part, it is, when taken out and dried, brittle, and in every respect unfit for use.

15. For the purposes of joinery, steaming and boiling are very good methods; as the loss of elasticity and strength which they produce, and which are so essential in carpentry, is compensated by the tendency to shrinkage being reduced: the durability also is rather

improved than otherwise, at least from steaming. It has been ascertained that of woods seasoned by these methods, those dry soonest which have been steamed; but the drying in either case should be somewhat gradual, and four hours are sufficient for the boiling or steaming process.

(To be continued.)

#### REPUTED FIGURE OF THE FIRST BISHOP OF FERNS.

TO THE EDITOR OF THE BUILDER.

SIR,—On looking over No. 63, I find you placed in the hands of the engraver my sketch of the first Bishop of Ferns. It may not be out of place to remark there is nothing in the appearance of this curious piece of sculpture to indicate it ever was designed as a figure of St. Edau, who is said to have been consecrated first Bishop of Ferns so far back as 598, beyond a modern inscription cut on a plain marble slab, as follows:—

"Under this Monument are interred the remains of SAINT EDAU, commonly called Saint Monque, the Founder of this Cathedral, and first Bishop of Ferns; he discharged the pastoral office with piety and Christian zeal for the space of fifty years; and died in an advanced age, Jan. 31st, A.D. 632."

Whether this is a figure of the founder of the cathedral or not, it is evidently a work executed with considerable ability, and must, therefore, have been chiselled centuries after the death of St. Edau. It is well known nearly all our ancient sculptural remains are rude efforts, destitute of any pretensions to symmetry or order, whilst the figure in question is chiselled from Kilkenny marble, a stone most difficult to work and manage even by a master-hand.

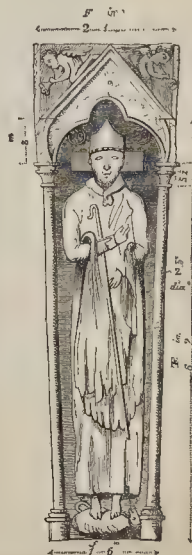
The appearance of the *face* of the figure referred to is that of a man not exceeding fifty years of age; contrasting this fact with the concluding part of the inscription, that he (Saint Edau) "discharged the pastoral office for the space of fifty years, and died in an advanced age," I come to the conclusion that this figure was never intended to commemorate Saint Monque. It is now about seventy years since it was found in a vault under the cathedral, through the laudable exertions of the then rector, Dr. Lloyd, who, after it being carefully cleaned, had it placed in its present position in the parish church.

I expect shortly to send a sketch of the monument (with a bust) of the *last* Bishop of Ferns, Dr. Elrington.

I am, Sir, your obedient servant,

Ferns, 7th July, 1844,

J. K. L.





## PETRALOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 339.)

In order to form a right conception of the *modus operandi* of nature in forming rocks and stones, it is also necessary to treat more particularly upon the process of lapidification, or petrification as it is commonly termed, for to this process we owe the formation of rocks which are termed *amorphous*—that is to say, *deficient of crystalline structure*. I have previously observed that every bed of earth or clay has a tendency, under favourable circumstances, to enter into the state of rock, which circumstances are produced by climate and association; thus, in one region of the earth, from the absence of heat, moisture, or other changing causes, soils continue in their disintegrated state, for ages—so long, in fact, as they continue exposed to the like influences; but in the revolutions of time and changes of the position of the earth's surface, these loose masses become exposed to new elemental influences, and it is then cohesion or crystallization takes place, whereby the bodies or portions of bodies of which such masses are composed lose their individuality, and are no longer to be distinguished in the general mass.

"Pure earth," says Aristotle, "doth not become a stone, because of its brittle, friable nature, the prevalent dryness in it not permitting it to coagulate, and so by the aqueous mixed with the terrene, stones are made." Such was the philosophy of early ages, founded upon observation of nature; it is not, however, essential that water enter into their combination to produce all the phenomena, for many varieties are produced in the total absence of water, in climates where it never rains; it is, therefore, essential that we look to other causes for lapidification and crystallization, which modern knowledge enables us to do, and by analysis to separate the elementary constituents of rocks; thus we have discovered that, while water was absolutely necessary for the generation of the bodies of which rocks are composed, the bodies thus formed, and containing the elements of water in their composition, are further perfected by the presence of heat, light, and atmospheric air, the latter being an essential component of rocks and stones. Dr. Price, in his "*Mineralogia Comubiensis*," observes: "That there is a petrifying quality in the earth or its juices, is manifest to those who are conversant with mining, and consider the nature of the stones which are dug out of the ground; for they frequently meet with large solid rocks, composed of several small stones, united together, of different forms, colours, and properties, with respect to the same individual rock or stone;" which is a manifest indication that its different parts were originally loose and distinct from each other, until they were conjoined into an entire solid mass, by something of a petrifying principle which cemented them together. There are, in fact, many soils, even in this country, favourable to the generation of stones, much to the annoyance of the farmer, who, not aware of this fact, expresses his wonder at the annual crop of stones, which reappear, in despite of his continued trouble to collect them; and this lapidifying process is sometimes produced by the very means which the farmer employs to fertilize the soil; the earths applied as manures uniting with the soil, natural concrete-masses are formed, which by atmospheric influences are rapidly converting into stone. Again, when lime is thrown upon sour lands, while it tends to neutralize their acids, it also forms concreted nodules, which speedily change their condition; and when bodies, or portions of organic bodies, are disposed in these soils, they speedily petrify, or uniting the sulphate of iron with their organic constituents, they become mineral petrifications. The well-known property of iron to form concrete masses has led to the theory that it is almost the sole cause of the production of concrete-masses; and it is observed that iron pipes and vessels buried for a long time in the soil gradually disappear, and become the cement of inclosed or surrounding masses; boilers also attach earthy matters held in suspension by the waters, and their whole interior becomes lined with a stony con-

crete-mass. To the presence of this metal, also, many mineral waters owe their petrifying powers, and it is also an ingredient in artificial stones; its more comprehensive character is manifest in *siderous rocks* and stones, of which I shall speak in my next article.

The experiments of Sir John Hall, quoted triumphantly by existing geologists to prove that marble is formed under an intense degree of heat and lateral pressure, were far from being a satisfactory explanation of the *modus operandi* of nature, in forming the crystalline and amorphous rocks; a much better explanation is afforded by the concretions constantly accumulating in salt-pans, boilers of steam-engines, wooden pipes through which waters charged with mineral matters and earths are conveyed, &c. The boiling springs or fountains of Iceland may also be quoted as illustrations of the lapidifying process, the vegetable bodies on which the water falls being speedily converted into stone. The crystallizing waters are here composed of a large portion of alumine as well as silica, uniting with their potash and other compounds. At Carlsbad, in Bohemia, there are similar springs.

The hot springs of the Valley de Fournos, in the Island of St. Michael, rising through granitic and schistose rocks, precipitate vast quantities of silicious matter, and the herbage and leaves, encrusted with silex, exhibit all the stages of petrification, from the soft pulpy state to the complete conversion into stone. The river Chorrun may also be noticed for the lapidifying quality of its waters; for if the root or branch of a tree fall so that a portion of it lies within the waters, the portion thus immersed becomes petrified, but the other part of it remains in its natural state. When the current is most rapid, then the transformation is most readily effected; the substance transformed always retains its natural porosity and the texture of its fibres. In Africa, several parts of America, and Asia, localities exhibit the like phenomena of lapidification.

The lapidifying waters near Marsighi, close by Tabreez in Persia, are most remarkable to escape our notice. "Here," says M. Morier, "the process of petrification is to be observed from the beginning to its termination. In one part the water is clear, in a second it appears thicker and stagnant, in a third quite black; and in the last stage is white like hoarfrost. Indeed a petrified pond looks like frozen water; and before the operation is quite finished, a stone slightly thrown upon it breaks the outer coating, and causes the black water underneath to exude. When the operation is complete, a stone makes no impression, and a man may walk upon it without wetting his shoes. Wherever the petrification has been hewn into, the curious process of the concretion is clearly seen, and shews itself like sheets of rough paper placed one over another in accumulated layers. Such is the constant tendency of this water to become stone, that where it exudes from the ground in bubbles, the petrification assumes a globular shape, as if the bubbles of a spring by a stroke of magic had been arrested in their play and metamorphosed into marble.

The substance thus produced is brittle, transparent, and sometimes most richly streaked with green, red, and copper-coloured veins. It admits of being cut into immense slabs, and takes a good polish. Its use is restricted to royalty.

The island of Ascension also exhibits many curious specimens of recent breccia and conglomerate; the beaches being an amalgam of oceanic, animal, and vegetable exuvie, sands, and waters charged with ocean slime are rapidly hardened into these products, which contain turtles' eggs, and many other curious animal remains. The limestone of Gaudalope, containing human fossil skeletons, are also singular evidences of the recent induration of earths.

Mr. Lyall, in the last edition of his "*Elements of Geology*," attempts to explain the process of lapidification, by assuming that strata are very generally permeated by water charged with minute portions of calcareous, siliceous, and other earths, in solution, and the above examples furnish him with arguments in favour of this opinion; but, in nature, as I have previously demonstrated, there are other and more extensive processes by which lapidification is conducted without the aid of water,

and solely by the agency of long continuous atmospheric or chemical heat.

The recent attempts of Professor Göpperts, of Breslau, to imitate the lapidifying process of nature, like the attempt of Sir John Hall to imitate the crystallizing process, was an approximation to one, or perhaps more, of the numerous means by which nature effects her purposes, but cannot be quoted as the law of nature, but rather is the power of imitation by which man, in this and many other respects, is enabled to mould the material of the earth to his wants and purposes. The professor steeped a variety of animal and vegetable substances in waters holding in solution silicious, calcareous, and metallic matters. He found that in a period of three weeks, or even days, the vegetable bodies thus immersed were mineralized to a certain extent. Thin slices of Scotch deal were immersed in a moderately strong solution of sulphate of iron. When they had been for several days thoroughly soaked in the liquid, they were dried and exposed to a red heat until the vegetable matter was burnt up and nothing remained but an oxide of iron, which was found to have taken the form of the deal so exactly, that even the dotted vessels peculiar to this family of plants were under the microscope distinctly visible.

This is art, not nature: many nodules and large aggregate bodies, it is true, silicify upon being permeated by silica, or mineral acids, or gaseous products, but then silica invariably becomes the base, the carbon of the permeated body undergoing a change, and passing, by a new combination with oxygen, into the compound form termed silica; for here, with due deference to the eminent chemists of the age, I must express my decided conviction that silica is none other than the re-combination of the elementary constituents of carbonaceous, albuminous, and gelatinous bodies, with oxygen, chlorine, or iodine, and all the phenomena of change termed petrification confirm this view; for how otherwise could the shells of fishes, nay fishes themselves, and other portions of animals, as well as of vegetable bodies, become, on mere exposure to atmospheric action, converted into silicates, unless a radical change took place in their elementary constituents, which, as is palpably manifest to observation, as it is confirmed by experiment, have combined with an extra dose of oxygen: it can be demonstrably shewn that they do not derive this material from the soil on which they are disposed, for the whole bed, so far down as the influences of light and heat extend, is composed of the like silicified substances, and at the lower depths the fossils have maintained their primary condition, and are very often wholly unimpaired.

So essential are locality and climate to the formation of rock, that many varieties may be considered as existing monuments of change in the position of the earth, equally as certain and convincing as the existence of vast quantities of animals and vegetables, both of the land and waters, which could only have existed and propagated their species in an unbroken line of generations, while disposed beneath the tropics. The very high degree of oxidation of many of the hill and mountain-chains of Europe is demonstrative proof that they at one period of time were subject to long and continuous intense heat, such as we now find in tropical regions. The iron of Finmark, says Von Buch, actually forms mountains, and it is remarkable how great the similarity is between this ore and the ores of Asia, both being highly oxydized. The ironstone here is everywhere with difficulty pressible, and yields an iron which is brittle when cold. It exceeds in richness the ironstone of Sweden, but, as is the case with oriental iron, requires to be mixed with other kinds of a more pliant quality; this ironstone is analogous in every respect to the ironstone of Hindostan, which is chiefly disposed in elevated plains or mountains. Again, the same remarks are equally applicable to rocks: farther, Van Buch observes of gneiss: "Nature in the higher latitudes is so accustomed to gneiss-formations, that she always returns to it; and even when mica-slate, limestone, and clay-slate, make their appearance, they merely resemble a series of movements, which have spread towards the North Pole without having their origin here." The same remarks apply to the porphyritic and jasper rocks; the causes by which they were produced have ceased in these northern lati-



tudes, and thus those geologists who have confined their observations to the strata of Europe have been led to infer that they have ceased altogether over the face of the whole earth; but within the tropics, all surface-soils not covered in by vegetable-mould are the subject of incessant change peculiar to locality or particular regions, and those varieties of rock may be observed in all their progressive stages of development.

The range of rocks of Holmestrandt is porphyry, but passing through all the imperceptible gradations and changes of formations, in which Auvergne is so rich, into basalt, the sandstone upon clay mixed with mica: the granite mountains in the island of Arran, in the Frith of Clyde, rest upon strata of clay slate; in Norway it rests upon mica slate; in Mount St. Gothard it lies above slaty mica slate. Cronstadt tells us that northwards of Jämtland, the mica-slate changes more and more into granite, and the latter appears at last of a very coarse grain, and of a red colour. The disposition of the rocks is, therefore, as is the disposition of the beds or soils from which they were formed, owing to those accidental causes which mark the local accumulations now going on in all parts of the earth, which continue so long as the disturbing causes exist; thus the river Thames will continue to convey mud, consisting of animal and vegetable bodies, portions of the older soil, and excrementary matter, into the ocean, and deposited on its bed, it continues to form layers alternately with oceanic substances, or to blend with them, and give peculiarity to the forming beds.

#### MUTILATION OF STATUES AT WINDSOR.

All who have visited Windsor-park and the grounds adjoining Virginia-water, will remember a beautiful and retired spot, called "The Ruins." The name is derived from some very fine specimens of architectural antiquities brought from Greece by Lord Elgin, and which were so disposed in this appropriate locality, under the direction of George IV., as to represent the remains of an extensive Grecian temple. The principal ruins consist of several remarkably beautiful columns, with plinth complete, and various statues are placed on either side of the approach, and in different parts around. Several of them are of great beauty and antiquity, besides being in a good state of preservation. Others date from about the middle of the 16th century; and it is one of the latter that has, within the last few days, been destroyed by the wilful conduct of some one or more of the visitors, whose sense of gratitude for the privilege of viewing such a delightful spot should have taught conduct far different from this disgraceful and malignant work. On Sunday week, according to the statement of the man whose province it is to shew the public the cascade, &c., the statue in question, a female figure, with the horn of plenty by her side, and apparently intended for a Flora, was thus mutilated. It was a work of great beauty, the head and arms particularly being remarkably fine, and sculptured with extreme delicacy; but it now lies in a state of mutilation that is alike painful to behold, and disgraceful to the hands that have thus destroyed what cannot be satisfactorily restored. The statue was thrown down from the spot where it stood with great violence, and the fall has broken the head completely off, and also broken the right arm in two places. This could not possibly have resulted from accident, as the strength of two or three persons must have been required to remove this heavy marble figure from its station. The destruction of this statue, however, though the most recent, is not by any means a solitary instance of the wilfully mischievous conduct of some of those who thus abuse the privilege awarded the public of viewing these splendid grounds and Virginia-water. Various other beautiful works of art, also adding attractions to these modern antique ruins, bear terrible proofs of the same destructive spirit. There was formerly a row of statues on each side of the approach to the principal group of columns. Now the uniformity is entirely destroyed, and the ruins spread around are far more numerous than agreeable to behold. Very few of these works of ancient art have entirely escaped.

Those are most fortunate that merely have carved upon the breast, or some conspicuous portion of the body, the name of William Tomkins, or Jeremiah Noodle, or some other equally high-souled owner of a bread and cheese knife, who has been thus anxious to expose his name to the disgust and contempt of all right-minded persons. Most of the statues, however, are much more mutilated; the heads having especially formed favourite points of attack. Really some steps should, if possible, be taken to prevent the perpetration of such atrocities, worthy only of modern ignorant and malicious Goths and Vandals, who have not the intellect or taste to appreciate the beautiful works of art, or the gratitude or good feeling to estimate the privilege accorded by these grounds being thrown open for their inspection. — *Correspondent of the Times.*

#### A GLANCE AT THE INTERIOR OF THE CHURCHES IN THE DEANERY OF SPARHAM, IN NORFOLK.

WITH NOTICES OF THEIR ACTUAL CONDITION.

*Ringland.*—The site of this church, a barren spot, which edges the green basin of the Wensum, is peculiarly uninteresting; the pile rose on us in bleak keeping with a day of incessant snow, drifted into every nook and crevice by a merciless north-easter. And yet well were it, at such a season, standing among the graves of the departed, to bethink ourselves how

"The storm that racks the wintry sky  
No more disturbs their deep repose,  
Than summer evening's latest sigh,  
Which shuts the rose."

The edifice consists of a nave with clerestory, two aisles, a chancel, a square tower having five bells in it, and a south porch.

On opening the great south door, which is in good preservation, the first object presenting itself is a massive octagonal font, in the decorated style, and raised on three high steps. Its existing state will indicate the taste in which reparations of our village sanctuaries are too generally conducted. At the instance, it appears, of a late visitor, this elegant memorial of olden piety has been cleansed from the lime-wash that incrusts it; but instead of being allowed to remain in its natural state, our gorge rises at finding the whole besmeared with a vile daubing of flesh colour.\* It stands, where in every case the baptismal font should stand, just within the principal entrance, and its leaded bowl is provided with a drain to permit the consecrated fluid to escape.

In 1506, John Att Mere, who lies buried in the nave, desired by will that the heir or purchaser of his lordship should "fynde a light of waxe brening before the high rode;"† it has not been since his day the practice in churches, to prevent the closing of windows, to the exclusion of heaven's own sunlight from the entire body. We have something like this in the once splendid east window of the chancel, the crockets and mullions of which have been supplanted by two unsightly brick piers. The same does not apply to the fine painted glass in the aisles and clerestory, where many windows have been cleaned and reglazed in a manner that reflects credit on the artisan employed. On the other hand, we learn, from good authority, that portions of these were, not many years since, abstracted, with the connivance of the authorities, to adorn a Roman Catholic Chapel in the adjoining parish of Cossey.

A label on the east window of the north aisle—which, together with all the rest, is in the style known as the *Perpendicular*—acquaints us that the charges of its erection were defrayed by "the brethren and sisters composing the guild of the Holy Trinity." What a contrast between this elegant memorial and the thing near it, fit only to receive the team-boy of a threshing-machine, where the parochial Dominic finds himself weekly exalted.

Many of the original massive oak benches yet remain, their ends being surmounted by large finials, called poppies, some elaborately, others more plainly sculptured. Those

\* [We think so small a matter as the unimpersonated cleansing of so small a piece of furniture as a church font, would be far better than any "gorge-rising," which is the exchanging of piety for passion. —Ed.]

† Parkin's "History of Norfolk."

once standing in the eastern part of the nave and aisles, and where rich and poor sat together in the house of God as friends, have been either entirely swept away, or mutilated past repair, to admit "mean and high pews, the unhappy legacy of our Puritan forefathers."\* We were gratified to learn that a lady of influence here has recently expressed a wish that these last could again be gotten rid of. The pulpit and reading-desks form no exceptions to the reigning ill-taste, although they possess the merit, by no means general, of not compelling the minister and clerk to avert their faces from the altar.

The master barbarism seen in this fine church lies in its reredos or altar-screen, which wainscots the entire east end of the chancel. It would be difficult, were not the existence of similar perversities elsewhere matter of too general notoriety, to conceive how things so expensive and tastelessly absurd as Grecian pilasters and alevocs could ever have gained admittance to our time-hallowed fanes, utterly incongruous with them as they are in style, and destitute of all ecclesiastical propriety. Strange that with the inarched monument, or the niche with its fretted canopy, occurring at every turn, the Decalogue could only appear in this ill-assorted guise! The canonists, when enjoining that the "ten commandments should be set up at the east end of every church and chapel," would have stood aghast had their eyes been greeted by a vision of the monstrosities which their rule was destined to originate. The nave presents at its west end another disfigurement under the pseudo-name of "gallery," a place where in too many instances Brady and Tate are "villainously entreated." It should be demolished and swept away forthwith, and the village choir located in the north aisle on seats placed *longitudinally* at the east end.

The chancel-screen yet remains, although sadly shorn of its ancient honours: it is noticeable now chiefly for three paintings,—the Last Supper, and two other incidents in our Lord's life,—which stand over it, facing the communion-table. They have most likely yielded place to the vulgarity above commented upon. We are not adequate to decide, *ex cathedra*, on the merits of these portraiture as works of art, but none can devoutly gaze on the solemn quietude depicted, without feeling at once that "it is good for them to be there."

We take leave—we trust in no irreverent vein—with a quotation from the autobiography of a parish clerk in days of yore, useful for the lesson it should convey to his followers generally in the same office: "Fourthly. The pews and benches, which were formerly swept but once in three years, I caused every Saturday to be swept with a besom and trimmed." C. T.

#### YORK MINSTER BELLS.

MANY of our numerous readers will, doubtless, be anxious to hear something of the "Beckwith bells," which were rung for the first time on the 11th inst. By a preconcerted plan, they were not even heard during the process of hanging, and about half-past one o'clock in the afternoon the citizens of York were taken by surprise, by the full peal bursting upon their ears, evidently to the astonishment of many, who ran out of their houses, and congregated in groups in the streets or hastened towards the minster. The bells were heard to great advantage, not having had the usual separate trials to tune and adjust them in their frames. The ropes being new, would of course stretch: the other fittings were also new, and require time to adapt them to their purpose; the ringers were out of practice, and unaccustomed to a peal of twelve bells. Musicians conversant with campanalogia agree that the quality of tone is fine, but it is premature to judge of them now, and until they have been severely rung, and both bells and clappers have accommodated themselves, the first to the machinery, and the latter to the sides of the bells, it is impossible to speak accurately of the good tones they have yet to hear. However it may surprise some, there is a similar adjustment to be effected by vibrations in bells as in musical instruments made of wood, although in a slower degree, and these bells will, if a fair and liberal use of

\* "Markland's" Remarks on English Churches."



them is allowed, become more rich and mellow every year.—It will no doubt be interesting to many to know the weights and dimensions of the new peal, which are as follow:—

	Weights.			Dimensions.	
	cwt.	qr.	lb.	feet.	inch.
Treble .....	7	2	22	2	6
Second .....	7	1	14	2	7
Third .....	8	0	2	2	8
Fourth .....	8	1	12	2	10
Fifth .....	9	2	15	3	0
Sixth .....	13	0	8	3	2½
Seventh .....	14	1	2	3	6
Eighth .....	17	3	18	3	9
Ninth .....	19	3	4	4	0
Tenth .....	25	1	10	4	3
Eleventh .....	33	3	7	4	9
Twelfth .....	53	3	9	5	5

The treble and second are the additional bells to make the peal one of twelve. The other bells, from the third to the twelfth inclusive, would form a similar peal to the old one, of ten bells. The ten lowest bells in this new peal are heavier by 2 cwt. 38lb. than the old peal, and the total weight of the new peal (including the two small bells added to the ten) makes 16 cwt. 2 qrs. 18 lbs. additional to the peal.—*Local Paper.*

#### RAILWAY INTELLIGENCE.

**York and Scarborough Railway.**—On Wednesday week, the directors of the York and North Midland Railway held a meeting at the board-room, to receive tenders for the making of 44 miles of the Scarborough Railway and branch to Pickering. The work was divided into four sections, but the directors accepted the tender of Mr. Crawshaw.

**Leeds and Bradford Extension Line of Railway.**—Robert Stephenson, Esq., accompanied by the directors of the Leeds and Bradford Railway, and Mr. Young, the assistant engineer, visited Keighley, for the purpose of determining the point of terminus at that place, in the event of the contemplated extension of the line to Blackburn, by the Lancashire and Yorkshire junction, when it was arranged that Robert Stephenson, Esq., take an early opportunity of consulting with Mr. Vignols, the engineer of the latter company, and arrange such other matters as may eventually lead to both the companies working harmoniously together, to accomplish what may be considered eventually a line not only of local but of national importance, across the island.

**Leeds and Bradford Railway.**—This bill received the Royal assent on Thursday week. The engineer has already commenced staking out the ground; the previous consent of owners and occupiers not being required for merely surveying and taking levels, and the company only being liable to make compensation for any damage thereby occasioned. The Act contains a penalty for obstructing the company on setting out the line, or removing or in any way destroying the stakes or marks left in so doing.

**Grand Junction and the London and Birmingham Railway.**—The disputes between these two companies were brought to a most satisfactory conclusion on Wednesday week, at a meeting held at Birmingham. The value and importance to the proprietors of such an arrangement may be inferred from the fact, that an advance immediately took place of 8*l.* or 10*l.* a share on each line.

**Railway from Maestricht to Aix-la-Chapelle.**—*Venloo, June 30.*—The inhabitants of Maestricht have now hopes of obtaining a railway to Aix-la-Chapelle, with a branch to Kerkrade. A company is ready to undertake the work at its own expense, if the government will grant it the coal-mine of Kerkrade for a certain number of years. If it is true, as is affirmed, that these coal-mines cause more loss than gain to the state every year, why not give them up, and thus obtain an iron railway, which may be of great importance to Maestricht and the province of Limburgh?—*Herald.*

**The Lancaster and Carlisle Railway.**—This important national work is now fairly commenced. A satisfactory arrangement has been made between the company and the Earl of Lonsdale, upon the fair principle that a valuer should be appointed on either side, with power to name a third party; and the adjustment of terms will, therefore, be an easy matter. The first general meeting of the company was held on Friday week at Kendal. A very efficient body of directors has been appointed.

A petition from the Hull and Selby Railway Company, against the Government Railways Bill, was presented to the Lower House on Thursday week. The York and North Midland and the Manchester and Leeds Railway Companies have also petitioned against the Bill.

Preparations are in progress to commence the Whitehaven and Maryport Railway immediately.

#### AN INDIAN METHOD OF CONSTRUCTING ARCHES.

**STR.**—The accompanying sketch of a semi-circular arch 22 feet in span, built at Nagpore, may prove of utility, even in this country, in the construction of bridges, domes, and other arches or vaulted buildings, being applicable in masonry or cast-iron to an arch of any dimensions. It is from a drawing and description given by Captain B. Mackintosh, of the Madras Artillery.

**Fig. 1.**—At the spring (A) of the arch, stones of a considerable length were used, having their inner ends cut so as to suit the curvature of the arch; six such layers were laid on each side, in the manner wherein stones are placed in the generally-termed *Egyptian arch*, the upper layer having a groove five inches wide and two inches in depth.

On arriving at this height, stones of a smaller size (B. B. B. B.) are made use of,

each having a groove cut in two adjoining faces two inches in depth and four inches in breadth, with corresponding projections on their opposite side.

The stones were so placed, that when a layer was completed, there appeared a channel or groove (C. C. C.) the whole length of the building, ready to receive and bind to it by their projections the next row of stones when applied.

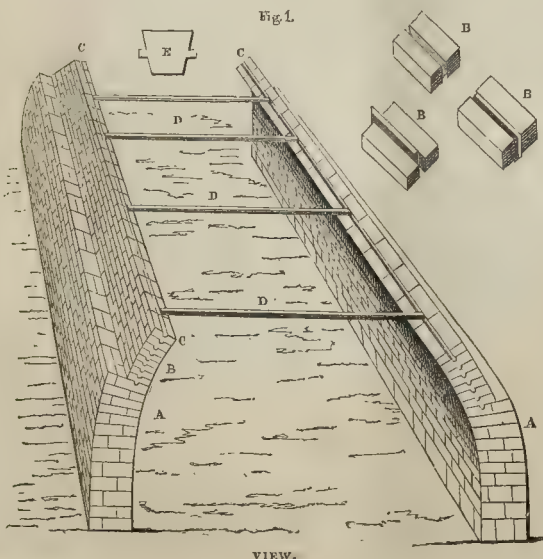
Eight layers on each side of the stones to an arch of the above span having been placed, each layer occupying about six inches of the curvature of the arch, it became necessary to prevent the work, if carried on, from falling inwards. A space of ten feet in length on each side of the unfinished arch was then marked off (see fig. 1 and 2), and at these points two strong horizontal beams were forced into the grooves (fig. 1, D. D.) extending across the chasm. From these, as from a new base,

the grooved stones already described were used. (Fig. 2, F. F.) The length of each succeeding layer contracting gradually until the application of the key-stones.

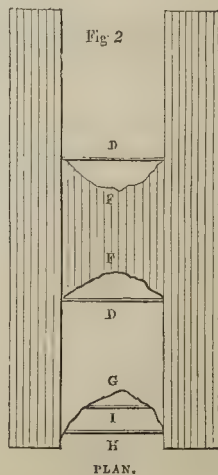
When the arch is of considerable span, a series of bases such as now described (fig. 2, I. H.) is placed, each base higher than the other, in order to support the work until it is secured by being keyed.

When the centre portions of the arch have been thus completed, the beams are removed by being sawed asunder in two places. (Fig. 2, F. G. H.) In a similar manner the arch is continued in different portions at either end of that part which is first finished; the introduction of a new beam constituting with it a renewed base; a slight scaffolding supports the workmen. No frame or centering is used for support while building of arches so constructed.

INDIANUS.



VIEW.



PLAN.



## CHURCH-BUILDING INTELLIGENCE, &amp;c.

**Salisbury.**—At the quarterly meeting of the Committee of the Diocesan Church Building Association, held at the Board-room, in the Close, on Tuesday week, Archdeacon Lear in the chair, the following grants were voted:—60*l.* towards restoring and providing increased accommodation in the parish of Coombe Bisset; 25*l.* towards lengthening the nave and repairing the church of Sedgell; 200*l.* towards the extensive enlargement and new pewing of Melksham Church, Wilts, &c. A former grant of 200*l.* to the new church at East Grafton, in the parish of Great Bedwyn, Wilts, was ordered to be paid, the church having been consecrated.

**New Churches.**—The friends of the Establishment in St. George's parish are going to erect two new churches in Pinllico—one in the Belgrave-road, near Warwick-square, and the other near the Orange Tavern.

**A Chapel on Wheels.**—The Wesleyan Methodists of the Bingham circuit have erected a moveable wooden meeting-house upon wheels, capable of seating about 120 persons, at a cost of about 60*l.*, for the accommodation of several villages where no site could be obtained.

The late William Stephenson, Esq., of Stamford, has secured by deed, for building a church in Deeping Fen, Lincolnshire, 4,000*l.*; for keeping it in repair, 200*l.*; for income for the minister, 5,000*l.*; total, 9,200*l.*

A new church has been erected in Birmingham, and will be consecrated on the 25th inst. by the Lord Bishop of Worcester. The church is dedicated to St. Stephen.

## Correspondence.

## SOUTHWELL CHURCH, NOTTS.

SIR,—In your number for June 22, I observed a notice *en passant* of some complaints made relative to a competition for Southwell Church, Notts; perhaps the following may furnish some comment on the same: the drawings were sent in on the 5th inst., on the 9th the committee forwarded their circular to the competitors, "that the plans of another architect had been thought more proper for the purposes of the committee." It would seem that two clear days, Saturday and Monday, were sufficient to enable the committee to examine (?), compare (?), and make their selection; perhaps a committee of professional men would feel some difficulty in coming to a conscientious decision in so short a space of time.

Your obedient servant and constant reader,  
Friday, July 12, 1844. Φ.

## SHAM COMPETITIONS.—DERBY LUNATIC ASYLUM.

SIR,—I am glad that your spirited correspondent, signed "A second Subscriber, but no Competitor," has directed attention to the decision relative to the design for the Derby Lunatic Asylum. In this instance, I had the opportunity of inspecting and minutely examining the whole of the designs submitted to the committee.

I have given considerable attention to the subject of lunatic asylums for several years, and have examined the principal establishments throughout the kingdom; from this circumstance, and from my experience and practice as an architect, I considered myself qualified to form an opinion of their merits. There were several good works among them, and a large number of a very inferior and even ridiculous character, such as we generally see in great public competitions.

I selected several designs in my own mind, such as I conceived the committee might recommend for examination, and certainly the motto, "Curator," of the approved design, was not among that number. The committee ought to have called in the assistance of some architect of eminence to report upon them; and I will venture to say, that if they had acted upon such report, the result would have been very different indeed.

I do not complain of any man availing himself of the influence of his friends. If influential persons have their pet, let them employ him; but for heaven's sake let them not trifle with us, in order to give a favourable colour to their proceedings, and make it appear that his works are so pre-eminent above

all others. The successful candidates may, in this instance, reap all the advantage of this jobbing, but I entirely reject that any honour is attached to it.

I do not understand upon what principle the sealed letters of those competitors, whose designs were not selected, were opened. They might surely have been apprized of the decision by the medium through which they were invited, and the designs would then have been applied for, as in other cases. I received mine per railway, unpaid, addressed to me.

In number 73, your correspondent, "A subscriber," puffs off the Derby Town Hall, which he says has a very commanding elevation. I am ready to admit that it stands in a commanding situation (an open market-place), but I must confess that, on my first view of the building, I was struck with its singular inelegance and bad outline. It appears to me to betray an entire absence of all good principles of architectural design, and presents a most awkward perspective effect. On my subsequent visits to this building, it lessened in my estimation, and appeared to exhibit a miserable poverty of design; it reminded me of the new-square-style in Mr. Pugin's criticisms. When I contrasted with it the fine old tower of All Saints Church, and that of the Roman Catholic church erected a few years since in Derby, I could not avoid observing (although they are of very different styles of architecture), as features of the town decoration, how greatly this building suffered by the comparison.

What the other designs sent in competition for this building may have been I know not, but it tells little for the credit of the sapient committee who advised and carried out its erection. I am by no means singular in my opinion; on the contrary, I found the building generally disliked by those of the gentry whom I met with in the town and neighbourhood. A wealthy and influential inhabitant of Derby assured me he considered it a disgrace to the town, and (much as he deprecated the calamity of fire) he should not regret to see it again destroyed, and another more worthy building substituted.

I am, Sir, your obedient servant,

A THIRD SUBSCRIBER AND A COMPETITOR.

SIR,—Seeing in your valuable paper a letter respecting the Derby Pauper Lunatic Asylum competition, and wishing that all such rascally tricks should be made public, I inclose you the instructions received from the committee in answer to the following questions:—

What expense is to be gone to?

What size and style is the building to be?

A plan of the ground, and general information.

Now, Mr. Editor, does it not carry upon its very face that it is a job from beginning to end, for what architect in his senses would ever think of competing on such instructions? The following letter accompanied the production:—

"Derby, 26th March, 1844.

"SIR,—In reply to your letter to Mr. Barber, I am directed to send you the foregoing general answers, *being all the information he is at present able to furnish.*

"I am, Sir, your obedient servant,

"Mr. ——— "S. WHITAKER."

And this is a specimen of competition.

Wishing every success to THE BUILDER,  
I remain yours truly,

A LOVER OF FAIR PLAY, AND SUBSCRIBER  
FROM THE COMMENCEMENT.

The following are the general answers alluded to by our correspondent:—

"The site is not yet chosen, therefore no information depending upon locality, the nature of soil, &c., can at present be given.

"It is wished that the front of the building shall have a south aspect.

"The arrangement of the wards and offices, the general design and construction of the building, and the style of architecture, are for the consideration of the gentlemen who send in plans, and who will, of course, avail themselves of the information to be gathered from the most approved establishments of the same kind. The committee reserve their opinion on these points until all the plans are before them.

"The principle of warming and ventilation now in use at the Derby County Prison will be most satisfactorily ascertained, either by

inspecting the prison, or by application to Mr. Silvester, who superintended the warming and ventilating apparatus.

"The committee do not pledge themselves to adopt the cheapest plan."

SIR,—The letter in the last number of THE BUILDER, from "A Second Subscriber," will, I trust, do good, in helping to expose the infamous system of "Sham Competitions," and shew Mr. Dewsbury that, as the real circumstances of the case are now pretty generally known, he has no very great reason to plume himself as being the successful competitor, but ought rather to blush for the share he has had in the transaction; for, as reported, he sent in a set of drawings that had already been seen and approved by the Committee before the competition was thought of, I trust he sees that his own conduct, as a member of the profession, is not without blame; as he must have known that "the great expense," that many architects would put themselves to, would, in this instance, be wholly misapplied. The competition, I believe, was proposed merely to destroy a counter-influence that had been raised by the friends of Messrs. Scott and Moffat, who obtained the second premium. For myself, I had nothing to do with it, as I heard that Mr. Dewsbury was competing, and I was aware of his local influence; but I was foolish enough to send in a design for the church at Southwell, Notts, where a similar farce was enacted; and it is to be regretted that you did not give publicity to the "complaints" which you noticed, in No. 72, as having being received relative to the competition. I forwarded my drawings, seven in number (in the vain hope of standing on their merits), on the 6th of July, which, being Saturday, I may fairly suppose they were not laid before the committee until Monday, the 8th. In a day or two afterwards I received my drawings back again, with an intimation that, "although highly commended, they were not deemed so suitable as the plans of another competitor." This intimation was dated the EIGHTH, so that these wise men (perhaps none of whom had ever seen a set of drawings before) were so inspired, that in one short sitting they were enabled (by intuition, I suppose) to jump to a conclusion, and decide upon the merits of all the designs submitted for their notice. Now, is it not pretty evident that they must have selected their *PET* before-hand, and that the whole affair was a mere juggle, got up for some hidden purpose of their own? I will only add, that I never yet sent in any competition designs, but something or other came to light to shew the futility of doing so, without first having strong interest with the committee.—I am, Sir, yours faithfully,  
17th July, 1844. T.

[We have received other letters, which, being to the same purpose, we deem it unnecessary to publish.—ED.]

## FALL OF HALSTEAD CHURCH STEEPLE.

SIR,—On Wednesday last, at half-past two o'clock in the afternoon, the spire and tower of the beautiful new church at Halstead, intended to be dedicated to the Holy Trinity, fell to the ground with a tremendous crash. It had reached the height of 115 feet before it fell, but for a fortnight past many persons have expressed their doubts that it could not stand, owing, in a great measure, to the rapid manner in which it was being carried up, as much as 30 feet being executed during the week before it fell. On the day it fell, the mason, after he returned from dinner, could perceive that the cracks in the tower were much larger than they were before he left, which caused him to communicate with the other parties connected with the building, the result of which was, that the men were all ordered down directly from the scaffolding. They had all reached the ground in safety with the exception of two poor fellows who remained behind, at about 100 feet from the ground, to lower a ladder, and it is supposed they must have clung to the head and three ribs broken, but hopes are now entertained of his ultimate recovery. A third person met with a slight contusion by a brick falling upon his head, but was very little hurt. The con-



sternation into which the inhabitants of Halstead were thrown by the sudden falling of the greatest monument that was ever erected in this part of the country may be more easily imagined than described; hundreds of persons might be seen flocking to the spot, and I believe I do not exaggerate if I say there were near three thousand persons within an hour after it fell. The shrieks and screams were dreadful to hear; almost every one expecting that not less than from twelve to fifteen persons were beneath the ruins.

The church was to have been consecrated on the 31st of this month, and the tower and spire altogether would have been 150 feet high.

Yours, most respectfully, G. C.

Halstead, July 15.

[As we judge our correspondents take the same interest as ourselves in all matters of the construction and failure of buildings, we should be obliged by any exact particulars as to the nature of the work and the cause of its ruin. —Ed.]

### Miscellaneous.

**PICCADILLY IMPROVEMENT BILL.**—A bill is now on its way through Parliament to widen and improve Piccadilly, in the city of Westminster. It is under the care of the Earl of Lincoln, M.P., and Mr. John Young, the Secretary of the Treasury, and contains eight clauses. The first clause empowers the Commissioners of Woods and Forests to widen the carriage-road and south side foot-way of so much of the street called "Piccadilly," in the parish of St. George, Hanover-square, as lies between Bolton-street on the east, and Park-lane on the west, and to take and use for that purpose so much of Her Majesty's "Green" Park, in the parish of St. Martin-in-the-Fields, as will make Piccadilly, from Bolton-street to Park-lane aforesaid, of an uniform width of 70 feet, or thereabouts. The second clause empowers the commissioners to alter, raise, lower, and shut or stop up the carriage-way and foot-way aforesaid during the progress of the works, to put up bars and posts, and to make general orders for regulating the passage of carts, carriages, and horses. The street, as widened, is to be repaved by the Commissioners of Woods and Forests, either with stone or wood; or it may even be macadamized. The portion of the Green Park, appropriated towards the widening of Piccadilly, is to be severed from the parish of St. Martin-in-the-Fields, and annexed to that of St. George, Hanover-square. The whole of Piccadilly, between Bolton-street and Park-lane, when so widened and improved, is to be kept in repair at the expense of the last-mentioned parish. This act is to be deemed a public act.

**DESTRUCTIVE FIRE AT SLOUGH.**—On Monday afternoon, a very destructive fire broke out in the recently erected mansions at Upton-park, near Slough, the property of Mr. J. T. Bedford, the extensive builder, of New Windsor. As soon as the intelligence of the fire reached Windsor, two companies of the Scotch Fusilier Guards left Windsor, with the barrack engine, for the scene of the conflagration, followed by two engines from the Castle, the Windsor and Eton College engines, and several others from the vicinity; but such was the ascendancy that the flames had obtained before their arrival, that all attempts (although there was a plentiful supply of water) to preserve the property were totally ineffectual, and three houses were completely gutted forming the west end of Victoria-terrace. We understand the property is insured to the amount of 3,000*l.* (about one-half of its value) in the London Union Fire-office. It is supposed that the fire broke out in the basement of the house (situate at the eastern end of the Terrace, the wind at the time blowing strongly from the westward) in which a fire had been lighted by the workmen who were employed in some zinc works connected with the buildings. Such was the rapidity with which the flames extended, that several of the workmen lost their clothes, and a large portion their tools, which were consumed before they had time to secure them.

**ROYAL ACADEMY.**—In the House of Commons on the 9th instant, Mr. Hume moved "That an humble address be presented to her Majesty, praying that, as patroness and controller of the Royal Academy of Arts, she will be graciously pleased to take into consideration the laws and regulations of that institution, with a view of rendering it more conducive to the advancement of the fine arts, better suited to the spirit and circumstances of the present age, and more consonant with the original intention of its royal founder, George III." The hon. member was proceeding, in support of his motion, to arraign the conduct of the Royal Academy, as impeding rather than assisting the progress of art, and to argue the right of the people under the charter to free admission to its exhibitions, when an hon. member moved that the house be counted, and there being only thirty members present, the house adjourned.

**ST. MARYLEBONE BANK FOR SAVINGS, 76, WELBECK-STREET.**—ESTABLISHED 5th JULY, 1830. COMPARATIVE STATEMENT OF PROGRESS at specified periods during the last seven years.

	Open Deposit Accounts.	Sums invested with National Debt Commissioners.
	<i>£.</i>	<i>£.</i>
On 5th July, 1838	10,703	179,381
" 1839	11,620	216,017
" 1840	12,445	243,469
" 1841	12,881	260,852
" 1842	13,100	275,072
" 1843	13,820	305,383
" 1844	14,638	340,509

D. FINNEY, Assistant Secretary.

**NEW HARBOUR AT ABERDEEN.**—The works for the new harbour at Aberdeen have been contracted for by Messrs. Oldham, builders and railway contractors, of Cheltenham. The sum is 99,660*l.* When completed, the new harbour will be one of the most commodious in the kingdom.

**THE ARTESIAN WELL NEAR PARIS.**—The volume of water supplied by the Artesian Well of Grenelle was measured a few days ago, and found to have lost nothing of its force or quantity. The source furnishes 2,000,000 quarts of water per 24 hours, which is more than sufficient for the consumption of the quarter of the Pantheon, where immense reservoirs have been constructed to receive it. The water is as limpid as filtered Seine water, and has continued clear since tubes have been inserted in the aperture.—*Constitutionnel.*

**SINGULAR CIRCUMSTANCE.**—Lately, as some workmen were employed in quarrying a rock close to the Tweed, about a quarter of a mile below Rutherford-mill, a gold thread was discovered embedded in the stone at a depth of eight feet. How long this remnant of a former age has remained in the situation from which it was taken will baffle the skill of the antiquary or geologist to determine. A small bit of the thread has been sent to our office for the inspection of the curious.—*Kelso Chronicle.*

**NATIONAL PROPERTY IN FRANCE.**—A general statement of the national estates and property, with an estimate of value, has been distributed to the members of the Chamber of Deputies. The gross amount is 1,287,900,000*l.* (51,480,000*l.*) The portion appropriated to the public service amounts to about 550,000,000*l.* (22,000,000*l.*), and the woods and forests to 729,000,000*l.* (29,000,000*l.*)

**LONGEVITY OF TREES.**—The following trees are calculated to live—elm about 335 years; cypress, 350; cheirostemon, 400; larch, 575; orange, 630; olive, 700; ornamental plane, 720; cedar, 800; lime, 1,147; oak, 1,500; yew, 2,820; baobab, 5,150; taxodium, 6,000.

On Wednesday week, his Royal Highness Prince Albert presided at a meeting of the commission for promoting and encouraging the fine arts in the rebuilding the Palace of Westminster.

The Health of Towns Commission had a meeting on the 9th instant at Gwydyr House, Whitehall.

A poor little sweep was suffocated in a flue at Goldings, Herts, on Friday week.

**STONELEIGH BRIDGE.**—It has been ordered that this bridge be repaired. The cost will be 600*l.*

It is in contemplation to convert the Tunbridge Wells Theatre shortly into a corn market.

### Tenders.

**TENDERS** delivered for Messrs. R. Barratt and Sons' premises, Beech-street, Barbican. Quantities provided, and tenders opened in presence of contractors.—W. Wallen and Son, Surveyors, 1, Circus-place, Finsbury.—July 13.

Piper .....	£769
Furnival .....	748
Webb .....	735
Waterlow .....	705
Ashby .....	695
Ward .....	678
Trego .....	660
Haynes and Co. ....	650

**TENDERS** delivered for building two third-rate houses and offices on the east side of Holford-square, Pentonville.—Mr. James Harrison, Architect.

Thomas Lawrence .....	£2,339 0 0
C. Hellis .....	2,125 12 0
Lawrence and Sons .....	2,116 0 0
John Hall .....	2,084 0 0
C. Tibbets .....	2,050 0 0
John Jay .....	1,984 0 0
Locke and Nesham .....	1,977 0 0
W. Smith .....	1,957 0 0
H. Freeman .....	1,595 0 0
W. M. Hill .....	1,371 0 0
W. Watkins .....	1,365 15 6

**TENDERS** for the Repairs and Painting of the Police Station West Smithfield.—T. Bunning Architect.

Johnson .....	£98 0 0
Colbatch .....	91 0 0
Buzzard .....	89 0 0
Self .....	72 10 0
G. Cooke .....	72 0 0
Chandler .....	49 0 0

The lowest tender was accepted.

**TENDERS** delivered for erecting a new Hospital. The Guardians of the Poor of the Union Workhouse, Aston, near Birmingham.

Davies, Birmingham .....	£1,515
Watson, Whitacre .....	1,404
Greensall, Erdington .....	1,365
Norton, Birmingham .....	1,350
Warden, do. ....	1,329
Dredge, do. ....	1,297
Johns, do. ....	1,275
Dewsbury, do. ....	1,270
Machin, Erdington .....	1,260
Hardwick, Birmingham .....	1,239
Heafeld do. ....	1,911

The lowest tender was accepted.

**TENDERS** delivered for erecting a School at the Workhouse of the parish of St. Mary, Newington.

Hawes .. ..	£1,205 0 0
Wood .. ..	1,198 0 0
Colven .. ..	1,196 0 0
Warren .. ..	1,180 15 0
Peacock .. ..	1,173 10 0
Plaskett and Shelton ..	1,152 0 0
Burtenshaw .. ..	1,145 0 0
Ward .. ..	1,135 0 0
Geary .. ..	1,132 0 0
Cooper and Davies ..	1,090 0 0
Mason .. ..	1,010 0 0
Wilson .. ..	944 0 0
Cuttress .. ..	935 0 0

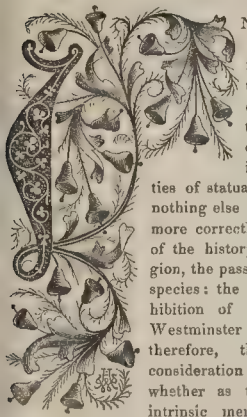
The tenders were opened in the presence of the parties.



# The Builder.

NO. LXXVII.

SATURDAY, JULY 27, 1844.



Nothing else does the mind, whether refined or unrefined, take greater delight than in the beauties of statuary—for by nothing else is the mind more correctly informed of the history, the religion, the passions of our species: the present exhibition of statuary in Westminster Hall claims, therefore, the greatest consideration from us, whether as to its own intrinsic merit or the opening of a new era in architectural art, whereby no longer is even the bald white-washed wall deemed too costly, but embellishment is re-admitted, and superiority is called for. The chosen work of the chosen artist is to form the decoration of the Westminster Palace, and the three sister arts—architecture, sculpture, and painting—are to be united in one magnificent work.

The exhibition is highly creditable; it contains many respectable and many fine works, and is particularly pleasing, as containing not a few which, in the patriotic spirit of representing our own sages, our own heroes, our own monarchs, gives it a nationality, which, eventually, will be the distinguishing excellence of the British School. All appreciative such subjects, treated in such spirit. We do not deem it necessary to give any more general observations upon the matter, but proceed to some particulars relative to these objects of art themselves.

85. Lord Bacon, by John Henning, jun.—This must be recorded to our disgrace, that the name of Bacon has been more highly appreciated and more extensively diffused by the learning of Gassendi, the admiration of Voltaire, and the critical sagacity of D'Alembert, than by any efforts of our own. Whatever in the revolution of ages may be the fate of this empire, even to that distant, but probable period, when the present continent of Europe shall exchange its civilization for the barbarity of regions now undiscovered or unexplored, in whatever corner of the globe literature and science may hereafter seek an asylum, so long will they exalt the fame, and be guided by the genius of Bacon.

This is a fine work, in the peculiar costume of the day, which outdid nature when in a sunny mood.

90. Captain James Cook, R.N., F.R.S., by W. G. Nicholl.—A very proper subject for the chisel.

91. Richard I., by Charles Augustus Rivers.—A work of animation.

93. St. George and the Dragon, by Hamilton and Carleton McCarthy.—The horse of this is a fine work.

95. John Rennie, F.R.S., by C. A. Rivers.—Suitable.

100. Geoffrey Chaucer, the Father of English Poetry, by W. Calder Marshall.—A very beautiful work.

103. The Earl of Marlborough, afterwards the Grace the Great Duke of Marlborough, by Henry Sibson.

Quite out of the Gothic character; yet, though hugely booted, according to the costume of the man himself—therefore proper.

106. The Archer or Eagle-Slayer, by John Bell.—“Our ancestors used the bow for a double purpose; in the time of war it was a dreadful instrument of destruction, and in peace it became an object of amusement. It will be needless to insist upon the skill of the English archers, or to mention their wonderful performances in battle.”—*Strutt's Sports and Pastimes of the People of England*.

The story intended to be conveyed is, that an eagle having just slain a lamb, soars high aloft; scared from his prey by the shepherd (represented in the statue), who has just launched a successful shaft at the wide-winged robber.—A very fine work, seeming to live.

108. Milton dictating his Poem of Paradise Lost to his Daughters, by W. F. Woodington.—A good work.

111. Chaucer, by John Hancock.—A very beautifully designed production, having an air totally differing from routine performances.

113. Boadicea, Queen of the Iceni, a group, by John Henning, jun.—“But she then appeared upon the same foot as one of the vulgar, and sought vengeance for the oppression of public liberty, for the stripes inflicted upon her person, for the defilement of her virgin daughters. To such a height was the wild fury and consciousness of the Romans advanced, that neither the persons of individuals, not even old age, nor even tender maidens could escape their rage and contamination. The incensed deities were, however, ready to aid the just sword of vengeance; by it a legion which dared to attempt an engagement had already fallen. . . . If the Britons would survey the number of men under arms; if they would well weigh the affecting cause of war; they would find that in that battle they must remain utterly victorious or utterly perish; such was the firm purpose of her who was a woman; the men, if they pleased, might still enjoy life and bondage.”—*Annals of Tacitus*, book 14.

A very masterly work of art.

115. Talbot Earl of Shrewsbury (time of Henry VI.), by Charles Samuel Kelsey.

A capital architectural statue in costume and treatment, suiting the building.

117. Alfred the Great with the Book of Common Law, by Frederick S. Archer.

A very good work.

118. The Death of the Duke of York at the Battle of Agincourt, by Benjamin E. Spence.

“Upon these words I came and cheer'd him up: He smil'd me in the face, rought me his hand, And with a feeble gripe says—‘Dear, my lord, Commend my services to my sovereign.’”

—*Vide SHAKESPEARE'S HENRY V.*

An artistic specimen of exquisite feeling.

120. Alfred the Great, by James Sherwood Westmacott.

Good and suitable in design and execution.

123. Portrait Statue of Robert Burns, by David Dunbar, jun.

A worthy morsel of art.

124. Sir Isaac Newton, by William Jackson.

Simply, yet finely treated.

129. The Mourners; representing a wife, who, during the civil wars of York and Lancaster, has followed her husband to the field of battle, and discovers his lifeless body among the slain, his charger standing over him. By T. G. Lough.

After passing a file of good, of fine, of even very fine productions, this wonderful piece of art breaks upon the view, and the longer the sight rests upon it, the longer view does it desire.—The heroic slain, who has not fallen till the sturdy wood of his battle-axe broke under his prowess, seems in death a conqueror: the bereaved lady pictures a fine mixture of heart-break, pride in her husband's prowess, of grief and admiring love: the noble charger, faithful to its master, remaining there in death, as in life, with the beautiful widowed face almost leaning in companionship upon it, breathes through the stolid material in audible passion. How fine, how touching does art become, when, leaving the ineffective restraints of conventionalism, it dares to assume, that perfect art can take no flight higher than the perfect beauty which God himself has set in the feature, the limb, the muscle, the action, the breath, with which, after his own image, he has endued nature in all her works!

131. Cardinal Wolsey, by Thomas Grimsley, “Farewell, a long farewell, to all my greatness.”

A beautiful cabinet statue, with its hands silently clasped in bitterness.

132. Sir Isaac Newton, by Edwin Gahagan.—“The first idea of universal gravitation was suggested to Sir Isaac Newton (in his 24th year) by the fall of an apple.—“A new idea darted across his mind. Why, he asked himself, may not this power extend to the moon, and then what more would be necessary to retain her in her orbit round the earth?”—*Library of Useful Knowledge*.

Wonderfully fine—indeed exquisite—quiet, yet evidently all soul, though evidently worked out in only rude matter.

133. Milton reciting to his Daughters, by James Legrew.

Of perfect beauty, elegant, soul-like, wanting nothing in design, or execution, or finish.

134. Jane Shore, by John Bell.

“Look on her now, behold her where she wanders, With no one hand to help; and tell me, then, If ever misery were known like her's?”

Somehow about this quarter of the town, I hear the poor abandoned creature lingers; Her guard, tho' set with strictest watch to keep All food and friendship from her, yet permit her To wander in the streets, there choose her bed, And rest her head on what cold stone she pleases.”

ROWE'S TRAGEDY OF JANE SHORE, Act 5.

A very beautiful figure, not spoiled by being over short.

135. Bede, the Saxon Ecclesiastical Writer, by Charles Samuel Kelsey.

Thoughtful, but too coarsely managed to reach ideal beauty.

137. Richard Cœur de Lion planting the Standard of England on the Walls of Acre, 12th July, 1191, by James Sherwood Westmacott.

A very beautiful work; the more meritorious from being free from the mere matter-of-fact of conventionalism.

139. Edward I. creating a Knight Banneret. The dying man still retains the banner in his grasp and is supported by a trooper, while the King, who comes up at the moment, is in the act of conferring on him the honour of knighthood; the horse of the dying man is also mortally wounded by a spear in his throat. By T. G. Lough.

A very beautifully executed horse—the dying man of speaking effect; the figures of the prince and the trooper less striking; but the monarch's horse, stumbling over a dead mailed warrior, exhibits the highest art.

140. Richard I., King of England, surnamed Cœur de Lion, by James Wyatt.—“The Christian adventurers, under his command, determined to besiege the renowned city of Ascalon, in order to prepare the way for attacking Jerusalem with greater advantage. Saladin, the most renowned of all the Saracen monarchs, was resolved to dispute their march, and placed himself upon the road with an army of 300,000 men. This was a day equal to Richard's wishes, this an enemy worthy his highest ambition. The English Crusaders were victorious. Richard, when the wings of his army were defeated, led on the main body in person, and restored the battle.”—*Goldsmith's History of England*, vol. ii., p. 283.

Of considerable beauty.

141. Margaret of Anjou and her Son meeting the Robber after the Battle of Hexham, by John A. P. Mac Bride.—“Margaret, the wife of Henry VI., after her defeat at Hexham, fled, accompanied only by her son. She was met in a forest by some robbers, who stripped her of her jewels, and treated her with great indignity. The division of this rich booty caused a quarrel amongst them, and she took the opportunity of escaping still further into the forest, when, overcome by hunger and fatigue, she met another robber, who approached her with a drawn sword in his hand; anxious only for her child, and with the courage and dignity which never forsook her, she advanced and said, ‘Hold, my friend, save the son of thy king.’”

Quiet, yet speaking more passionately than all the outward hard working of muscle, fixed eye, and stiffened features.

144. Caractacus before Claudius Cæsar, with his Wife and Child, by W. Spence.—A fine group.

147. A Portrait Statue of Lady Emily,



daughter of the Duke of Beaufort, by Wm. Behnes.

148. Cupid, with Doves, by Wm. Behnes.  
Two works by this sculptor, of great beauty.

151. A Girl at Prayer, by P. MacDowell.—An extremely exquisite work.

153. The Burial of the Princes in the Tower of London, by H. C. Shenton, jun.

"The tyrannous and bloody act is done;  
The most arch deed of piteous massacre,  
That ever yet this land was guilty of."

\* \* \* We smothered

The most replenished sweet work of nature  
That, from the prime creation, e'er she framed."  
*Vide SHAKESPEARE'S RICHARD III., Act 4,*

[Scene 3.]

A meritorious work.

154. The death of Boadicea, by Thomas Woolner.

Exhibiting death in the face of the figure in a manner wonderfully affecting.

162. An Ancient Briton, as a Scout, torch in hand, and with fire-wood resting on the ground, by Geo. G. Adams.—A good work.

163. Prince Henry, by Wm. Thomas.

"I spake unto the crown, as having sense,  
And thus upbraided it:—The care on thee depending  
Hath fed upon the body of my father,  
Therefore, thou best of gold art worst of gold;  
Other, less fine in carat, is more precious,  
Preserving life in med'cine potable:  
But thou, most fine, most honour'd, most renowned,  
Hast eat thy bearer up."

SHAKESPEARE'S HENRY IV., Act 4, Part 2.  
A very beautiful work.

165. Eve, by W. Calder Marshall.

"So saying, her rash hand, in evil hour,  
Forth reaching to the fruit, she pluck'd, she ate!  
Earth felt the wound; and nature, from her seat,  
Sighing through all her works, gave signs of woe,  
That all was lost. Back to the thicket slunk  
The guilty serpent; \* \* \*

MILTON'S PARADISE LOST, Book ix.

The mother of mankind is beautifully shown plucking the fruit, while the serpent is coiled aloft around the trunk. The subject is well treated.

169. An Ancient Briton protecting his Family, by Thomas Earle.

170. Edward I. presenting the first Prince of Wales, by Thomas Earle.—"He began by declaring to them, that whereas they were oftentimes suitors unto him to appoint them a prince, he, now having occasion to depart out of the country, would name them a prince, if they would allow and obey him whom they should name. They cautiously answered that they would do so if he would appoint them one of their nation. The king lost no time in assuring them 'that he would name one that was born in Wales, and could speak never a word of English.' He left them to congratulate each other on his favourable intentions, and returned in a few seconds, very much to their surprise, bearing in his arms a new-born infant; but much more were they astonished when he presented him to them as their prince, satisfying them most completely that he fulfilled the stipulated conditions, that he was born in Wales, and could not speak a word of the English language."—*Lives of the Princes of Wales*, by Robert Folkestone, vol. i., p. 4.

Two very beautiful works.

171. William of Wykeham, by John Thomas.—A capital performance.

173. Alfred the Great propounding his Code of Laws, by Edward B. Stephens.—A very good work.

178. A British Warrior, by Samuel Nixon.—An excellent work.

#### THE GOVERNMENT SCHOOL OF DESIGN.

The annual distribution of the prizes to the most meritorious of the pupils in the Government School of Design took place on Wednesday the 24th inst., in the apartment of Somerset-house set apart for the studies and business of the institution, in the presence of the great body of the pupils, and of a very numerous assembly of ladies and gentlemen. The walls of the room were covered with designs in plaster of Paris, on paper, and with other things connected with the progress of art; and numerous tables were placed, on which were displayed specimens in sculpture, in casting, in porcelain, &c., the productions of the continent, collected for the use of this establishment,

and to make the students better acquainted with the modes by which foreign works of art are distinguished, and to avail themselves of foreign discoveries and improvements in the classes for which the School of Design was established.

Amongst the company present were the following members:—The Right Hon. Lord Colborne, Mr. B. Hawes, M.P., Mr. H. Galley Knight, M.P., Mr. R. Monckton Milnes, M.P., Mr. P. Pusey, M.P., Mr. T. Wyse, M.P., Sir R. Westmacott, R.A., Mr. J. G. Shaw Lefevre, F.R.S., Mr. W. R. Hamilton, F.R.S., Mr. W. Etty, R.A., Mr. W. Dyce, Mr. J. M. Gardiner, Mr. Thomas Gibson, Mr. H. B. Ker, Mr. Apsley Pellatt, Mr. A. Poynter, besides Lord Westmorland, the Right Hon. Mr. Gladstone, Mrs. Gladstone, Colonel Wodehouse, M.P., and many other persons of distinction.

The chair was taken precisely at 4 o'clock by Lord Colborne, who expressed his high satisfaction at what he saw in the room that day. He felt so great an interest in the success of the Government School of Design, that he had left other duties which demanded his attention to take the chair. His duty on that occasion was not, however, likely to be a very long one; it was, first, to return his thanks, and that of the council, to the company assembled, for their attendance, and next, to tender to Mr. Gladstone, who appeared there to distribute prizes, the thanks of all present. He was convinced that hon. gentleman, and all who were there met, would rejoice to behold the works displayed around them—works, for the most part, of individuals who had only been pupils of the institution for two years. His Royal Highness Prince Albert had been pleased to preside on the last annual meeting, and had most kindly offered his services this year, provided the distribution of the premiums could have been arranged to take place previously to his going to Windsor. He (Lord Colborne) much regretted that Prince Albert was not present, but that regret was greatly alleviated by the presence of the Right Hon. the President of the Board of Trade. He hoped he was not too sanguine when he alluded to the attention bestowed on the institution by Mr. Wilson, the director (to whom his lordship paid an elegant compliment), in thinking that it would flourish and answer the expectations that had been formed of it. He (Lord Colborne) was most happy to hear the mark of approbation which had been given when the name of Mr. Wilson was mentioned, because it showed how highly he was esteemed. He thought that under his management the artists who attended the School of Design, and their productions, would shortly be able to compete with those of the continental countries. He would come now to the most pleasing part of his duty, which was to call upon the secretary to read over the names of those to whom the premiums had been adjudged; but first he would place the Right Hon. Mr. Gladstone in the chair, who would distribute them to the successful candidates.

His Lordship then quitted the chair, which was taken by Mr. Gladstone amidst expressions of applause from the company; and Mr. Wilson shortly explained the collection of works of art and of design which were exhibited in and hung around the walls.

Mr. Gladstone then rose, and after apologizing to the company for the few brief remarks he was about to offer, said the institution had the best wishes of the Government, as well as of the public. They were assembled there that day with one unanimous feeling of anxiety to promote the objects connected with it. Those objects were not only intimately connected with the commercial prosperity of the country, but with the progress of good taste, and that feeling for the truly beautiful in art by which the country was to be improved and exalted. Perhaps if more of difficulty was to be surmounted, a greater degree of interest might be excited for the progress of the institution; but the great difficulty had been surmounted. The greatest credit was due to that Ministry which had first established the Government School of Design, when its subsequent fate was doubtful, and when strong prejudices were to be encountered and got over—when some prejudiced people thought, and perhaps there might be some few who still thought, that the artists of England could not contend in rivalry with the artists of foreign countries, in uniting what

was useful with what was beautiful. Great honour was due to those who had recommended Parliament to attend to that school. Many thanks were next due to Lord Colborne and the gentlemen of the council of the School of Design; many great questions had made demands on their time since the School of Design had been originated, nevertheless they had not relaxed in their efforts and attention to the interests of that school. The labours of those also must be taken into view who had produced those works which the company were that day assembled to view. He would say that the present director was the soul of the school, without whose genius and application the council or any other assistance could not avail. It was impossible to overrate the public importance of the institution. The commercial power of this country excelled that of all others; but one defect—the defect in the art of design—had given other countries an advantage we did not possess. France was deserving of praise for her efforts to effect a union between the beautiful in design and the national industry. He did not, however, despair for what England would do by such a union. He no longer despaired of making the people of this country understand what beauty in art was, and by such understanding would be supplied all that was wanting. No vote in Parliament was more cheerfully made than that for the advancement of the School of Design. The vote was cheerfully supported by the Government, by the Board of Trade, and every assistance had been furnished by Sir Robert Peel and by Mr. Lefevre. Sir Robert Peel felt, what every minister should feel, a warm, a lively interest in the success of the institution. The pupils, who fully appreciated the importance of what was presented to them, might rely that the encouragement hitherto given would not be withdrawn. There would be found no indisposition or backwardness to reward those who developed ability and talent. The late changes in the law had been beneficial to the encouragement of the art of design; the designer had as much right to be protected as the author, and that principle was now recognized by the law. The law now worked beneficially for all parties: the designers were now secured the fair reward of their talent and genius, which but for this alteration of the law would have been the prey of pirates. They might now indulge a thankful satisfaction on the progress of the school; and the problem would be solved, whether or not a true estimate of the beautiful in art might be united to commercial industry and the enterprise of trade, and might not exist in its full development in England. We had no envy for the advancement of other nations, but contended that in adopting what they had adopted, this country showed that it appreciated their efforts. Mr. Gladstone concluded by congratulating the meeting on the results of what had been attempted, and then delivered the prizes, in the following order, to the persons named:—

1. Arabesque painting in fresco, Mr. Silas Rice, 5*l.* 5*s.*
2. Arabesque painting in fresco secco, Mr. G. Stuart, 5*l.* 5*s.*
3. Arabesque in oil, Mr. A. E. Vindon, 5*l.* 5*s.*
4. Arabesque in oil, Mr. F. R. Fussell, 3*l.* 3*s.*
5. Design for paperhangings, Mr. Walker, 2*l.* 2*s.*
6. Composition of ornament from natural flowers, Mr. Brown, 3*l.* 3*s.*
7. Design for glass chandelier, Mr. J. Stradwick, 5*l.* 5*s.*
8. Design for porcelain dinner-service (two prizes), equal merit, Mr. G. Wallace, 5*l.* 5*s.*; Mr. W. C. Wilde, 5*l.* 5*s.*
9. Design for side-board, Mr. J. Phillip, 2*l.* 2*s.*
10. Design for carpet, Mr. J. R. Harvey, 3*l.* 3*s.*
11. Design for silver candelabra, Mr. J. Stradwick, 5*l.* 5*s.*
12. Design for silk hangings, Mr. J. Brown, 3*l.* 3*s.*
13. For coloured designs for printed druggery.
14. W. C. Wilde, 3*l.* 3*s.*; J. R. Harvey, 3*l.* 3*s.*
15. Best specimen of ornamental modelling, Mr. H. Armstead, 3*l.* 3*s.*

Class Drawings.—For outline drawing, 1*st*, Mr. W. Scott, 1*l.* 10*s.*; 2*nd*, Mr. G. George, 1*l.*



Shaded Drawings of Ornament in Chalk.—1st, Mr. J. Phillips, 2*l*. 2*s*.; 2nd prize, J. Pringle, 1*l*.; 3rd prize, Short, 1*l*.  
Shading in Chalk.—1st, W. Gledall, 2*l*. 10*s*.; 2nd, L. C. Wyon, 2*l*.  
Best Grisaille Drawing.—1st, E. Arnold, 2*l*. 2*s*.; 2nd, L. Walker, 1*l*. 10*s*.  
Best coloured drawing in tempera from flowers, F. Smallfield, 2*l*. 2*s*.  
Best copy of an arabesque painting, 2*l*. 10*s*.  
No name on the drawing.  
Best chalk drawing of the human figure, Mr. F. R. Fussell, 2*l*. 10*s*.  
Second Prize.—G. Stuart, 2*l*.  
Junior Class.—Drawing from the mask of Lucius Verus, A. G. Gandy, 1*l*. 10*s*.  
Second Prize.—J. Brown, 1*l*.

## FEMALE SCHOOL.

Best design for lace, Miss Dixon, 3*l*. 3*s*.  
Best design for flowers, Miss R. Densdale, 1*l*. 1*s*.  
Best chalk drawing from the round, Miss E. Angell, 2*l*. 2*s*.; 2nd prize, Miss E. Channon, 1*l*. 1*s*.  
Best design of ornament for engraving on wood, Miss A. Colchester, 2*l*. 2*s*.; 2nd prize, Miss Bragg, 1*l*. 1*s*.  
Best drawing for lithograph, Miss Clark, 2*l*. 2*s*.; 2nd prize, Miss Bridges, 1*l*. 1*s*.  
The business of the day having thus been terminated, the thanks of the meeting were moved by one of the council to the hon. chairman, who returned thanks for the honour done him; after which the meeting broke up.

## COMPLETION OF THE NELSON MONUMENT.

HOUSE OF COMMONS, JULY 22.—A vote for 8,000*l*. being proposed to defray the cost of completing the Nelson Monument, Mr. WYSE begged to know whether the Government had not received an offer from an artist of the name of Park, who had offered to complete the monument at an expense of 5,000*l*. if he were suffered to undertake and finish it in conformity with his own taste and judgment.—Sir R. PEEL said, it was true that the Government had received such an offer, but had not thought proper to accept it, as a monument like that erected to Nelson ought to be the subject of competition to artists, and it would be establishing a bad principle if such a proposition as that referred to by the hon. member were to be accepted. The best way was for the Government to pay the expense attendant on completing the monument upon such a plan as might be deemed proper, and not to accept the money of private individuals in such a matter.—Mr. WYSE did not disapprove the conduct of the Government in this matter, but thought the present occasion was the fittest opportunity for bringing the offer that had been made to the notice of the House.

Mr. G. KNIGHT recommended that the shaft of the Nelson Monument should be carried to the height to which it was originally intended to carry it before the funds fell short: its height at present was 20 feet less than that originally contemplated, and now the Government had undertaken its completion, the monument ought to be finished in a style worthy of the nation and of the man to whom it was erected. As for the taste which was displayed in the statue of Nelson now placed on the column, he thought it in the lowest possible school of art. He hoped, in the completion of the monument by the Government, that care would be taken to secure good and competent artists to execute the lions which were to adorn the base of the column, and that they would be of a size proportioned to the structure.

Mr. B. COCHRANE observed that he had seen it stated in one of the papers that the Emperor of Russia had bestowed 500*l*. towards the completion of the Nelson Monument, and that this sum had been accepted. He considered that if this statement was true, the fact was extremely disgraceful to this country, for a national monument ought to be paid for by the people alone, and not to be the result of foreign assistance. As the Government had now taken charge of the structure, he begged to express his entire satisfaction with this proceeding; but he thought that if this had been done before the length of the shaft had been reduced 20 feet, in consequence of the falling off of the funds, it would have been much better, ("Hear," and "No.")

Would it be disputed that the monument was twenty feet shorter than it was intended to be, and that this was occasioned by the inadequacy of the sum subscribed to erect it? Why, there was still a sum of 12,000*l*. required to finish the pedestal, and how therefore would it be denied that the sum required for the shaft, as originally designed, had not been inadequate for that purpose? The whole progress of this and of many other public buildings proved to him the necessity that existed in this country for creating a Minister of Public Works, whose attention would be directed to objects of this nature, and which were of such vast importance.

Sir R. PEEL said the house should bear in mind that this design of a monument to Lord Nelson was originally a private affair. It was proposed to erect a monument to Lord Nelson exactly in the way in which two memorials of the Duke of Wellington were about to be erected, one in the east and the other in the west part of the town, not by Government, but by private subscription. He could not help thinking that memorials in honour of a great general must be more acceptable to his feelings when erected by the spontaneous offerings of his fellow-subjects, than if erected by a vote of Parliament. (Hear, hear.) In like manner it was determined to erect a monument to Lord Nelson, and the design of the monument originated entirely with individuals. A sum of 20,000*l*. had been subscribed, but the committee of management had expected that a considerably larger sum would have been raised. In the progress of the proceedings connected with this monument the committee thought it desirable to take the opinion of an architect and engineer as to its height, and the parties consulted Sir R. Smirke and Mr. Walker, who, considering the height of the fluted Corinthian column, which was also to have a bronze capital and statue on the top, declined to answer for its safety, strongly advising that the shaft should be curtailed by 20 feet. The curtailment was injurious to the effect, but it arose entirely from considerations of public safety, as it was thought that it would be extremely inconvenient should the monument fall in that crowded part of the metropolis, where it was now erected. This consideration alone, and not one of expense, led to the curtailment of the monument. When the Emperor of Russia gave 500*l*. towards the completion of the monument, the Government had not the charge of the monument, and the committee accepted the gift, which was not given towards the expense of a public monument erected by public money, but in aid of private subscriptions already collected; the Emperor of Russia being willing to mark his sense of Lord Nelson's merit, and shew his gratitude for the courteous reception he had experienced in this country, by this subscription of 500*l*. (Hear.) With the same feelings the Emperor subscribed towards the Wellington Monument. Though the Government had now the charge of the Nelson Monument, he hoped the hon. member would not advise the Government to return the subscription of the Emperor of Russia, which was presented before the monument came under the charge of the public, and when it was to have been raised by private subscriptions.

After a few words from Mr. B. COCHRANE, the vote was agreed to.

[In allusion to the proceedings in the House of Commons, reported above, the *Times* of Thursday observes, "We did yesterday a very unintentional, but very material, injustice to Mr. Patric Park. We stated erroneously that he had offered to complete the Nelson Monument for the sum of 5,000*l*., whereas his proposal was to do all that remains to be done gratuitously, giving, at the same time, a guarantee of 5,000*l*. that the work should be finished according to the terms specified in his communication to the committee. So generous an offer requires no comment."]

It appears that the sum of 12,000*l*. and upwards is yet required for the completion of this great national memorial, which the Lords of the Treasury have recommended Parliament to supply, a vote of 8,000*l*. being proposed to be taken for the expenses of the present year. The sum of 3,095*l*. is required for the discharge of Messrs. Grissell and Peto's contract for granite steps; 4,000*l*. for the cost of four

commemorative subjects, in bronze; and 3,000*l*. for four lions, in granite; making altogether 10,095*l*. Upon this there is, however, a charge of 2,000*l*. for the architect's commission upon the gross amount, and for incidental expenses. It was so far back as the year 1816 that the House of Commons (on the 5th of February) resolved, *nem. con.*, that an address should be presented to his Royal Highness the then Prince Regent, humbly requesting his Royal Highness to give directions that a national monument be erected in honour of the ever-memorable victory of Trafalgar; and on the 11th of February, 1816, the Prince Regent intimated to the House, through Lord George Beresford, his willingness to grant its request.

A meeting of the Nelson Pillar Committee took place on Saturday at the National Gallery, Sir George Cockburn in the chair, for the purpose of taking into consideration a communication which had been transmitted by the Government, on the subject of the application made by the committee, to the effect that the Government would either supply the means of completing the monument, or take it wholly into their own hands. There were present, besides the chairman, the Marquis of Northampton, Lord Colborne, Lord Montague, Sir P. Laurie, Mr. Sydney Herbert, one of the Lords of the Treasury, &c.

The official letter from the Treasury was read. It stated that in the year 1816, the House of Commons having voted adequate sums for commemorating the great military victories which were achieved, and might thenceforward be achieved, by the arms of this country, there could be no doubt of the existence of a similar desire to perpetuate the memory of the naval valour by which England was so eminently distinguished. It appeared, therefore, to the Government, that the most advisable course which could be pursued by the committee of the Nelson Pillar was to deposit whatever sums of money might be in the possession of the treasurer to the fund in the hands of the Commissioners of Woods and Forests, who would undertake the task of completing the monument. The letter also alluded to the large sum, 20,000*l*., already subscribed by the public, and desired that all the drawings, plans, and documents relative to the pillar should be sent to the office of the commissioners.

The meeting unanimously agreed to the suggestion in the official letter, which was considered by the committee as a security for the most perfect completion of the work. A general wish was expressed that upon one side (the northern) of the pedestal not only the name of Nelson, but the names of all the other eminent officers engaged in the battle of Trafalgar should be chiselled. The expense of completing the pillar will amount to 10,000*l*. or 12,000*l*.

## TRAFALGAR-SQUARE.

(From a Correspondent.)

As much public curiosity has been manifested for these last few weeks, to know when the fountains are to be brought to their place there, and as to what kind of things they are to be when duly finished—with respect to the first part of the matter we do not profess to be very intimate; but with respect to the second, it may be observed, that we have every reason to believe that they will be the two finest, largest, and boldest fountains in the country. They are to be of Aberdeen granite, of very considerable elevation, and noble proportion, consisting of two basins, one above the other, somewhere about in the proportion of seven feet to nine, which is the proportion considered most eligible for the situation. They will each contain a central or upper jet, which will consist of a good body of water, and be thrown to a tolerable elevation, say about ten feet; then falling into the first basin, and running over its side in a continuous stream, so as to form one solid sheet of water till it reaches the second basin, where it is again to pass through the same process of running over the sides, and from thence falling in streams to the granite blocks or steps which support the fountain, and thus form a fine, bold cascade into the large open basins now already fixed in the square; in addition to which, there will be four jets, thrown from dolphins' mouths, in the framework which supports the basins.



From this rapid description it will be seen that there will be a considerable degree of effect produced by these fountains, as they are intended to be on a large scale, with a plentiful supply of water, which is the main feature in the whole affair. The granite works of these fountains is to be executed by Macdonald and Co. (the contractors for the Wellington Statue pedestal), and will, no doubt, be done in their usual style; the mechanical part of the matter is intrusted to the firm of Easton and Amos, the engineers, of the Grove, Southwark, who have already completed the two wells for the purpose of supplying the water, one of which is behind the National Gallery, and the other immediately in front; they are connected together by a tunnel, so that there need be no apprehension of a failure in the supply of that needful element—the water. There were several designs for these fountains, of various materials, including stone, plaster, and iron; of the latter, a very bold one was furnished by Messrs. Lockwood and Folkard, consisting of two basins, and each having nine jets of considerable magnitude.

Messrs. Macdonald have just completed a granite fountain for her Majesty, at Windsor, which is a very fine addition to the beautiful improvements in the Home Park which have been so recently made by the authorities of the castle.

It is much to be regretted that there are not more ornamental fountains in the metropolis than there are, the more particularly as water can be so readily obtained in most of the localities where fountains are already placed—such as they are. There is a most unhappy dumb-water-looking thing at the end of the Serpentine, in Kensington Gardens, which ought to be immediately removed, as it is a positive disgrace to all parties connected with it, and, what is more, it is anything but an ornament to the gardens. There is also an attempt at a fountain in the inclosure in St. James's Park, which is as rich a specimen of Cockneyism as ever disgraced a public garden. It is the more surprising that this fountain, a squirt, should be a failure, because it is so well commanded by two reservoirs at a good elevation above it; namely, one hid in the shrubs on the top of Constitution-hill, and the other at the top of the hill in the Green Park, both of which, if properly managed, would yield a plentiful supply of water to feed a *real fountain* on a scale of grandeur which would make it worth the trouble of looking at, and be a noble ornament to the gardens, as well as a matter of satisfaction to the public, who have to pay for all these things, whether they may happen to be good or bad.

#### VAUXHALL AND BATTERSEA EMBANKMENT.

THE Commissioners of Metropolitan Improvements are endeavouring, we understand, to effect arrangements with the proprietors of the river frontage between Vauxhall and Battersea Bridges, for the construction of an embankment and roadway which shall connect the two, and afford the public an uninterrupted promenade by the river side of about two miles in extent. There are circumstances connected with the interior of the Chelsea district which obviously exclude this from the class of cases in which the public should be at the entire charge. Much of the ground is yet uncovered; and while on the one hand, therefore, there is no very crying demand for improvement, in the sense in which the term has been applied of late years in the metropolis, on the other there is a field for speculation and private enterprise which must render the opening of any great line of communication like that in question an object of great interest to the various freeholders in the line—such, we can easily apprehend, as would justify any commission in making the recommendation of such a measure to her Majesty to some extent dependent upon private contribution.

The fairness of this principle, we believe, has been at once recognized in the instance before us; and, if we are rightly informed, Lord Westminster, Lord Cardigan, the Chelsea Water Company, and others have offered to contribute very largely. We are told, indeed, of a promise of some thousands! But be this as it may, we are satisfied, after the immense pains which were taken by this

commission upon a somewhat kindred improvement on the river last year, that the subject of the proposed embankment at Chelsea has been examined in all its bearings, and amongst these, of course, would be the relative interest of the public and the freeholder in the accomplishment of such a measure. The terms proposed, we feel assured, have been liberal; and if there should be any truth in the rumours which have reached us as to the dissent of certain parties in the line, we must advert to them hereafter, and upon better information as to the grounds of such dissent, than we possess at present.

On one point, however, connected with this improvement, we must be allowed to express a very decided opinion. In the appendix to the report of the proceedings of this commission during last session is a correspondence referring to the appropriation of the grounds of Chelsea Hospital. As far as we can find, the commissioners were not the first to enter upon this question. They appear to have applied for permission to carry their roadway between the garden of the hospital and the river, and to have been not very courteously refused. But the present appropriation, or rather non-appropriation, of these grounds is an abuse that calls most loudly for a remedy; and if, as we hear rumoured, there be at length a prospect of a terrace road being constructed in the line originally proposed by the commission to the hospital authorities, we hope and trust that the gardens of Chelsea Hospital will be no longer closed against the admission of the public. The place has, at present, all the seclusion of a monastery without its sanctity.—*Observer.*

#### LONDON AS IT WAS IN 1800, AND IS IN 1844.

WHAT a wonderful place is this London of ours! Its appetite of increase is insatiable—fields, villages, towns, disappear in rapid succession, as they are absorbed in the forest of houses. And yet it is not the size of London which excites the admiration and astonishment of foreigners; it is the ten thousand indications of wealth, afforded by the endless succession of private streets and squares, the splendour of the shops, the illuminations of a city which knows not darkness, the numerous contrivances for obliterating time and space, for making money and spending it. Talk of ancient Thebes and its hundred brazen gates, this famous city would have been lost in one of our second-rate parishes; the bricks employed in building the tower of Babel would scarcely be deemed sufficient for a week's requirement of the London builders of our time; and the stones of the Great Pyramids sink into insignificance, when compared to the quantities of hewn granite employed in the paving of our streets and thoroughfares; nay, the very fragments of the ancients give way to the sober realities of modern times: and not Rome in the Augustan age, enriched by the pillage of all nations, could boast of a tithe of the riches, or moral wealth and spread of intelligence, so pre-eminently manifest in our own modern Babylon.

Our hairs are not yet grey, nor has age chilled the active current of our blood, and yet how old we appear, as we take a retrospective view of the past, as we look at London as it was in the beginning of the present century, and London as it is now.—A city then ill-paved, ill-lighted, ill-ventilated, and reeking with fumes of open ditches, kennels filled with filth breathing typhus, plague, and pestilence; the houses too of the old city denoted a primeval simplicity of manners, kept up to the very latest possible period; they were chiefly of wood, without party-walls, and story overhanging story, surmounted with fantastic chimneys, and having projecting spouts, by which the drainage of their roofs was carefully poured upon the heads of those unfortunate pedestrians whom business or pleasure called into locomotion. The luxury of cabs and omnibuses was then unknown, steam scarcely dreamed of—hackney-coaches, chairs, oil-skins, and umbrellas looked up mightily. The shoe-black was then a mighty important personage, and was always to be found when the mud became cumbersome to the feet and unsightly to the eye. As a running accompaniment to music-grinding, such as those days could afford, we had also the creaking of innumerable sign-boards, the melodious sounds

of coach-guards and newsmen, varied by the doleful ditties of Grub-street sons of harmony, and the stentorian laments of peripatetic vendors of last dying speeches and confessions; for the offices of sheriff and sheriff's deputy, the gentle "John Ketch," were then no sinecure, Hounslow, Bagshot, and other outskirts of the town being well stocked with gentlemen of the road; the worthy citizens had always a weekly pageant at Tyburn; and fellows were as used to hanging in those days as eels are to skinning with us.

The merchant then might still be seen trudging on foot to his office, between eight and nine in the morning, and returning thence late at night; unless, and which was generally the case, he resided in his house of business: he did not think of working by deputy, or of employing numerous clerks without adequately paying for their services; nor was it usual to find him at the head of bubble companies or fraudulent foreign loans; neither was he seen a banger on at court, or aping the manners of a west-end beau; nor was he often found playing the usurer, or anticipating the smiles of fortune by bankruptcy; his character for hospitality had passed into a proverb, realizing in this respect the manners of the fine old English gentleman.

It is amusing to read the history of London in 1803. Its length was then about seven miles, exclusive of road-side houses in the suburbs; but its breadth in the narrowest part did not exceed two miles. It was even then considered the most healthy city in Europe: the principal streets were paved and flagged, and boasted of underground sewers; but many of the courts, alleys, and private streets were close, densely populated, and abounding with filth of every description. It contained sixty squares, and 160,000 houses, warehouses, and other buildings; but its population for its extent was less than many other great cities, being estimated at not quite eight hundred and forty thousand resident inhabitants.

The number of bullocks annually consumed in London was 110,000, of sheep and lambs 776,000, calves 210,000, hogs 210,000, sucking pigs 60,000, besides other animal food. The consumption of milk was little short of 7,000,000 gallons, and 14,000 acres of land around London, now almost entirely built upon, were cultivated wholly for vegetables and fruit. 16,600,000 lbs. of butter, 21,100,000 lbs. of cheese, 700,000 quarters of wheat, 600,000 chaldrons of coals, 1,113,500 barrels of porter and ale, 11,146,782 gallons of spirituous liquors and compounds, and 32,500 tuns of wine were also consumed in the year. To those who are curious in such matters, it will be worth while to compare this consumption of provisions with the consumption of the present day, by which a pretty correct estimate may be formed of the comparative state of the middling and lower classes.

The progress of the fine arts was confessedly slow at that period, and, in despite of the vaunted wealth and beauty of the metropolis was wholly unworthy of these times. Thus, in "the Picture of London," we find the following remarks: "A stranger who rambles in London will be dissatisfied with the general style of public buildings, and chilled with the poverty of thought and invention, that leaves the noblest situations unadorned with monuments of the arts, or disfigured with poor and frigid examples of them. Besides the outside of the cathedral of St. Paul, the inside of St. Stephen's Church, Walbrook, the portico of St. Martin's, near the Strand, and the fragments of the Palace of Whitehall, there are few buildings of eminent grandeur or exquisite beauty in this metropolis."

The first symptoms of the improving spirit of the times was manifest in forming the London Docks. The great increase of commerce, shipping, and revenue for the port of London was found productive of numerous inconveniences; the moorings in the river were wholly inadequate to the reception of shipping, the legal quays, the same in extent as at the fire of London in 1666, and limited to between London Bridge and the Tower, could not accommodate one-fourth of the ships; the losses, damages, accidents, and plunder annually sustained, to the amount of 300,000*l.* per annum, had become intolerable. A company was formed to remedy these evils by forming docks in Wapping over a low space of ground mostly



composed of gardens, pastures, rope and waste grounds, the houses being of the most wretched description, the major part being in the last stage of repair or of habitation. This company, having a subscribed capital of 1,200,000*l.*, struggled slowly into existence against the united opposition of those whose interests were at stake. Objections were urged that ships would be removed to an inconvenient distance from the city, that the risk of fire was very great, that it was impossible to complete the plan, and that, even if completed, they could not possibly extend them. Time has shewn the folly of these arguments, but they had their weight in that day, and between seven and eight years were consumed in discussing the policy of it. Its success encouraged other speculations of the like nature, and the West, and eventually the East, India Docks were formed, the beneficial results of which were not only felt by the commercial world, but also by the community at large.

At this early period, however, architecture had been gradually improving for the previous sixty years; the heavy fabrics of brickwork, the uniform square mass of building, before so fashionable, and which had succeeded the uncouth structures that braved both time and proportion since the reign of Queen Elizabeth, then gave way to lighter Italian models. The introduction of Portland stone contributed much towards improving the beauty of English architecture, while the balcony, the Venetian gallery, by admitting a large body of air into apartments, greatly contributed to the health of the resident inhabitants; but the improved style of buildings manifest in the suburbs, formed a still more remarkable contrast with the ancient buildings of the old city; many of the houses even of the principal thoroughfares were still little better than lath and-plaster edifices; the shop fronts were mean and contemptible compared to the present noble display; the streets, better paved and lighted than any metropolis in Europe, were scarcely passable for mud; and the dim obscure and effluvia of train-oil were anything but agreeable to the quiet order of night pedestrians, or to those miserable apologies for watchmen, yept Charles's robbery and violence were very frequent at night.

The extension of London was a natural and inevitable consequence of increase of population, wealth, and industry; but our acquired taste in building is attributable to several co-operating causes. The frequent and destructive spread of fires, and the stern necessity of attending to the health and comfort of a rapidly increasing population gave birth to the Building Act and its imperfect clauses. But the progress of improvement was almost imperceptible for the first ten years of this present century. Many elegant buildings, it is true, had been erected, many new and beautiful streets had been formed, but so little real progress was made, that the picture of London in 1800 is the picture of London in 1810. Fires, however much to be deplored, have had their full share in effecting local improvements, and to their destructive powers we owe many of our most beautiful public and private buildings. The theatres have arisen phoenix-like from their ashes, and the new Houses of Parliament, springing forth in like manner, will redound to the lasting fame of Mr. Barry, the architect. I remember the great fire at Wapping; what an awful, yet beautiful sight! the whole of a densely-populated neighbourhood in flames, and sheets of liquid fire floating down the river Thames; that fire was truly a blessing, it devoured dens of infamy, and swept away in a breath a huge cancer from the body corporate; it was the last essential purifying by burning which this great city was to undergo. I had been present at the burning, and three days after strolled over the still smoking ruins, and while I truly felt for the many friendless and houseless sufferers, I still thought of the noble purposes to which such a vast space could then be applied. A rather curious incident to which I was a witness may not be amiss here: while standing gazing upon the ruins before me, my attention was suddenly attracted to a true Boniface, such as only exists in the person of a Wapping landlord; his rubicund countenance exhibited a most extraordinary state of inquietude and restless anxiety; he was the landlord of a *Blue Anchor*, and upon that anchor his present hopes appeared fixed, for

he shuffled onwards through the crowd as a being wholly unconscious of its presence; he neared the spot—the house to which he directed his attention was down—but the chimney was still standing—there was magic in that sight, his countenance suddenly underwent all the varied phases of hope, fear, joy, sorrow, and doubting anxiety; he advanced with accelerated step, thrust his hand up the chimney, and from it drew forth, with a yell of success, a large bag of gold—it was his all; the fire had not penetrated his secret recess—lucky dog!

At the west end of the town, never was improvement more called for than in 1813; the court, fixed and immovable, made property too valuable to be lightly abandoned, and nobility could not retreat far from its immediate atmosphere. The Prince Regent was the first to set the example of improvement, and, however little we admire his taste or choice of architects, still to him we are really and truly indebted for every improvement that followed. His will was good to realize the proud boast of Augustus, that "he found Rome of brick and left it of marble;" but reforms in building, as in every thing else, are difficult to accomplish when opposed to custom, early association, and individual interests; his views were therefore not met with that cordial acquiescence they ought to have been, but they produced all the effect truly required,—individual or corporate rivalry, and the onward march of taste. That beautiful park named in honour of him is much more honourable to this pacific and voluptuous monarch than the very equivocal tribute to the Duke of York erected on the site of Carlton House.

The improvements of the western end of the town were begun by removing Swallow-street and its neighbourhood, to make way for the present elegant street; and house after house rapidly disappeared as disposed of by auction, presenting a scene of demolition to which we were then wholly unaccustomed; and, armed with the Act of Parliament, the commissioners paid little or no attention to interests opposed to their plans, on the plea of inalienable rights, family inheritance, or dogged attachment to place—turn out you must. There is something strangely repulsive in these Acts of Parliament, by which the ancestral home is razed to the ground, the park, or family estate, is divided, and the solitude of privacy broken into and destroyed. Gold does much in the present day; but gold will not always compensate for the loss of that which we have loved for its own sake, or for associations connected with it. In the present instance, numerous complaints were made against these arbitrary ejectments, but the plea of public utility is imperative and knows no compromise, beyond that of a mercantile one. Of the many houses removed, my guardian purchased the material of several, among which was an old-fashioned mansion, in a state of great dilapidation, the effects of sheer old age. It was occupied by an elderly person, most decidedly very poor, but his careful attention to the minutiae of dress, his amply-powdered wig, gold-headed cane, and silver buckles, together with his suavity of manners, proclaimed him a finished courtly gentleman of the old school. Docile as a child in all things else, he manifested a determined resistance to the sale of his property, refused his consent to any pecuniary reward, and expressed his determination to be put out only by force; his opposition was useless, the house must come down, even to prevent its falling, and our people were set to work. Seeing all further opposition useless, he begged of me, as a favour, that I would permit him to follow the steps of the workmen in their work of demolition, and to this I most cheerfully assented, for his deep and settled grief appealed most forcibly to the heart. In the midst of falling crashing timbers, and clouds of dust, might be seen this venerable old man, watching through the dim obscure the removal of every plank and joint, the displacement of every brick, the ripping out of every skirting-board; from room to room he went, from floor to floor he descended with the men, his evident anxiety increasing almost to agony as they neared the base of the building. He seldom spoke, and seemed almost unconscious of the presence of any one; a tear might now and then be found trickling down his aged cheek, and involuntary exclamations would escape him, evidently in unison

with his thoughts: "No, no! Not here—not here!"

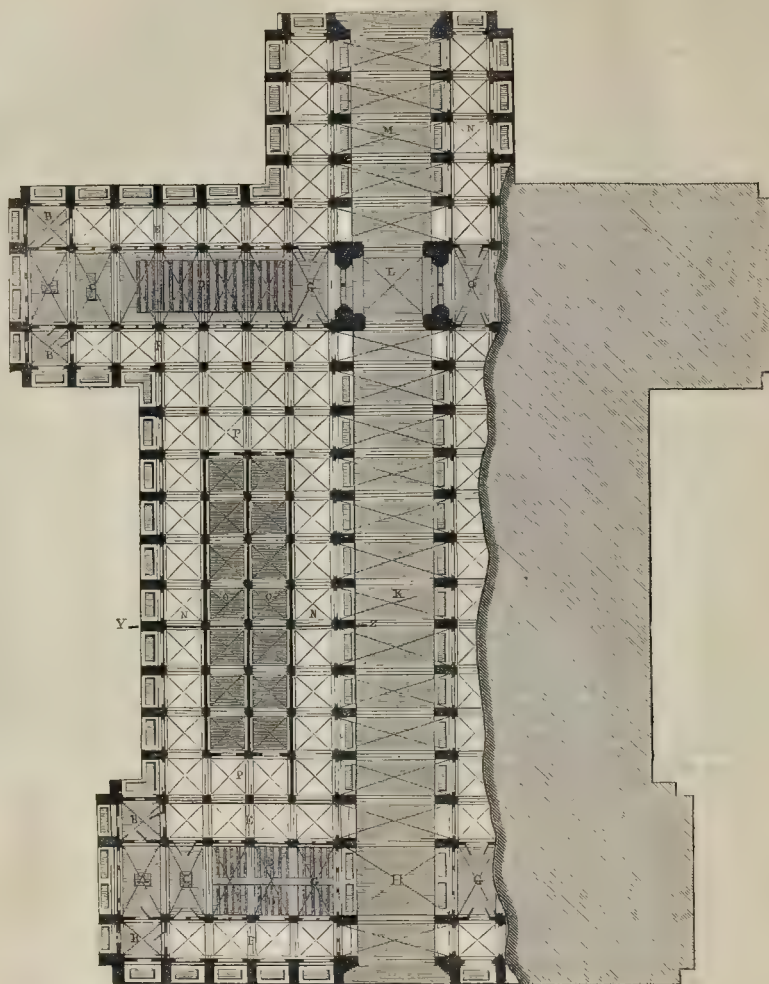
The whole of the upper portion of the house was removed, and the uncovered kitchens alone remained—his anxiety increased—tears of bitterness coursed his venerable cheeks, and wringing his hands in an agony of grief he exclaimed, "My noble boy, thy last hope perishes—but no—while a brick remains there is hope." Five days had elapsed and brick after brick was removed towards the foundation, and still he looked intent upon their labours; the workmen had retired—yet still he remained as though rooted to the ground on which he stood. I was a youth at that time, but my heart was sensitively open to the sorrows of others, and I would have given the world to have seen that old man smile again. With timidity I approached and seized his hand. I would have spoken words of comfort, but tears choked my utterance: he started—awakened to consciousness by my overpowering feelings—he gazed upon me in silence for a few moments, and then mingled his tears with mine. As soon as his feelings subsided, he convulsively whispered, "There are papers, my child—papers of importance to me and mine—concealed in this house—I cannot yield up my hope so long as a brick remains." I assisted his search, raised up one by one the flags, sounded every part of the remaining walls, but all to no purpose. Night advanced, we were retiring, when a thought struck me to examine the extensive range of vaults—he had often done so, he said, but perhaps my young eyes might assist him in a stricter examination. I procured flambeaux and carefully scrutinized every part of them. Upon entering one of a range of four, I observed it was much shorter than the rest, although in every other respect uniform, and on applying a strong light to the extreme end, discovered a patchwork of brick, evidently more recent than the rest, and not occasioned by dilapidation; I pointed it out to him—we assailed it with hammers—the brick-work immediately fell inwards, discovering an aperture beyond it; through this I crept, and my companion followed—it was a continuation of the vaults, but almost filled with a variety of boxes and packages—a gleam of hope, followed by a wild cry of joy, betrayed his feelings—box after box was rapidly forced open, until at length he suddenly started backward, and fell without a word at my feet, his hands firmly grasping a bundle of parchments.

All that remains is told in a few words. His elder brother, with himself, joined the Pretender, were declared rebels, and his family estates confiscated. Being mortally wounded in the field of battle, George sent for his brother, who was in the immediate neighbourhood, and after giving some general directions, was about to inform him where his papers were concealed. "You will find them," he said, "in my house in town in the ——" Death stopped his further utterance. The survivor, then a young married man, fled the country, and returning after some years' banishment, he found the family town-house untenanted, took possession, and commenced an unavailing search for the papers. Age crept upon him—poverty oppressed him—but still he wandered through the house like some discontented spirit, in the vain hope of finding the hidden treasure. His wife died—all his children died but one, a fine young man, who, unable to purchase a commission, had volunteered previous to the close of the war, and attained the rank of a lieutenant; he was put on half-pay at the close of the war. In this young man rested all his hopes—the discovery of those papers gave him rank and wealth.

**THE COLCHESTER CORN EXCHANGE.**—The front elevation of the New Corn Exchange, which is now in course of erection by Mr. Hayward, consists of a receding centre and wings; the entrances, three in number, are in the centre compartment under an Ionic colonnade, which is surmounted by an allegorical group of sculpture, representing Ceres scattering around her the produce of an abundant harvest. The wings are formed by pilasters of the Ionic order, between which, in each wing, is a recessed panel, containing a bas-relief composed of agrarian produce and implements of husbandry. The whole of the High-street front is to be of stone of the same description as that of the Town Hall, with the exception of the plinth and steps, which are to be of granite.



## HINTS FOR A DESIGN FOR A CEMETERY CATHEDRAL.



GROUND PLAN.

## REFERENCES.

- A. Desks under arched recess.
- B. B. Robing-rooms for clergyman and clerk, over which, on the gallery-floor, are rooms for music-books, choristers' robes, &c.
- C. Open space and bier.
- D. D. Stalls for mourners.
- F. Cloisters for the passage of the corpse

- from the hearse, over which are galleries for choristers and strangers.
- E. Cloisters for the passage of mourners from their coaches, over which are galleries for choristers and strangers.
- G. Organ-gallery over the last-mentioned.
- H. West entrance.
- K. Carriage-drive, inclosed on each side by cloisters and tombs.

- L. Central tower and spire.

- M. Eastern entrance, inclosed on each side by open cloisters and tombs.

- N. N. N. N. Cloisters for tombs and tablets.

- O. O. Family-vaults, lighted by small openings from the cloisters on each side.

- P. P. Staircases to the galleries of the chapels and upper cloisters.

MR. CHADWICK, in his report on interments in the metropolis, proposes, as a remedy for the defects in the present system of burials, to establish four large national cemeteries, in the environs of the metropolis, each having appropriate buildings of magnitude and grandeur sufficient to produce a solemn effect.

The following sketch is submitted as a hint towards the production of designs for such buildings:—

The object proposed to be obtained is a building of such size and grand proportions as to form a complete whole, and at the same time, to present to the visitors a series of various delightful and interesting scenes, to impress on their minds a pleasing and lasting remembrance of the place, and by means of the fees from the tablets and tombs, to pay a very large portion of the expense of the building.

By inspecting the accompanying plan, it will be seen that it contains two chapels at the

west end, with an archway between them, with carriage drive leading under the tower and spire to the two chapels at the east end; the lateral spaces, between the chapels, being devoted to cloisters for tombs and tablets, thus the whole building giving externally the general and grand outline of a complete cathedral.

The chapels have each two entrances under the archways, with cloisters on each side leading to the body of each, so that mourners may proceed up the western, and be seated, while a corpse is being conveyed from the hearse at the other entrance up the eastern ones, thus preventing all confusion. In all, the desks are at the ends opposite the entrances under arched recesses, with open spaces in front for the bier; on each side of the desks are robing-rooms for the clergymen and clerk, so that they may have free access to them; at the opposite ends is a gallery for the organ, also in an arched recess,

and on each side of the chapels, over the cloisters, galleries for choristers and strangers. These chapels would have grand and lofty interiors, and with the arched recesses at their ends and sides, and groined ceilings and stained-glass windows, have a solemn effect.

The carriage-drive entering from the grounds under the lofty groined archway at the west end, with the large open space beyond, bounded on the right and left by the three tiers of open cloisters and tombs, with the tower and spire at the end, would form a fine and novel feature; this open space perhaps might be arched over with the intersecting ribs only, leaving the spandrels open, having creeping plants entwining round them, and hanging down in natural festoons, which, with the addition of the various colour of the leaves and flowers, contrasted with the sky-tints (seen through the open spandrels), and the playful shadows cast on the adjoining cloisters, would add much to the beauty and interest of this scene.



Proceeding eastward under the tower, which would be of one height internally to the base of the spire, looking upward, with the arched openings all round (the light passing freely through them), a new and magnificent picture would be given; beyond which are the groined arches with open cloisters and tombs on each side, nearly similar to the west end, under which arrival to the cemetery grounds would be again effected.

In the cloisters forming the sides of the cathedral I have shewn tombs: as they would be commanding and desirable situations, a sum of money would be obtained, in addition to the ordinary fees, for the privilege of placing them there; and it might be hoped that many would be induced to erect handsome memorials to themselves or deceased friends, which would greatly add to the decoration of these cloisters; and by a little outlay in gilding, colouring, and bringing out heraldry, &c., a splendid effect would be the result, which would be much heightened by having small parterres of flowers, of rich tints, placed in the spaces between them. The flowers being behind the buttresses, some would just catch the strong lights, and some be in the deep shade, causing in this little matter an almost endless variety of tint and shadow. I would here also suggest that the building should be surrounded outside by a grass-lawn, freely sprinkled with flower-beds, as the view outward would be improved, and the scent wafted into them pleasant; besides, on a bright day, the refraction of the sun's rays would illuminate the lower cloisters with all the various and splendid tints of the grass and flowers, and thus colour them in a manner far superior to any which can be done by any artificial means. If a few trees were placed near the chapel, the shadows cast into the cloisters would by their contrast make the bright parts appear still brighter. By attending to these little, and apparently insignificant matters, at times most unexpected beauties are added to buildings, and almost magical effects can be produced. On the opposite side to the tombs are blank walls, on which tablets are proposed to be placed facing the light, which, by being inserted in proper recesses and paneling, might be made to assist greatly in ornamenting these cloisters, as the decorations would not be more expensive than those used at present on such occasions. By spreading out the lower parts of the buttresses, the tombs on the ground-story may be placed outside, with canopies over them, which, with the deep shadows cast by them, would add to the pictorial effect of the exteriors, at the same time protect the open cloisters, and by a judicious arrangement of the arches, and the arches over the carriage-drive (which might be formed into bridges to communicate with the cloisters on each side, from which splendid views of that part of the building and the funeral processions below would be obtained), the lateral, the filling-in walls, and upper cloisters might be *surprisingly* thin and light, consequently be of little comparative cost. These cloisters, it may be observed, would produce distinct and separate scenes (all of

which might be differently decorated internally), some embracing views of the cemetery grounds, and some the carriage-drive, with the tower and opposite cloisters through the openings at the sides; by forming these various scenes, a greater degree of interest would be excited and kept up in the mind of the observer, and afterwards be related, and so cause hundreds to view the place who would never otherwise have thought of going, and by these means make popular the establishment.

The length of the whole of the cloisters would be upwards of 2,500 feet, and the space therein capable of being covered with tablets at 10s. per foot superficial (I believe the usual charge), would produce 12,000*l.*; the fees from tombs, at 25*l.* each, would amount to about 3,000*l.*; and, putting the fees for the burials in the family vaults on the ground-story at a similar total sum, about 18,000*l.* of the cost could be obtained from this source alone, without taking into consideration the fees to be received for interments in the catacombs to be formed under the whole building, which would be very considerable, and much above the additional cost of erecting them.

With regard to the situation of the building as to the points of the compass, I have shewn and described it as standing due east and west, as is usual; but it is evident that the north side of the building would never have the benefit of the sun's rays, and it being an important elevation, requiring strong light to bring it out effectually, would lose a great deal of its beauty in consequence; besides, the grass and shrubs on that side would never thrive so well as on the others. By placing the building diagonally to the points of the compass, one end only would be in the shade; the three principal elevations would then have all the advantages possible to be obtained, the sun's rays penetrating into the open cloisters and archways, bringing out, by deep shadows, all their parts boldly, ventilate and keep dry the whole building.

In conclusion, I will, in a few words, give a summary of what I consider to be advantages in this plan.

1st. That the building forms a complete and grand whole.

2nd. That the cloisters would be a source of considerable profit, from the fees for tablets and tombs; would be very attractive to visitors, and by these means make the last resting-place of the dead less distasteful to the living.

3rd. That the construction of the building is proposed to be of such a nature, that more effect and accommodation would be obtained for less money than by the ordinary means, and *every inch of space* would be devoted to some useful purpose.

4th. That the building would not be liable to decay or dry-rot, having but little timber in its construction.

5th. That the building would be *fire-proof*, consequently an annual saving of the insurance would be made, and the inconvenience and ruinous effect a fire would have on such an establishment would be prevented.

W. J. SHORT.

## TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLLSON.

(Continued from p. 361.)

16. Langton's method of seasoning by extraction of the sap is another that is considered well worthy of notice: it consists in letting the timber into vertical iron cylinders standing in a cistern of water, closing the cylinders at top; and the water being heated, and steam used to produce a partial vacuum, the sap, relieved from the atmospheric pressure, oozes from the wood; and being converted into vapour, passes off through a pipe provided for the purpose. The time required is about ten weeks, and the cost is about ten shillings per load; but the sap is wholly extracted, and the timber fit and ready for any purpose; the diminution of weight is, with a little more shrinkage, similar to that in seasoning by the common natural process.

17. Smoke-drying in an open chimney, or the burning of furze, fern, shavings, or straw, under the wood, gives it hardness and durability; and by rendering it better, destroys and prevents worms: it also destroys the germ of any fungus which may have commenced.

18. Scorching and charring are good for preventing and destroying infection, but have to be done slowly, and only to timber that is already thoroughly seasoned; otherwise, by encrusting the surface, the evaporation of any internal moisture is intercepted, and decay in the heart soon ensues; if done hastily, cracks are also caused on the surface; and which, receiving from the wood a moisture, for which there is not a sufficient means of evaporation, renders it soon liable to decay.

19. We now proceed to treat of the various timbers individually, taking them in the order of their importance as materials used in building.

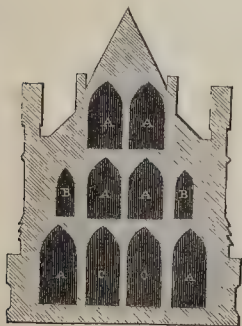
20. **OAK.**—To the oak has been justly awarded the pre-eminent title of the "King of the Forest," and when we consider its high qualities, as well as the length of its existence—in the tree and in the timber—we must approve of the distinction, and give it in our notice of timbers that first place to which it is so honourably entitled.

21. There are several species of the oak, and they differ very considerably from each other, both in appearance and quality: some individual description of them, therefore, is necessary.

22. Of the **ENGLISH OAK** there are two kinds, namely, the common British and the sessile-fruited, the former of which is most plentiful in the south, and the latter in the north of England: the first is the most esteemed, and that from Sussex is considered the best that England affords; it is a stiff, straight, and fine-grained wood, with very few knots; the raffling of its leaves is irregular, with very little foot-stalk; the stalks of its acorns are long; the wood is often reddish; the larger transverse septæ are plentiful, and produce large flowers: it is eminently adapted for the purposes of the carpenter; it can also be split readily, and makes laths of the best description, both for tiling and plastering. The sessile-fruited is the handsomer tree of the two; it has likewise these marks of contradistinction: its leaves have long foot-stalks, and are less deeply and more regularly sinuated, and its acorns are almost without any stalk; the wood is darker and has fewer septæ; in gloss and smoothness of grain it somewhat resembles the chestnut, and exceeds it in hardness, weight, and elasticity; being very tough and difficult to rend, oak laths are seldom used where it prevails; in the seasoning it is very liable to warp and split. Both these oaks require long seasoning by the ordinary mode to fit them for the purposes of joinery, but steaming and boiling are adopted with advantage.

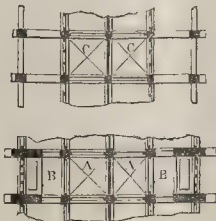
23. The **Lucomb Oak**, so called in Devonshire, where it is cultivated (as well as in Cornwall, Somersetshire, &c.), is an evergreen species, of rapid and large growth; straight and handsome, compact and hard, but not so durable as the common oak. The **Durmast Oak**, belonging to France and the south of England, keeps in foliage later than the English oaks; it is inferior to them in compactness and strength.

24. Of the American oaks there are the red, the white, the blunt-lobed, the live, and the chestnut-leaved. The **White Oak** has the preference in America, both for house-carpenter-



SECTION ON LINE Y. Z.

- A. Covered cloisters for tablets;
- B. Open ditto for tombs.
- C. Family vaults.



PLANS OF ONE DIVISION OF UPPER CLOISTERS.

- A. Covered cloisters on one pair story.
- B. Open cloisters for tombs on ditto.
- C. Covered cloisters on two pair story.



try and ship-building; the wood is flexible and tough, it grows quicker, and is not so durable as the English oak; it derives its name from the appearance of the bark. The *Mountain Red Oak* is light and soft in the wood, and not very durable; it grows rapidly, and not uncommonly attains a height of a hundred feet; it has its name from the circumstance of the leaves changing their colour before the fall. The *Blunt-lobed Iron Oak* frequently grows to the height of seventy feet, and is a valuable timber; it is hard, and not being subject to decay, has generally the preference for fencing and works of a similar nature. The *Live Oak* reaches a height of fifty feet, and is a wide-spreading tree; it furnishes very durable wood, and is in high estimation as a ship-timber. The *Chestnut-leaved Oak* is a tall and handsome tree, coarse in grain, but useful for inferior purposes.

25. The oak which we call *Dutch Wainscot*, from importing it from Holland, grows in the German forests, whence it is floated down the Rhine; it is fine in the grain, generally free from knots, and more easy to work and is less liable to warp than English oak; it is much used for floors and joinery in general; also for a variety of furniture. The *Riga Oak* is esteemed on account of its freeness from knots and from its straightness in the grain. The *Austrian Oak* grows quicker and to a greater height than our oaks; but it is less valuable, because softer in texture, lighter, and less durable: it is also lighter in shade than English oak.

26. The oak is to be found in almost every climate, but thrives best towards the northern parts of Europe, that being the most compact and durable which is grown in a dry and sandy soil and an exposed situation; much moisture causing expansion, and giving bulk without nourishment or firmness of texture: oak so reared also splits more easily than the former, and is more liable to shrink and swell with the changes of the weather.

27. The age at which the oak is considered to reach maturity is 100 years; that period is therefore the best for cutting it down: it certainly ought not to be felled earlier than at 60, nor allowed to exceed 200, although under favourable circumstances the tree may attain the age of 1,000 years. The average quantity of timber that is obtained from trees which have been allowed to reach maturity is a load-and-a-half, or seventy-five cubic feet; but it too often happens that they are cut down before they will produce a load of timber.

The best time for felling is in summer, the timber cut down at that season being the most durable, supposing the common mode of treatment only to be adopted; but as the bark, which is very valuable for tanning, is not easily detached from the trunk when the sap is at rest, the method referred to in Art. 9 is sometimes pursued, by which it is obtained in the readiest manner and best condition, and the timber left for felling when most fitting or convenient, say after the fall of the leaf, a practice which not only improves the sapwood, rendering the timber heavier and stronger, but also makes it less liable to engender worms, and to decay. The sap-wood of oak (of which the proportion is not so great as in fir) is by steeping made less subject to worms, and is otherwise improved. Green oak is said to suffer in seasoning a reduction of from one-third to two-fifths of its weight. The shrinkage in its width has been ascertained to be about one thirty-second part.

28. The annual ring in oak presents a compact and a porous part, the former being the darkest in colour; the pores in the sap-wood are large and numerous, and distinctly apparent; the larger septæ are usually very distinct, but the smaller they are, and the more minute the pores, the greater the strength and durability of the timber; also the less that the brown colour approaches a foxy or red shade, the more superior it is. On cutting oak in an oblique direction, much beauty in flowers and veins is discovered, originating in the septæ and mixed texture of the wood.

**MONUMENT TO WILSON, THE ORNITHOLOGIST.**—A subscription has been commenced at Paisley for the erection of a monument to the memory of Wilson, the celebrated ornithologist, who was a native of that town, and originally a weaver there.

# COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.—No. VIII.

**COLUMN—Doric.**—Of existing remains of the Grecian Doric, the earliest known specimen is the Temple at Corinth, of which the columns, whose shafts are monolithic (or consisting of a single stone), are little more than four diameters in height; in the latest recognized examples of Greek taste, the columns are found to be in height nearly six diameters and a half. Between these two extremes, in the former whereof we see the nearness, both in date and character, to the massiveness of

Egyptian architecture, and in the latter when Roman innovation had already interfered with the purity of Greek taste; between these two we find a proportion which has been always looked upon as the perfection of this order; this proportion is found in buildings which are clearly ascertained to belong to one period, viz., the age of Pericles, wherein the most consummate taste and the highest skill had the direction of the public buildings. The following table exhibits at one view the proportions of the columns in some of the principal buildings in Greece and its colonies, concluding with the scale which the Roman and Italian schools assigned to the Doric:—

Date of Erection.	Name of Building.	Name of Architect.	Height of Column.	Diameter.	Number of Diameters high.	No. of Columns in Portico.	No. of Columns on the side.
About 800 B.C.	Temple at Corinth . . .	—	Ft. In. 23 8	Ft. In. 3 10	4½	6	—
600 or 700 B.C.	Great Hypæthral Temple at Pæstum . . .	—	28 10	7 0	4½	6	14
500 B.C.	Temple at Selinus . . .	—	32 6	7 6	4½	6	12
—	Ocrotystæ at Salinus . . .	—	48 7	10 7	4½	8	16
—	Temple of Minerva at Syracuse . . .	Probably Archias of Corinth.	28 8	6 6	4½	—	—
About 450 B.C.	Temple of Hercules at Agrigentum . . .	—	33 0	7 0	4½	6	14
—	Temple of Concord at ditto . . .	—	22 2	4 8	4½	6	—
500 B.C.	Temple of Jupiter Panhellenius at Ægina . . .	Libon.	17 1	3 2	5½	6	—
About 461 B.C.	Temple of Theseus . . .	—	18 7	3 3	5½	6	13
* 448 B.C.	PARTHENON . . .	Ictinus.	34 0	6 2	5½	8	17
About 430 B.C.	Temple of Apollo at Bassæ . . .	Ictinus.	19 6	3 7	5½	6	15
—	Temple of Minerva at Sounium . . .	Ictinus.	19 7	3 4	5½	6	—
Age of Pericles	Temple of Ceres at Eleusis . . .	Cornebus,†	—	6 6	Supposed 4	12	—
—	Temple of Diana-Prophyæa at Eleusis . . .	—	14 10	2 7	5½	2 in antis.	—
—	Temple at Rhamnus . . .	Alcamenes, a pupil of Phidias.	13 4	2 4	5½	6	12
—	Temple of Apollo, Delos . . .	—	18 8	2 11	6½	—	—
About 338 B.C.	Portico of Philip of Macedon, Delos . . .	—	18 8	2 10	6½	—	—
—	Temple of Jupiter, Nemeæus . . .	—	33 8	5 2	6½	6	—
100 B.C.	Agora, at Athens . . .	—	26 2	4 4	6½	4	—
Time of Augustus	Theatre of Marcellus, at Rome . . .	—	21 0	3 0	7½	—	—
About 80 A.D.	Coliseum . . .	—	27 3	2 10	9½	—	—
About 300 A.D.	Baths of Dioclesian . . .	—	—	—	8	—	—

Palladio, Vignola, De Lorme, and others of the Italian school, assigned eight diameters (including the base as well as the capital) for the height of the column, whilst Scamozzi gives 8½ diameters. Sir William Chambers, in his plate of a column, which he calls the Doric order "in its improved state," follows the proportions of Palladio and Vignola.

By a reference to the table, it will be seen, that in the examples of the best era, that of the Parthenon, the columns are found to exceed five, and to be less than six, diameters high; difference of situation, or other local circumstances, might affect the proportion in some slight degree, but it will be seen that Ictinus adhered very nearly to one standard.

Lord Aberdeen is inclined to test the antiquity of a building, by comparing the proportion of the capital to the shaft; but Mr. Gwilt prefers "a judgment from the height (of the column) as compared with the diameter, to any other criterion; although it must be admitted that it is not an infallible one." (Encyc. p. 63.) The same excellent critic observes, that "the origin of the Doric order is a question not easily disposed of. Many provinces of Greece bore the name of Doria; but a name is often the least satisfactory mode of accounting for the birth of the thing which bears it." Colonel Leake, and many other authorities, consider that the Doric order arose, as soon as internal tranquillity followed the return and settlement of the Heraclidae in Peloponnesus, 825 B.C.; and that it began in those cities which were the earliest seats of art in Greece, viz. Sicyon, Corinth, and Argos. Professor Muller says, that "the order is not improperly termed Doric, inasmuch as it was

brought to perfection in the Doric cities;" and that Corinth was the first place "where the front and rear parts of temples were finished with pediments, the tympanum being adorned with statues of terra-cotta."

In the opinion of the same writer, the Doric architecture was created by the Doric character, and displays therein "the peculiar bias of the Doric race to strict rule, simple proportion, and pure harmony."

Unfortunately many temples, of which we read, have entirely disappeared—as that of Juno, at Argos, said to have been the very first Doric erection, considered as a specimen of the order, and the temple of Jupiter at Olympia, by the architect Libon—still enough has been spared to later times to justify the admiration of posterity; and in the unrivalled Parthenon and the Theseum, we have two examples which have been so accurately measured and delineated, as to leave no cause for regret but the ravages of man—for time seems to have respected such admirable relics of taste. "For all the highest effects, which architecture is capable of producing, a Greek peripteral temple of the Doric order is perhaps unrivalled." (Hoeking.)

To correct an optical deception, the Greeks made the columns at the angles of buildings thicker than those in the middle; at the Parthenon this increase is one-forty-fourth—at the temple of Theseus one-twenty-eighth—the Vitruvian precept is that it should be one-fiftieth part of the diameter.

It may be taken as an invariable rule that the Greeks always fluted their columns, and it is remarkable that the axiom that "the exception proves the rule" has peculiar force in this respect. For, either from motives of economy or other unexplained cause, some examples are found in which the columns are fluted only a few inches at top and bottom, the rest of the shaft being left plain, doubtless to be also

\* Lord Aberdeen and other writers are inclined to place the date of the Parthenon a few years later than the above, the year in which Pericles obtained undivided power by the death of Cimon.

† According to Plutarch; but Vitruvius states that Ictinus designed it.

‡ Has no base.



fluted at some future period. Such examples are found at Eleusis, Rhannus,\* and Thoricus in Attica, at Ægesta and Selinus in Sicily, and at the temple of Apollo at Delos; and it may be confidently asserted that no column can be mentioned, belonging to a Greek temple, which is not either fluted throughout its whole height, as usually seen, or prepared for the process, as the exceptions declare. The columns at Ægesta are the only instances which at first sight may appear not to come within the full meaning of these remarks, but the peculiar arrangement of their shafts seems to point to some future adornment.

"The refined Athenians had so exalted an idea of the beauty and grandeur of their columns, that no private citizen was allowed to decorate his abode with these distinguished members of their orders which were consecrated by them to the exclusive ornament of their grandest and most sacred edifices." (Bardwell.) Some modern writers, among them Sir William Chambers and Le Clerc, who have a decided leaning to the Roman school, lament the omission of a base to a Grecian Doric column; the latter writer believes that "the ancients had not yet thought of employing bases, or that they omitted them in order to leave the pavement clear, and that had the columns been made with bases, the passages between their shafts would have been extremely narrow and inconvenient." Sir W. Chambers had, with all his undoubted skill and genius, but little veneration for, or even acquaintance with, Grecian art, for he says—"None of the few things now existing in Greece, though so pompously described, seem to deserve notice either for dimension, grandeur of style, rich fancy, or elegant taste of design; nor do they seem calculated to throw new light upon the art, or to contribute towards its advancement; not even those erected by Pericles or Alexander, while the Grecian arts flourished most, neither the famous lantern of Demosthenes, nor the more famous Parthenon, which, though not so considerable as the church of St. Martin, in St. Martin's-lane, had for its architects Phidias, Calliarches, and Ictinus, was the boast of Athens, and excited the envy and murmurs of all Greece." Yet the Parthenon exceeds the church by 65 feet in length, 20 feet in breadth, and has 42 more columns, those of the church being 3 feet 4 inches in diameter, whilst in the Greek temple they are 6 feet 1 inch.

Mr. T. L. Donaldson claims the merit of being the first to notice that some of the columns of temples are not placed quite perpendicularly. "The axis of the columns of the Parthenon, both on the flanks and on the fronts, as well as those of the temple in Ægina, and of Concord at Agrigentum, have a considerable inclination inwards (a circumstance I am not aware to have been before noticed), though not to such a degree as required by Vitruvius, and not confined, as he directs, to the columns of the peristyles only." (Vol. IV. Stuart's Athens.) Vitruvius thus directed: "The bases being thus completed, we are to raise the columns on them. Those of the pronaos and posticum are to be kept with their axes perpendicular, the angular ones excepted, which, as well as those on the flanks right and left, are to be so placed that their interior faces towards the cella be perpendicular. The exterior faces will diminish upwards as above mentioned. Thus the diminution will give a pleasing effect to the temple." (Gwilt's Vitruvius, b. 3, c. 3.)

Mr. Jenkins (also in the fourth volume of Stuart's Athens) adds to the examples named by Mr. Donaldson, the temple of Theseus, the Erechtheum, the Choric monument of Lyciarches, &c., as instances in which the Vitruvian precept was in some measure corroborated.

In Mr. Bartholomew's "Essay on the Decline of Science in Architecture, &c.," the same point is thus scientifically explained. "The ancients, knowing how much more secure were their fabrics when made to settle together and consolidate by their own gravity, set the lateral columns of their temples with their axes falling towards the cells, so that the inner faces of the shafts of the columns should be perpendicular, and the outer faces of them receding the whole quantity of columnar diminution in order to afford to the building a more solid, pyramidal, and graceful appearance: and by this shrewd device they rendered the

avenues between the side walls and the colonnades of their temples no wider next the soffits of the architraves than down upon the pavement; and it is not improbable that the preservation of this symmetry led to the omission of the inner columns of the ancient pseudo-dipteral temples; whereas the moderns, in general, not attending to this dynamic and optical nicety in architecture, so set their columns that when we walk down a modern colonnade, we cannot divest ourselves of the idea that the axes of all the columns are falling outwards; and, indeed, accurate admeasurement would often find this to be no illusion, since the work, not erected so as to fall together, will, in general, with the slightest inevitable settlement, expand at its upper part." (Part I., c. 51, 453.)

The Greek word usually employed for column is *στυλος*, *stylos*, which is found connected with other words, as *peristyle*, from *περι*, about, used when a building is set about with columns; *epistyle*, from *επι*, upon, for the architrave, which rests upon the columns; *stylobate*, which signifies a base under columns, &c. The arrangement of porticos, as to the number of columns and distances between them, is also expressed by words compounded of *στυλος*, and others, which will be explained in due course. Mr. Hosking considers that "the word *style* would be more correct than *order*, as it would indicate the column as the feature referred to, without conveying the idea of fixed rules." The word used in Homer, *κίονες*, *kliones*, may be rendered as meaning lofty posts, or pillars, rather than columns of a cylindrical plan, which formed no part of the exterior of the Homeric palaces.

G. R. F.

#### THE NATURE OF DESIGN.

*A Paper read at the meetings of the Decorative Art Society, March 13th and 27th.*

BY MR. CRABB, V.P., MEMBER OF THE INSTITUTE OF FINE ARTS.

A CORRECT understanding of the nature of design being essential to the proceedings of our society, I have attempted in the paper of this evening a short notice of its origin and progress, the resulting benefits and present position, upon the continent and in England. The general tenor is a broad consideration of the subject; details and critical notices of the distinct styles of ornament, and upon outline, colour, teaching for design, and other leading points being intended to occupy separate papers. These will constitute an important portion of the advantages of this society; although I cannot disguise from myself, that the free communication of valuable practical information (extensively known but to few of us) must necessarily depend upon contingencies yet to be developed. We are proposing to collect, classify, and diffuse information, that long since ought to have been publicly given through the Government School of Design, and to what extent we can privately afford to make our experience known is uncertain.

The term *design* admits of various explanations, according to the nature of its intended purpose; the most concise and specific meaning is *delineation of objects* through the acquired medium of geometry, optics, and colour. A knowledge of these may be possessed, and the faculty of delineation exist, without any creative power of mind, and therefore the real and true meaning of the word is discovered when to these capabilities is added the genius of originating; embodying such combinations as have not been previously known, and are capable of amalgamation under the admitted governing laws of nature and of taste. This power is found to result from a careful study of nature, and an accumulation of the sound principles and excellencies of our great predecessors in art; producing in combination new arrangements and beauties, in proportion to the originality of conception and power of invention in the artist. Manufacturing design requires different modes of treatment, that it may accord with the nature of the material to receive embellishment; but the laws or great principles are known to be unchangeable; thus a silk damask or an iron railing may be designed from the same given quantities of proportion. A division under the heads of outline, light and shade, and colour, will enable us to make a classification for its distinctive application to weaving, printing, wood, metals, and other great branches of trade; each

requiring special instruction to produce successful design. Fitness of purpose is another essential, and doubles the value of the art; nowhere can we so perfectly study this portion of design as throughout the works of nature, where it is discovered in unity with embellished elegance of form and wisdom of application.

The human figure is a beautiful illustration of the possibility of combining great mechanical power with the most graceful contour and action; the general design affords extensive varied power of motion,—the detail shows the most profound skill in adapting the form of each bone to its respective office,—the provision of pro and antagonist muscles, their form, insertion, and beautiful mechanical action, discover a profound design, and the disposition of each part being considered with relation to the production of a perfect whole, we have the upright and commanding figure of mankind, capable of exhibiting the athletic muscular massiveness of a Hercules or the feminine loveliness of a Venus. The animal creation is replete with graceful beauty, subject to fitness of purpose. The horse and his numerous varieties present noble examples. What majesty is exhibited in the lion! ponderous limbs, breadth of shoulders, clothed with a magnificent mane, thin flanks, and enormous muscular strength. Opposed to this king of the forests we find the lightly moulded, elegant gazelle, whose pace is on the wind, and

"Who glads one by its fond blue eye."

In the vegetable world no grace of form, no colouring is wanting; the most studied productions of man are as nothing compared with the resulting effects of a gorgeously varied tropical vegetation: through all the striking varieties of the stately palm and small-leaved cedar, to bowers of citron and acacia, with colouring and contrasts, frequently displayed upon a gigantic leafage, instructing, but defying the humble imitative art of man; from the most delicate hue of green, warm or cool, to those of intense depth, mingled with bright scarlets, deep crimsons, and a profusion of brilliant and secondary colouring, blending into repose with the tertiaries. Imagine for one moment a woody scene under the dazzling tropical sun, with all its curious varieties of shape in tree and foliage, the jungle half choked by tall grass and knotted reeds; then picture the gay and glittering plumage of the birds, from pale amber to deep golden yellows, rich purples, russets, the finest reds and glistening blues! what a study for the decorative colourist! 'Tis thus nature teaches the principles upon which her sister art should found the theories of her charming imitations. Unpossessed as we are of tropical advantages, let us endeavour to appreciate the value of those we enjoy. The horticulturist presents the choicest flowers of every clime, and the botanical garden will give us some idea of the palm and olive; we have the acacia, the stately chestnut, the mountain ash, with its peculiar leafage and clustered bright scarlet berries; our fields, our hedgerows, and the varieties of trees common amongst us, afford materials for studying portions of design in a way that may be rendered most profitable and most agreeable. Many a common plant presents a diminishing elegance, a graceful flow of line, colouring, and hints of much value; the fine-shaped leaves in this class are replete with instruction; exquisite tints are often seen on the withering moss-rose leaf; the whole science of colouring is there exemplified; yellow, a primary, continued through the russets to the primary red, often very brilliant. Who, that has viewed the rich hues of autumnal colouring, but must feel the varied tones to be a source of admiration? and how much more so when he can deduce the whole apparently endless variety from three simple original colours? But apart from other considerations, there is scarcely any ornamental production in which some object from the vegetable world is not introduced, and for correct delineation we ought therefore to be intimate with its original source and habits. The trees about bursting into bloom will afford delightful examples: render them therefore useful to yourselves by making notes of your observations; there will be the deep pink of the almond, the delicate hue of the clustered apple blossom, and the pyramidal flower of the chestnut, a fine mellow white, of peculiar crisp-like character, relieved and inspired by a dash of crimson.

(To be continued.)

\* At Rhannus the columns of the pronaos are actually fluted throughout the length of the shaft in front.



## Law Intelligence.

VICE-CHANCELLOR'S COURT, JULY 24.

(Before Sir L. Shadwell.)

BUNNETT AND ANOTHER V. SMITH.

THIS was a motion by the plaintiffs, as patentees of certain improvements in the construction of iron revolving window-shutters, for a special injunction to restrain the defendant from manufacturing and selling shutters, alleged to be an infringement of their patent. A patent was granted to the plaintiff, Bunnett, in June, 1836, and the specification described his shutters to consist of a series of partially overlapping strips or plates of iron, or other metal, so connected together by a particular description of crank, butt-hinge, that the knuckles of the hinges should be hidden by the partial overlapping of the plates, and without such plates being cut away at the upper edges to let in the knuckle of the cranked hinge, which arrangement the plaintiff claimed as the first feature of his improvements; and the specification also described a plan of applying an endless screw and toothed-wheel to the roller on which their shutters revolved, for the purpose of raising and lowering not only shutters as above described, but any shutters used before the date of his patent, and this arrangement formed the second feature of his improvement; and it was for an alleged infringement of the plaintiff's patent in these two particulars that the plaintiff sought the injunction of the court. The plaintiff in his specification disclaimed the various portions of his shutters and lifting-gearing separately, admitting that each was *per se* old and well-known in principle and in use, previously to his obtaining the grant of Royal Letters Patent, but rested his claims entirely on the combination of the whole. The circumstances which gave rise to this motion were as follow:—It appears that Messrs. W. Cubitt and Co., the eminent builders, of Gray's-inn-road, are engaged in making considerable additions to the banking premises of Messrs. Smith, Payne, and Co., in George-street, and Mansion-house-place, in the City, and it being determined that iron shutters should be adopted, application was first made by the surveyor of the works to the plaintiffs, who furnished drawings of their shutters and gearing, and gave information as to the smallest space within which they would revolve; but the surveyor finding that the space required was more than could be afforded in the building, applied to the defendant, Andrew Smith, of Princes-street, Leicester-square, who is the manufacturer of an improved iron revolving-shutter, and was there shewn specimens of the defendant's shutter, which it was stated would occupy less space than that of the plaintiffs, and exhibited other advantages, by reason of the outer strips or plates of the shutters being connected by a peculiarly constructed chain, consisting of alternate links of wire and flat plates, in lieu of the crank-butt-hinge of the plaintiffs; the shutters being raised and lowered by means of an endless screw and tooth-wheel, similar in principle to that used by the plaintiffs (which is old and well-known), though differently arranged by defendant, so as to further economise space; and upon looking into the relative merits of both, the surveyor determined on having Mr. Smith's shutters, as being manifestly superior in many respects to the plaintiffs; and Messrs. Cubitt and Co. accordingly gave orders for numerous shutters to be affixed to the windows of the building in

question by Mr. Smith. The work was accordingly proceeded with by the defendant; and in consequence of an intimation from the plaintiffs to Messrs. Cubitt and Co. that legal proceedings would be taken by them against the defendant for an infringement of their patent, he (the defendant), on the first day of July, wrote them a letter, denying that he was infringing their patent, and asserting his right to manufacture and affix shutters and gearing on his own principle, as being wholly distinct from theirs, and greatly superior; also challenging them to try the question of law at the next Surrey assizes, or by arbitration, and offering to afford every facility for effecting that object with as little loss of time as possible. This was, however, not accepted by the plaintiffs, who preferred to file their bill in Chancery against defendant, and in such suit to adopt the present motion. It was contended by Mr. Bethell, with whom was Mr. Bacon on the part of the plaintiffs, that the chain of the defendant was a colourable and evasive imitation of the first head of their patent, and that the lifting gearing used by the defendant was also a colourable and evasive imitation of the lifting gearing claimed under the second head of their patent; on the other hand it was contended by Mr. Stuart and Mr. Thomas Turner on behalf of the defendant, firstly, that the plaintiffs patent was altogether bad and invalid on several grounds, and that therefore the plaintiffs could not be entitled to the interference of the Court, but should be left to their remedy at law; secondly, that even if the patent was good, the defendant's chain was in nowise similar, either in appearance, principle, or effect, to the crank butt-hinge of the plaintiffs, but infinitely superior in point of strength, security, durability, and economy of space, as was evidenced by the selection of Messrs. Cubitt, and therefore could be no infringement; thirdly, that the lifting gearing of the defendant, although similar in principle to the plaintiffs, was differently arranged, and so as to produce a much more beneficial result, and therefore was no infringement of the plaintiff's patent; and lastly, that inasmuch as the plaintiffs had specified, for a particular combination of old parts, they were not entitled to, nor could they restrain the defendant from using any of the respective parts unless he also used the whole. Numerous affidavits of scientific gentlemen and others were put in by both sides and read, and various models, shewing the relative constructions and arrangements of each party were exhibited, and amongst the evidence brought forward by the defendant to shew the non-existence of novelty in the plaintiff's patent, were affidavits to the effect, that iron revolving-shutters of a similar construction to the plaintiff's fastened by hinges on the same principle, made in nearly the same particular manner, were in use long prior to the date of the plaintiff's patent. Also the particular description of machinery used for raising and lowering the plaintiff's shutter, and claimed by him, in his specification, was patented, and in use about thirty-six years ago for closing and opening window shutters. And in shewing that the plans adopted by the defendant were not the same as claimed by the plaintiff, it was demonstrated that they were essentially different in construction and effect, although producing the same result, but in a superior manner, which creates alone a difference.

His Honour the Vice-Chancellor said, that where a patent was found to have existed for a period of eight years without any dispute, it was not the habit of the Court to scan very narrowly the expressions used in the specification, and to affirm that because the language was not as clear as it might be, that therefore the patent was bad. The long acquiescence of the public rather afforded *prima facie* evidence that the patent was good. But what pressed upon his mind was, whether the plaintiff had not so described the operation by which a part of the invention was managed, as in effect to permit the defendant to do what he contended the patent left him the right to do. There appeared to his Honour to be a difference in the mode by which the operation of winding up was effected in the two inventions, and it appeared to his Honour that the whole scheme of the thing was to make a succession of hinges, which were so placed that the successive lateral bars lapped over

each other, and thus concealed what his Honour might call the cardinal virtues of the whole thing. The second part of the specification regarded the rolling up of the shutter so constructed, and this was effected by "the revolving power of one hinge being made to depend upon a piece of the next hinge." Now, in the defendant's alleged piracy his Honour saw a different piece of machinery, for instead of making the revolving power of one hinge, according to the plaintiff's specification, depend on the adjoining hinge, the defendant did not make his hinge come in contact with the next hinge. It might be for a jury to say whether this were an infringement of the patent or not, but his Honour was not called on to decide such a question on a motion of this sort. It was the custom of the Court in granting injunctions to do as little injury as possible, and therefore he thought the proper course was to make no order on the motion, but let the plaintiff proceed forthwith to establish the validity of his patent in an action at law, as proposed by the defendant previous to this application for injunction.

The case occupied the Court for five hours, and excited great interest. Amongst the auditors, many scientific and practical gentlemen engaged in the engineering and building professions were observed.

## CHURCH-BUILDING INTELLIGENCE, &amp;c.

York Minster was re-opened on Sunday, the 7th instant, having undergone a complete restoration.

The consecration of the new church at Yeaton, near Leeds, by the Bishop of Ripon, took place on the 19th inst.

The intended Roman Catholic cathedral at Bristol, which has long remained in an unfinished state, is announced for sale.

## RAILWAY INTELLIGENCE.

**Important Railway Meeting at Banbury.**—A most important meeting took place on the 11th inst. The Messrs. Stephenson (engineers of the London and Birmingham Railway), Mr. Brunel (engineer of the Great Western Railway), and most of the influential inhabitants of the town and neighbourhood, numbering about eight hundred, were present. The first speaker, Mr. Elgie, of Worcester, advocated the adoption of a line from the terminus of the Great Western Railway at Oxford, to Wolverhampton, through Worcester and Banbury; the second, Mr. Barlow, advocated the extension of the Great Western line from Oxford to Rugby, through Banbury; the third, Mr. Carter (who represented the London and Birmingham company), advocated a line from Weedon to Worcester, passing near Farnborough, through Banbury to Oxford; the fourth, Mr. Hodgson, of Stockton, spoke in favour of a line from Oxford to Banbury, through Farnborough, Southam, Leamington, and Warwick, and thence to Birmingham direct. The proposition of the second speaker was carried without one dissentient voice, which virtually included that of the first, and we may now safely augur, from what transpired at the termination of the meeting, that ere long, under the same patronage, the fourth proposition will be carried into effect.—*Warwick Advertiser*.

**Rival Railways to Ashton.**—The great contest which has been proceeding in Parliament during the whole session between the Manchester and Leeds Railway and the Manchester and Sheffield Railway, in reference to the two Ashton lines, has at length been brought to a conclusion, the House of Lords having confirmed the decision of the Commons in favour of both the Ashton-under-Lyne and Stalybridge Branch Bill, and the Ashton, Stalybridge, and Liverpool Junction line. The Sheffielders are the defeated party in the contest, they having opposed the passing of the Liverpool Junction, as vitally endangering the prosperity, not merely of their Ashton branch, but also of their main line itself. To the Manchester and Leeds Company many reasons combine to render the victory they have achieved one of paramount importance.



**Lancashire and Yorkshire Junction Railway.**

—This line is projected to connect the Blackburn and Preston Railway with the Leeds and Bradford Railway, passing through or near the several towns of Blackburn, Church, Accrington, Whalley, Clitheroe, Padiham, Burnley, Colne, Skipton, Keighley, Bingley, Shipley, and Bradford, forming a continuous line from the port of Hull on the east coast, to the ports of Liverpool and Fleetwood on the west coast, with a branch at Accrington, through the town of Haslingden, to the Manchester, Bury, and Rossendale Railway—forming a direct communication with the town of Manchester. The length of railway to be made, including the branch at Accrington, will be about forty-five miles. A branch to Skipton is also suggested. Sir George Strickland, Bart., M.P., Sir C. R. Tempest, Bart., R. Townley Parker, Esq., C. Royds, Esq., M. Wilson, jun., Esq., and other gentlemen interested in the district through which the line will pass, are members of the Provisional Committee. — *Railway Record.*

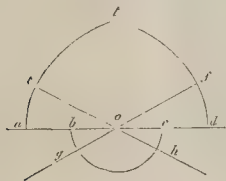
**York and Scarborough Railway.**—On Wednesday week the directors of the York and North Midland Railway held a meeting at the board-room, to receive tenders for the making of 44 miles of the Scarborough Railway and branch to Pickering. The work was divided into four sections, but the directors accepted the tender of Mr. Crawshaw, who tendered for the execution of the whole distance. The contractor's tender is under the engineer's estimate, and fully justifies Mr. Hudson's statement as to the cost of the line.

A petition from the Hull and Selby Railway Company against the Government Railways Bill was presented to the lower House on Thursday week. The York and North Midland and the Manchester and Leeds Railway Companies have also petitioned against the Bill.

The Leeds and Bradford (valley line) Railway received the royal assent on Thursday week. The line will, it is expected, be completed within two years.

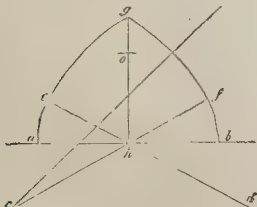
**ARCHITECTURAL GEOMETRY, No. VII.—TUDOR ARCHES.**

Sir,—Having seen in *THE BUILDER* several articles upon Architectural Geometry, I myself send to you some sketches for three-centred arches. First example, of which the span



only is given. The line  $ad$  is divided into four parts; from the centre  $o$ , describe the arc  $bc$ ; from  $a$  set off the distance  $ae$ , equal to  $ab$ ; draw  $eo$  to  $h$ ; then  $hgo$  will be the three centres for describing the required arch.

Second example, when the height and span of the arc are both given. Divide  $a$   $b$  as



before; with  $a$  as a centre, and one-fourth of  $ab$  as a radius, mark off  $e$ ; draw a line from  $e$  through  $h$  to  $d$ ; produce a line from  $h$  to  $e$ ; let the given height be  $g$ ; bisect  $gf$ ; let the bisecting line cut  $fh$  at  $c$ . Then, with  $c$  as a centre, describe  $fg$ ; with  $h$  as a centre, describe  $bf$  and  $ae$ , &c. A. K.

Spalding, June 5, 1844.

**THE NEW ROYAL EXCHANGE.**

THIS edifice is rapidly approaching completion, and at present no obstacle is apprehended that will delay its being opened beyond the early part of September. The Gresham committee have not as yet appointed the day, although preparations are going on to celebrate the event, so as to render the ceremony of an imposing and interesting character, it being clearly understood that her Majesty, accompanied by her august consort, will honour the city of London by opening it in person. The exact arrangements have not been as yet determined; it is, however, known that a grand banquet will be served in a spacious pavilion erected in the area, and that the whole proceedings will be conducted in an unusual degree of splendour, well becoming the opening of the most important commercial building in the country. At the recent meetings of the committee some alterations have been arranged, the original intention being that it should be free from all decorative and sculptural embellishments. In the centre of the quadrangle will be raised a marble statue of the Queen. For this work her Majesty has been pleased to name Mr. Lough, the sculptor. The committee have allowed 1,100*l.* for the execution of statues. A new statue of Sir Thomas Gresham has also been decided on. It will be 15 feet in height, chiseled out of Portland stone by Mr. Behnes, at a cost of 550*l.*, and when completed will be placed in the niche at the eastern end of the Exchange, immediately under the tower. The old statue of the wealthy founder, that withstood the ravages of the fire at the burning of the former Exchange, has been preserved, and will be erected in another part of the building. New statues of Sir Thomas Whittington and Sir Hugh Myddelton will also decorate the area—the artist selected for the former being Mr. Joseph, at a cost of 450*l.*; and the latter, Mr. Crewe, at a cost of 430*l.*, who has also been appointed to execute the Royal arms for the western entrance.

The ground between the eastern front of the new Royal Exchange, at the rear of the houses in Finch-lane, is being now built upon by direction of the trustees of Magdalen College, to whom the property belongs. There will be a line of houses from Cornhill to Threadneedle-street, for which purpose the church of St. Benet Fink, it is stated, will be pulled down, the living of which, it is said, will be transferred to a church which will be erected on the site of what was formerly Cripplegate Workhouse, Moor-lane. In excavating for the foundation of the new houses, at a depth of about 12 feet, a large quantity of common Roman and of Roman tessellated pavement was found.

**Correspondence.****SHAM COMPETITION.—DERBY PAUPER LUNATIC ASYLUM.**

Sir,—I was much amused at the letter contained in No. 73 of *THE BUILDER*, on the subject of the Lunatic Asylum competition at Derby; it (the letter) reminding one so very strongly of the old fable of "The Ass in the Lion's skin." We are told by Æsop that the long-eared simpleton, having disguised himself in the skin of one of the kings of the forest, carried all before him, until, wishing to boast of his success, and almost forgetting, in his new-born grandeur, the manner in which he had, as yet unchallenged, borne the palm, opened his unlucky jaws to roar, when "lo!" a violent braying was all that escaped his lips, and thus he betrayed himself a cheat.

I have until now remained quiet, in order that I might the better observe the proceedings of those most interested in the matter; but as I do not see in any of the letters on the subject points or facts as strong as I myself am in possession of for believing the competition to have been a mist thrown over the deeds of those who, from the position they occupy in the land, should be —; but of what use will it be for me to say what they should be?—suffice it to say, that what they should be they are not.

The list of the magistrates of Derby contains names of some of our high nobility, numbers of wealthy men, men known for their honest works—the number in all about 113; of these, about half-a-dozen attended at the meeting of

the committee on the occasion of selecting the plans.

Some friends of mine who competed among the rest, I know produced a plan not without merit—indeed, so good, that a learned physician, the first authority on such a subject, having inspected it, pronounced his decided opinion of its perfection in every respect for the purposes of an asylum for the reception of the insane.

Immediately after the plans were delivered, a pamphlet on the subject of lunatic asylums appeared from the pen of Dr. Brigstock, a gentleman residing at Derby, and who keeps a private mad-house in Green-lane; the idea suggested in this pamphlet was, that all the chambers should be upon the ground-floor, and the disposition of the buildings resembled that of a barrack, a number of detached wards connected to each other, to the chapel, to the kitchen, and to the superintendent's house, by long covered passages, but altogether extending over so much ground, that the idea became preposterous.

A competitor, who was exhibiting a radiating plan for the proposed asylum, called on the author of this pamphlet, and having presented him with a sketch of his design, he was much astonished at the instant remark of the doctor, "Oh, the committee has decided to reject at once all radiating plans; at least, so I am informed by the mayor." The truth of this observation was afterwards proved by the result of the committee's award of the premiums.

At this time the plans had not been seen.

I had an opportunity of inspecting with my friend the whole of the plans, and he remarked to me that two sets of drawings were distinguished by the same mark, viz., a seal bearing a coat of arms; to make sure of this, he examined and compared minutely the two seals, when he found that while the crest on the one (on the drawings also bearing the motto "Curator") was a bull's head rising from out a ducal coronet, the other was the head of an unicorn or horse, although at first sight very similar to the other.

The committee met twice, perhaps thrice, for a few minutes at each time. My friend called on Mr. Barber, the mayor, to know whether it was probable that the matter would soon be settled, but having been informed by that gentleman that it was likely that a fortnight might elapse before the decision was come to, he departed.

At this very moment the decision was already made; no more meetings of the committee took place, the committee having previously selected the design of Mr. Duesbury. A few days after this, my unlucky friend received a letter from the mayor to say that his drawing, not being successful, would be sent to him by rail, &c. &c. Yes, the letter was addressed to him by name, his sealed letter having been actually broken open, by what authority I know not.

The letter is sealed, and at first my friend thinks it a letter from "Curator," for it is sealed with the impression of the bull's head, with arms, as before seen on "Curator's" drawings; but no, it is from the mayor of Derby.

How easy is it to select from a multitude of designs.

The watchword is—The bull's head; the answer—"Curator."

When unanimously adopted by the committee (of half-a-dozen), without even a division on the subject—so great was the superiority of the Bull's-head plan—on examination it was found that the drawings were distinguished by the motto "Curator," and upon opening the sealed letter bearing the like distinguishing motto, to the astonishment of all present, they find it to contain the name of their old friend "Henry Duesbury," of Town Hall notoriety.

There were eighty sets of drawings exhibited, and I am told that on the average, each set must have cost 50*l.*; at that rate 4,000*l.* must have been expended in their preparation.

Trusting that you will not deny insertion to these remarks, and apologizing for thus long intruding upon your valuable time,

I have the honour to remain, Sir,

Your most obedient servant,

Derby, July 20,

A TOWNSMAN.



## Miscellanea.

**RADCLIFFE OLD HALL.**—This interesting relic of old English domestic architecture was taken down a number of years ago, to make room for a row of cottages for the workpeople of Mrs. Bealey and Sons, bleachers. It is understood that the Earl of Wilton, to whom the place belonged, sold the materials to the above parties, and rented the land to them, and so, in the spirit of modern improvement, the order was given, "Take it down, why cumbereth it the ground?" This venerable pile was highly interesting to all who loved to gaze on the relics of other days; and it was probably calculated to convey a more correct idea of the rude but strongly built habitations and festive halls of our forefathers than any other object to which the curious of this neighbourhood had access; and by them, no doubt, its destruction has been much regretted. Sir Walter Scott directed public attention to Haddon Hall, as a representative of the halls of the early Norman or latter Saxon chiefs; but the hall at Radcliffe must have been much older than Haddon Hall, as Sir Walter describes it. The materials at Radcliffe were chiefly beams and planks of solid black oak, which, together with the simplicity of the construction, and the rudeness of the workmanship, testified to the great age of the edifice. What a pity that it could not have been left alone, or rather that it was not deemed worth a little expense and trouble in covering it in once more; that it was not given as a shelter to some half-dozen poor families, on condition of their keeping it in perfect order; it would thus have endured for ages. The square tower, or fortified part of the ancient residence, still remains, but tottering with decay. The vaulted roof of the lower room almost hangs by a single stone; and unless it be protected from further wanton outrage, it must soon share the fate of the hall, and leave only its name in the remembrance of things that have been.—*Samuel Bamford's Walks in South Lancashire.*

**SCOTT MONUMENT.**—Sir Thomas Dick Lauder has received a subscription of twenty guineas from the Marquis of Bute. The Earl of Zetland has contributed twenty pounds to this truly national testimonial. The heads sculptured on the main capitals under the groined arch, now thrown open by the removal of the scaffolding, are likenesses of the principal Scott poets. The following are finished:—On the north front—Queen Mary, James I., James V., and Drummond of Hawthornden. On the west front—Hogg, Burns, Ferguson and Ramsay. On the south front—Buchanan, Sir David Lindsay of the Mount, Tannahill, and Byron. On the east front—Smollett only is yet completed; but the other three—viz., Hume, Thomson, and Beattie—are in progress.

**THE LATE DR. ARNOLD.**—The *Literary Gazette* says, "Having been invited to see the monument about to be erected to the late Dr. Arnold, designed by Mr. J. Thomas, we have to notice a very pleasing return to mediæval forms, executed with great taste. Under a Gothic canopy, it represents the late eminent scholar, in academic costume, lying on his back, with his hands uplifted and folded together on his breast. The head rests on a massive volume. The likeness is grave and expressive; the drapery simple and well composed; the pinnacles, traceries, and other ornaments subordinate, and good in style. The whole effect does credit to the artist."

**FINE ARTS.**—The following extract from the report of her Majesty's Building Commissioners, which is so complimentary to our townsman, Mr. Rogers, will be read with interest in this locality:—"It is the opinion of the committee that among the carvers whose works have been exhibited, Mr. W. G. Rogers holds the first place; and they consider him as the person best qualified to be entrusted with those parts of the wood-work of the House of Lords in which great richness of effect and delicacy of execution are required. (Signed) Mahon, Colbourne, J. B. Macaulay, B. Harris, Jun., George Vivian, Thomas Wyse.—*Dover Chronicle.*

The Pulteneytown Harbour Improvement Bill has passed the House of Commons. The estimated expense for completing the works amounts to 26,900*l.* 5*s.* 3*d.*

**THE IRON TRADE.**—The quarterly meetings of ironmasters were held during the past week, as usual. During the last quarter the trade has been in a healthy state, the demand steady, and the prices for all descriptions of iron fair and remunerating. It was, however, expected that there might have been a downward tendency, the masters being less flush of orders than at the beginning of the quarter, and some forced sales having been made in Liverpool and London, at rates rather below the market price. Notwithstanding these circumstances, and although some slight indications of a fall were given at Wolverhampton on Wednesday, at the meeting in this town on Thursday, which is justly considered the most important, former quotations were fully maintained, and several considerable contracts for Staffordshire bars were entered into at 7*l.* per ton prompt, and other descriptions in proportion; for forged pigs some efforts were made for an advance. The number of railway bills passed during the present sessions, the steady demand for manufacturing purposes arising from the improved state of trade in general, together with the increasing application of iron as a material to purposes for which it had not previously been used, all concur to strengthen the conviction that the present fair price will remain steady during the current quarter. It mainly depends upon the ironmasters themselves to preserve the trade in its present satisfactory state; but if, on the one hand, by a hasty attempt to force up prices, the demand is suddenly checked; or on the other, by a rapid increase of works, or the bringing into operation too many of those which have been suspended, the market be overstocked, and a ruinous competition created, the present prospects of the trade may be effectually marred. Of the latter of these evils there are at present too many indications; and it is to be hoped that by timely caution the consequences may be averted.—*Birmingham Gazette.*

**MAGDALEN COLLEGE, OXFORD.**—The splendid tower of Magdalen College, that soars to the height of 150 feet, was last week struck by lightning, and one of the pinnacles much shattered, several large stones being hurled into the street. One of the servants of the college, who was passing at the time, had a miraculous escape, being struck down by one of the fragments, which fell on his umbrella and hat, but we are happy to state he was not materially injured. The staircase of the tower, also, is much injured by some of the stones that were forced into it. The same turret, we believe, was struck in a similar way eight years ago, on St. Swithin's day.

**KING WILLIAM'S COLLEGE, ISLE OF MAN.**—The restoration of King William's College is progressing rapidly. The workmen are now engaged upon the roof, and the chapel is also in a state of forwardness. The patrons and friends of the institution are sanguine that the annual meeting for the distribution of prizes, on the 4th of June, will be held within the walls of the renovated building. The edifice was insured for 2,000*l.*, but the estimate of the necessary repairs was 3,100*l.*; the trustees, however, calculate on a gross expenditure of 4,000*l.*, thus leaving a deficiency of 2,000*l.* to be provided for.

Mr. Baily, the Royal Academician, has just completed his model of the statue of his Royal Highness the late Duke of Sussex, which, when completed in marble, is to be placed in the large room at Freemasons' Hall. The statue is of colossal dimensions, being about double the size of life, and his Royal Highness is represented standing upright, in the action of addressing an assembly. He is habited in the robes of a knight of the Garter, and, in addition, wears the insignia of the Guelphic order. At the side is placed a small altar, on which the masonic emblems are figured.

**A WINDMILL FOR SAWING.**—The gable ends of cottages often exhibit a very primitive windmill for sawing wood within doors. It is a large wheel, the spokes of which flappers are adjusted, made of coarse matting, and so placed as to profit by the ordinary sea breeze; and, while the wind is thus sawing his planks for him, the carpenter, at his door, carries on his craft.—*Blackwood.*

**HUNGERFORD SUSPENSION BRIDGE.**—One of the principal rivet chains has been completely swung across the river and secured to its arches.

## MARKET WESTON, NEAR EAST HARLING.

—It has long been a well-known fact, that metals will expand by heating, and contract in cooling; and this principle was most successfully applied on Monday week, and two previous days, in bringing upright the north side wall of Market Weston Church, which had declined full 18 inches from the perpendicular. The length of this wall was 54 feet, the height 24 feet, and 2 feet 9 inches in thickness. To accomplish this object, three iron bars, 36 feet long and 2 inches square, having powerful screws, of the workmanship of Mr. George Blomfield, Thelnetham, were passed from one side of the church to the other: enclosing these were sheet-iron troughs, containing ignited charcoal; which, after the bars were sufficiently heated, were removed, and the bars allowed to cool gradually. By this process, on their first contraction, the walls were brought in 5½ inches; on the second, 4½ inches, and on the third and fourth heatings, full 8 inches. The coming to of the inclined wall was very slow, but the result satisfactory, not even the surface being in the slightest degree defaced. The restoring of the church, which was in a very dilapidated state, was from plans and designs of L. N. Cottingham, Esq., London, under the immediate personal superintendence of Mr. John Reid, builder, Ixworth. This novel experiment is said to have been the first successful one made in England, although Mr. Cottingham adopted this method in restoring the walls of Armagh Cathedral, Ireland, which were two feet out of the perpendicular. So much interest had been excited on the occasion, that during these days many of the neighbouring clergy and gentry with their families were present.

**DISCOVERY OF AN ANCIENT ALTAR STONE AT BRANTINGHAM.**—The old Roman Catholic altar stone has lately been found in the pavement of the parish church of Brantingham, in this riding. It is now removed (with the permission of R. F. Shawe, Esq., and Mr. J. Beaumont, under whose seats it partly was), and placed for the present within the communion rails. It is broken into two parts, but is very nearly perfect, and has on it the five crosses with which the altar stones were formerly marked. This stone is curious, as there are very few of them now left in our churches. They were forbidden by an express injunction of Edward VI.; and their removal was made an article of inquiry in the visitation of several bishops in the reigns of both Edward and Elizabeth.

A silver coin of the reign of the Emperor Trajan, in excellent preservation, was lately dug up at the Cherry Garden Farm, the residence of Mr. Ford, at Kilmersdon, near Bath.

The Royal Naval School at Deptford is nearly built, at a stated cost of 16,000*l.*

## Tenders.

**TENDERS** for building Wesleyan Chapel, &c., Landport, Portsea.—A. Frimen, Esq., Architect, Adam-street.

Absolom, Portsea .....	£2,453	0	0
Genett, Portsea .....	2,390	0	0
King, &c., Portsea .....	2,245	0	0
Hendey and Son, Portsea .....	2,264	0	0
Low, Guildford .....	2,165	0	0
Wells, &c., Portsea .....	2,150	12	0
Nicholson, Wandswoth .....	2,115	0	0

**TENDERS** for Works for Stabling and Residence adjoining the Plough Tavern, Shore-ditch, for Mr. Thomas Harford Cox.—Mr. Thomas Ward, Surveyor, 95, Kingsland-road.

W. H. Little .....	£767	14	0
Little and Oakshatt .....	700	0	0
T. Wythe .....	650	0	0
Hervey and Son .....	560	0	0
R. Briant .....	481	10	0
B. Chesterman .....	426	0	0

Opened in the presence of the several parties, and the lowest tender accepted.



# The Builder.

NO. LXXVIII.

SATURDAY, AUGUST 3, 1844.

**T**HE session drawing to a close, we can have little expectation of much more being done in Parliament with regard to architecture and building. The new Metropolitan Building-Act, which passed its second reading in the House of Lords on Monday last, went into committee on Tuesday, and was brought up again on Thursday, we doubt not is being finally passed while we are in the act of publishing.

On the whole, while some may find particular parts of this Act to cavil at, it may be taken as an excellent measure. We may ourselves wish some few things in it had been otherwise; but considering in how many cases we have been listened to attentively, and have had our suggestions adopted to the very letter, we do not mean to shew ourselves dissatisfied; and we may congratulate the public on the consummation of a piece of architectural legislation, which, from its difficulty, has occupied many years in its incubation; so easy has been suggestion, but so difficult satisfactory amelioration and general agreement of differing interests upon so technical a subject.

On the whole, we think great credit is due to the department from which the measure has emanated—the harsher parts of the first proposal of the present Bill being mostly softened down, and in fact almost every person whose opinion upon the subject is of any value, and who has taken the trouble to speak out upon it, has been listened to, and the measure may be taken as a congress-opinion of the metropolitan building-world; and if, upon a practical trial of the Act, any alteration be found necessary, we little doubt the sterling desire to produce an useful, beneficial, unoppressive, and permanent code of building-law will immediately operate to the effecting all, by way of amendment, which may be desired.

The Government seems determined to carry on metropolitan improvement and the announcement with regard to the proposed Thames embankment may be taken as an earnest of the activity which the Government feels to be requisite for upholding and increasing the splendour of the metropolis of the first and richest empire in the world.

The Metropolitan Bill relative to danger by fire, we have already noticed, has been for the present withdrawn.

Our attention being now relieved from the exhibitions and legislation of the year, we shall have time and space for the resumption of our reviews of architectural works; this, with our attention to the subject of parsonage houses, we think will be acceptable to many of our readers. Some of our correspondents have desired us to fill our pages with designs and technical matters, good or bad, so that they may be accommodated with that which

is to be found in many ordinary books; but such is not our desire: without we can furnish good and practicable designs, we rather take the advice of those of our friends, who say, "give none, unless they be really good, and abstain from all common-place information, which most men previously know." We have for a long while past been collecting examples of Gothic architecture, and these, as the opportunity serves, we shall insert; and we have also in preparation a treatise on mechanics and hydraulics, preliminary to their application to engineering and building generally. We have moreover another subject in hand, viz., the consideration of the propriety or impropriety, profitableness or improvidence, of Building-societies. These in due time will make their appearance; we might introduce them more rapidly if we excluded other matters, but we trust our readers would rather bear with us while doing things soundly and deliberately, than be furnished suddenly with worthless or imperfect papers.

## W. G. GOVER'S PATENT REMOVABLE WINDOW-SASHES.

WE have lately seen a model of the above, which is a simple but ingenious method of constructing new sashes, or altering old ones, so that they may be taken out at pleasure, without removing the beads. By means of Mr. Gover's patent metal stops, windows are made perfectly firm when closed, and the sashes move easily and silently when opened and shut.

In our next number we shall give a detailed description of the patent, which we have no doubt will ere long be very generally adopted as an efficient means of preventing the many fatal accidents which are so constantly occurring amongst servants and others who are obliged to clean the outsides of windows.

## METROPOLITAN BUILDINGS BILL. HOUSE OF LORDS, MONDAY, JULY 29.

THE Duke of Buccleuch moved the second reading of the Bill, briefly explaining its object and provisions.

Lord CAMPBELL thought that this Bill was founded on very good intentions, but that its promoters had entirely failed in carrying them out. The Bill came up on the 22nd of this month; it contained 118 clauses and 27 schedules, comprising 107 folios, rather more than the *Code Napoleon*. (A laugh.) The Bill affected property all over the circuit within the bills of mortality. He did not mean to say that legislation regarding ventilation and drainage was not wanted, but this was not the way to go about it. It would take weeks to go through this Bill properly. As far as he could judge, the measure had no judicial determination, and its principle as regarded its interference with private property, where the public interest was not concerned, was, to say the least, extremely doubtful. He therefore moved that the Bill be read a second time that day three months.

The Earl of Cadogan opposed the Bill. The Earl of BESBOROUGH thought, as the measure had been prepared with much care, it ought to be read a second time, in order that its defects might be corrected in committee.

Lord KINNAIRD wished to know how the Government intended to provide for the great number of poor who would be turned out of their dwellings by this Bill after January. It ought not to be forgotten, that a measure for the improvement of Liverpool was some time since found impracticable, in consequence of the Government being unable to provide accommodation for 40,000 persons, who were inhabitants of cellars in that town, and who were proposed to be removed.

The Marquis of SALISBURY suggested, that the amendment should be withdrawn, on the

understanding that the Government would not pass the Bill this session.

The Earl of Wicklow was of opinion that the measure ought to be persevered with.

Lord COTTENHAM said, as this was one of the most important Bills that could be brought before the consideration of Parliament—affecting, as it did, an enormous amount of property in this metropolis, and as none of their lordships had had an opportunity of becoming sufficiently acquainted with it, he should vote for the amendment. It was obvious, if their lordships passed the measure this session, they would merely take it on credit from the Commons and the Commissioners of Woods and Forests. The noble lord on the woolsack, who had often alluded to the inconvenience of bringing forward Bills at a late period of the session, would certainly concur with him in thinking, that a Bill of this magnitude and importance ought not to be passed by their lordships at so advanced a period of the present session.

The Duke of Buccleuch, in reply, said, he had not heard any objection to the principle of the Bill, and noble lords had not made themselves acquainted with its details. The noble duke said he considered it to be his duty to press this Bill to the second reading, and in the committee all the difficulties would vanish away.

Their lordships then divided, when the numbers were—

For the second reading.....	31
Against it .....	8
Majority for the second reading ..	—23

TUESDAY, JULY 30.

The Bill passed through committee, several verbal amendments being adopted, and the report was ordered to be brought up on Thursday.

## EMBANKMENT OF THE THAMES.

HOUSE OF COMMONS, JULY 30.

THE Earl of LINCOLN rose to move for leave to introduce a Bill to empower her Majesty's Commissioners of Woods to form a terrace and embankment, with convenient landing-places for the public, on the Middlesex shore of the river Thames, between Westminster and Blackfriars' bridges. It was not his intention to press this Bill during the present session of Parliament. He merely moved for leave to bring in the Bill, in order that parties whose interests it affected, and hon. members of that house, especially the metropolitan members, might have ample time to consider its details, and to form an opinion as to its merits, before the commencement of another session of Parliament. It was, therefore, unnecessary for him to waste the time of the House by urging the necessity of such a measure, to meet the evils complained of in connection with the navigation of that important river on which the metropolis was situated. He would only remind the House, that the year before last a commission was appointed by Her Majesty to take into consideration any improvements that might be suggested; and the members of that commission were deeply impressed with the importance of effecting an improvement in the navigation of the river Thames. That commission drew up a report, which he (Lord Lincoln) laid on the table some three or four months ago; but, as that report was exceedingly voluminous, and accompanied by numerous plans, he thought it would not be right to call upon the House to consider this subject during the present session of Parliament. He conceived that better course would be to consider that report in connection with the present Bill. It had been suggested that the expense of the proposed improvements should be defrayed by a tax upon coals imported into the city of London; but he had not introduced any clause into the present Bill to enable the imposition of such a tax, though he thought, if an impost of this nature could be justified, it would be with the view of effecting the improvements contemplated by this measure. He would not now, however, enter into any discussion as to the propriety or impropriety of such a tax; but he hoped, under the circumstances, the House would permit the introduction of the Bill.

Mr. HURT thought it right to say that if any tax upon coals were proposed, he, and those hon. members whose duty it was to protect the



interests of the inhabitants of the northern districts of this kingdom, would feel it their duty to give their strenuous opposition to the Bill; and he hoped they would be supported by all those who believed there was either wisdom or common sense in the principles of political economy.

Mr. HUME.—If the noble lord had 3,000,000*l.* or 4,000,000*l.* to spare, he (Mr. Hume) would oppose his plan. The increase of the tax upon coals would be attended by most mischievous consequences. The embankment, instead of being an improvement, would be the greatest possible impediment to the navigation, but he would say no more on the subject, as the Bill was to be postponed until next session—"sufficient unto the day is the evil thereof."

Sir F. TRENCH advocated the erection of a new bridge on the other side of the House of Parliament, and proposed that old Westminster-bridge should be continued until the New Houses of Parliament were completed. Instead of putting a tax on coals, he would suggest, that the Government should erect a railroad on the site of the embankment. This railroad would not only pay its own expense, but the expense of the embankment, and would at the same time greatly add to the embellishment of the river.

Leave was then given to bring in the Bill.

#### PROPOSED MONUMENT TO THE MEMORY OF SOUTHEY.

A MEETING took place on Saturday week last, at the Institution, Park-street, to take into consideration the erection of a monument to the memory of Dr. Southey, in Bristol Cathedral. The Mayor, W. L. Clarke, Esq., took the chair, and introduced the subject, commenting upon the claims which Dr. Southey had upon the recognition of the people of Bristol, as a native of their city, who had conferred honour upon the place of his birth, by the manner in which he had distinguished himself in several branches of literature.

J. S. Harford, Esq., after adverting to the high moral tone of Southey's writings, and to the sincere reverence for Christian revelation displayed in them, and observing that the proposed erection of a monument to his memory in Westminster Abbey by no means rendered it a work of supererogation to offer a similar tribute to his genius in the cathedral of his native town, moved, as the first resolution, "That it is incumbent on the citizens of Bristol to give public testimony of the sense they entertain of the worth and genius of Dr. Southey; and that, therefore, a subscription be now opened for the purpose of erecting to his memory, in the cathedral of this, his native city, a monument, ornamental to that edifice, and worthy of the poet's fame"—which was carried unanimously.

The next resolution was in reference to the appointment of a committee, and the following gentlemen were named:—the Right Worshipful the Mayor of Bristol; the Very Rev. the Dean of Bristol; the Canon in Residence for the time being; Sir Charles Elton; Walter Savage Landor, Esq.; J. S. Harford, Esq.; the Rev. John Eagles; Dr. Pritchard; C. L. Walker, Esq.; J. Cottle, Esq.; Rev. T. Grinfield; Dr. Symonds; P. F. Aiken, Esq.; S. S. Wayte, Esq.; J. C. Swayne, Esq.; Jere Hill, Esq.; and C. B. Fripp, Esq. J. S. Harford, Esq., was chosen as treasurer, and the Rev. George Swayne, secretary.

A design, by Baily, for the monument, was then brought forward. It consisted of allegorical figures of Poetry and History, and a large medallion, on which was a profile of the poet in bas-relief. The architectural members were simple, but belonging to the forms of classic art. This design was sent by Mr. Cottle to C. B. Fripp, Esq.

Dr. Budd stated that a resolution had been placed in his hands, to the effect that the thanks of the meeting be voted to Mr. Baily, and that his design be adopted; but he could not help observing that this design, however beautiful, did not appear to be in harmony with the character of the structure for which it was intended, and that on that account he should hesitate to offer the resolution without some amendment.

Mr. Harford remarked, that the confidence which Mr. Baily's name would inspire as to the satisfactory execution of the monument, and the feeling in his favour as a native of

Bristol, would induce many gentlemen to subscribe, if it were understood that the design would be by him, who might not otherwise do so.

Mr. Sidney called the attention of the meeting to recommendations of the Royal Commission on Fine Arts, that, in future, monuments erected in Westminster Abbey should be more in accordance with the character of the building than had hitherto been the case. He thought that, after such a recommendation from such high authority, after a proposition had been seriously considered in high quarters for removing the monuments in Westminster Abbey, and St. Paul's, to a suitable edifice, it would be well to pause ere they decided on adopting a design so entirely unsuitable to the character of the edifice in which it was to be erected. He begged to remind them that there was a numerous society, distinguished not less for their attainments than for the enthusiasm with which they pursued their objects, who were earnestly engaged in renovating the churches of this kingdom, and reducing their ornaments to an ecclesiastical character; and he feared that if a purely classic design, however beautiful, were adopted, the committee would be deprived of an important amount of subscriptions. He did not for one moment venture to criticise the works of Baily, which could not but afford to all who examined them feelings of pleasure and admiration; but he could not consider that this particular design was in the true character for the position designed. It was his anxiety to see erected, not a mere mural tablet, but a monument suitable in character to the ancient cathedral, and yet worthy of the great man whom it would commemorate, and of the great city by which it was to be raised.

The Mayor observed that the design offered had struck him as rather too closely resembling a very beautiful one already in the cathedral, by the same accomplished artist. He referred to that to the late bishop—a medallion and allegorical figures. He suggested that Mr. Baily might be nominated as the artist, although the present design should not be adopted.

F. Ward, Esq., suggested that the nature of the monument should be left open to future consideration, and that the attention of the meeting should at present be confined to determining the means by which it might be carried into effect.

The Mayor then altered the wording of the resolution; when it was put and carried unanimously.

The subject of the subscription-book being broached, J. S. Harford, Esq., suggested, as the most satisfactory plan, that the subscriptions should be small, in order that they might be numerous; as it would be much more desirable that a monument to so eminent a citizen of Bristol should be raised by small subscriptions from a large number of his townsmen, than by large sums only from a few.

A vote of thanks to the Dean and Chapter of Bristol, for permission to erect the monument in the cathedral, and for their liberality in remitting the customary fees, was moved by Sir C. Elton, seconded by the Rev. J. Eagles, and passed.

The subscriptions amounted, including those that had been previously entered, to 150*l.*; 500*l.* is the sum named as required for the purpose in view; but, of course, the nature of the design must depend greatly on the pecuniary means at command.—*Great Western Advertiser.*

#### THE NEW ROYAL NAVAL SCHOOL AT NEW CROSS.

THIS edifice, situate as above-mentioned, and intended, in accordance with the rules of the corporation, as the future scene for the education of the sons of the less affluent naval and marine officers, is almost completed, and the pupils now on vacation will be enabled to enter it on their return, on the 8th of August next; so that Alfred House, Camberwell, formerly known as the Royal Naval School, will no longer be occupied as such. It will be recollected that when the new building was first contemplated, many urgent appeals were made to the public on behalf of the fund required for the erection, and the claims of the British navy to gratitude were earnestly set forth, as were also the objects of the institution, which are not entirely

confined to the education of those intended for the navy, the pupils receiving instruction as the sons of naval officers, that will qualify them for all professions, and the general pursuits of life. Some very liberal subscriptions were subsequently made to the building-fund. His Royal Highness Prince Albert subscribed 100 guineas, and the corporation of London 200*l.* Amongst other subscriptions were those of the Archbishop of Canterbury, 50*l.*; the East India Company, 100*l.*; the Lord Bishop of Elphin, 20*l.*; Mr. Alderman Lucas, 100*l.*; the Earl of Yarborough, 100*l.*; Sir Isaac Coffin, Bart., 200*l.*; Messrs. Drummond and Co., 50*l.*; Messrs. Coutts and Co., 20*l.*, &c.

Her Majesty the Queen Dowager and several members of the nobility are also amongst the subscribers; and his late Majesty William IV. was an annual donor of 100*l.*

The site for this national institution was purchased from the governors of Christ's Hospital and the Clothworkers' Company. The land consists of seven acres, most favourably situated at New-cross, four miles from London, and commands a view of that proud monument of British glory, Greenwich Hospital. The edifice is from the design of John Shaw, Esq., surveyor of Christ's Hospital, and Messrs. Locke and Neesham, of Theobald's-road, are the builders. When completed, the length, according to the plan, will be 280 feet by 170 feet; and when the entire plan shall be carried out, there will be accommodation for 400 pupils. It is at present calculated for 260. The ground-floor contains 17 apartments. In the upper story there are the dormitories, ushers' rooms, wardrobes, library, museum, &c. It appears that about one-fourth of the edifice remains unfinished, and the only impediment to the completion is want of funds, which, it is to be hoped, will not be long withheld.

#### THE NEW COLLEGE OF CHEMISTRY.

It has long been remarked as a very serious defect in the scientific establishments of this country, that there is in existence no institution especially devoted to the study and practice of chemical science, similar to that of Giessen, presided over by the celebrated Professor Liebig; and that if the student desire to perfect himself in analysis and research, he must resort to the schools of the Continent. With the increasing appreciation of the powers and importance of chemistry, as a science, and the daily extension of its practical application to all the useful arts, especially to agriculture, the deficiency has become more and more manifest; and we are happy to perceive that the first step has been taken towards supplying it by the establishment of a college or school where analysis and research are to be taught practically and systematically, and where the education of the scientific chemist can be completed at a moderate expense. A prospectus or proposal for founding such a college, has been sent to us, from which we extract the following summary of the objects it is intended to embrace.

First, a laboratory, as designed by Sir Humphrey Davy, and on the model of Giessen. Secondly, a college for the instruction of students, and for qualifying public lecturers and teachers. Thirdly, departments for the application of chemistry to especial purposes (as agriculture, geology, and mineralogy, by the analysis of soils, rocks, &c.), to manufactures, medicine, physiology, and the arts. Fourthly, the employment of such means as may appear expedient for facilitating the pursuit of scientific chemistry throughout the country.

These are national objects, and we shall rejoice to see them carried out to the fullest extent. The advantages to be derived from such an institution are so apparent, that we need not enlarge upon them, and we cannot entertain a doubt of the public support being awarded to the undertaking. We may remark, that the list of the provisional council contains some of the first names in the country.

To the above we may add, in no department of art or science would such an institution be more beneficial, if rightly conducted, than in building and architecture, it being at present a singular fact, that in proportion as chemical knowledge has extended under the present means, so have the right choice, and consequently the duration, of building materials retrograded.



## PETRALOLOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 363.)

Following up the chain of reasoning I held last, I will first, previous to entering further into the siliceous rocks, define to the reader the nature and origin of clay, or aluminous earth; so termed, because its base is almost invariably composed of the earth alumina, or otherwise it is the preponderating ingredient. In tracing the origin of clay, and the various modifications of mixture that it undergoes, we cannot sufficiently admire the wonderful provision of nature by which she accomplishes results perfectly analogous to each other, not only from varied materials, but also by varied action. It is by attentive observation of nature alone, and not by means of the crucible or the alembic, that we are enabled to arrive at a knowledge of first causes, which, from their obscurity and perplexity, are the forbidden fruit of modern men of science. For although the analysis of organic and inorganic bodies ever exhibits certain unvarying results, which enable us to classify and arrange elementary principles and compounds; although it is affirmed that all things known to us may be resolved into oxygen, hydrogen, nitrogen, and carbon, which affirmation has not yet, nor, in all human probability, ever will be verified; yet, in nature, the aluminous results seldom exist presented by the chemist, although the result satisfactorily proves that the elements of these bodies exist in the body analyzed.

CLAY is the resolution of putrescent animals and vegetables, produced upon the surface of the earth and in the waters. In its primary state, it is a carbonaceous product, consisting chiefly of, and known as, vegetable mould or soil; and in this state it is the *humus*, so much talked of by modern chemists. To this *humus* is added acids, alkalies, and alkaline earths, in varying proportions, which are abstracted from, and finally returned to, the soil, on which the vegetable bodies exist; or it is deposited over tracks of the earth, in the ocean-bed, or by rivers and running streams, which abstract from the lands through which they flow. Its nature is, therefore, under all circumstances, very variable, and its combinations almost indefinite; consequently, the rocks formed by the consolidation of its beds partake of the like character of irregularity and disposition of parts, quantities, and qualities.

An island, or a large continent, no sooner becomes elevated above the waters, and becomes exposed to a warm, humid climate, than the process of vegetation commences, species springing spontaneously from the soil, or being wafted thither by the winds, the waves, and birds; and with the development, growth, decay, and dust of these species, vegetable mould is generated, and where the position is favourable, gradually increased. While in the friable or unwashed state, this material is termed mould; but when digested in marine or saline waters, and amalgamated with animal matters, it rapidly passes into the state of clay; the nature of the clay, as previously observed, depending on the nature of the material from which and by which it is produced. Its character is now changed from a carbonaceous or aluminous product; and mineralogy then describes it as sordid, viscid, slippery to the touch, impalpable, without regular shape, tough, opaque, and becoming plastic by the addition of moisture; in its primary state and place moist, becoming friable when dry, hardening by ignition, not fusible by the greatest degree of heat; but when mixed with other heterogeneous substances, becoming variously shaped, it hardens into slate of varieties, rocks and stones, sometimes talcose, which, by resolution, is reproduced in mica, a scaly, opaque, flexible, and shining substance.

Clay, generally speaking, consists of alumine and silice—that is, the common, viscid matter united in variable proportions with sands, as every one may observe in the beds and on the banks of rivers; and with these are blended various substances, as the accidents of union may determine, being generally sulphates of iron, lime, magnesia, and other earths and inflammable products; it imbibes and retains water and oil, by each of which it is softened, being rendered plastic by the former; it does not effervesce with nitric acid, contracts and becomes harder in the fire. There are nume-

rous varieties known, as porcelain clay, pipe clay, potters' clay, fullers' earth, Lemnia earth, soap clay, common brick clay, Stourbridge clay, indurated clay, schistose clay, bole, earth of stragiron, cimolite, Chinese clay, red ochre, yellow ochre, green bole, tripoli, kollyrite.

Native alumine is the constituent of a salt called alum; it is also the chief constituent of clays or argillaceous compounds, eight parts of oxygen combined with nine parts of the earth aluminum, to form seventeen parts of oxide of aluminum or alumina. All bodies have this distinguishing basis, and the chief constituents are termed aluminaries. Argillaceous earths are the parents of aluminous, crystalline, and concrete aggregates: considered in their relative position to calcareous earths, they are secondary results, but generating perpetually with calx and silica, they are also secondary, recent, and still producing.

Having thus far given the origin of a material so universally diffused in and upon the superficial crust of the earth, and performing a most important part in the economy of nature, manifest in the fossil and mineral kingdom, I will not proceed in my description of those rocks, of which I have previously spoken.

The phenomena of intersecting other beds and running in veins and fissures, is not confined to granite, being common to those varieties of rock known as porphyry, trap, and basalt, and which geologists describe as volcanic. In the coal-districts of this country, we find a vast number of faults, as they are termed, filled in with an exceedingly hard, dark-coloured mass, porphyritic or basaltic, which the miners call clunch, and from the circumstance of its affecting the beds against which it rests, penetrating their material, and, in some cases, rendering them more highly crystalline, geologists have supposed the material to have been at one time in the heated liquid state of melted lavas. In order to account in a rational manner for the circumstance of one bed intersecting another, we have only to look at the operation of natural causes in the present day. The continued action of streams opens a channel through a thousand beds, varying from each other, sometimes in a direct line, sometimes tortuous, sometimes diverging right or left. Rivers in tropical climates throw out numerous branches; in one place we find them scooping out channels; in another place, filling up with the materials held in suspension by the waters channel veins, and extensive fissures formed by various causes. Again, when sedimentary deposits are carried into the ocean, and are deposited over an extensive surface of its bed, it often happens that so long as those deposits are forming, so long the bottom of the ocean is here and there disturbed by tidal lines or ocean currents, varying in their breadth; and when this is the case, the sedimentary matter is carried away in the line of action and deposited elsewhere. Thus, for instance, if pure vegetable earths and other carbonaceous matters are periodically deposited, preparatory to their transition into the state of coal, the whole accumulating bed will be cut right across by the tidal line, and a fault is naturally formed, the beds on each side of this fault preserving the same thickness. Again, other faults are the results of rents and fissures, which very often fill in fragments of the separated beds, and such matters as may happen to form the surface soil which are carried in by the rains, or by streams. Thus the fissures in the Devonshire strata are filled in with a material termed toad-stone, which is a species of Siderite. The basaltic dykes, which pass through chalk, in the island of Rathlin and other places, convert it into granular crystallized limestone, the rock in contact with the muddy deposit absorbing the hydrogen whereby its atomic particles were enabled to expand in the crystalline form. Heat would not produce this effect; the presence of water is a condition of crystallization.

The porphyry peculiar to the country around Christiana, says Van Buch, traverses clay in innumerable veins: the multitude of them is incredible; on every hill new ones break out and create confusion, when we wish to follow the same vein throughout its course to its termination. They frequently traverse the clay-slate at right angles, often almost perpendicularly; and in the direction and inclination there is also an infinite diversity, and

many of these veins must necessarily traverse each other. Their thickness is from ten to fifteen fathoms and upwards, and veins of less than a fathom I never remember to have seen. All these spaces are, however, filled with a sort of porphyry, which is completely similar to that which, as a widely extended formation, and in high mountains, we find at only a mile distance: a remarkable example of the filling-up of the veins with the formation which covers these repositories, and an important fact with respect to the theory of veins in general. Porphyry veins are also found in these mountains, traversing clay-slate and limestone: the porphyry of the mountains presents a vast perpendicular front resting upon sandstone, and this again resting upon limestone. Professor Jamieson also tells us that in the island of Arran porphyry occurs in veins and mountain masses, over red sandstone, containing coal and limestone full of petrifications.

Von Buch truly remarks, that "the great course of nature is one and the same, from the coagulation of granite to the career of man." The concretion of a small mass of earths, variously blended together, and uniting solid bodies within its matrix simply by the force of cohesion, is but the type of action and result by which nature forms the most stupendous rocks: the common phenomena of cracks and rents of a small piece of clay occasioned by summer heat, and the filling-in of these rents with a liquified mass of earth is typical of the filling-in of rents and fissures, such as are common to hot climates, extending many fathoms wide, of vast depth and length. In all these phenomena there is no necessity for the violence of volcanic action; beds upon beds are rent asunder, but without violence, and nature repairs the evil without violence, and the intruding matter is generally such as we recognize as forming one or the other of the overlying beds, differing from it only when subject to different conditions, such as amalgamating with other matters, or by the mineralizing process becoming more compact, silicified, or crystalline.

(To be continued.)

## TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLSON.

(Continued from p. 374.)

29. OAK when thoroughly seasoned is so very durable that its application is advisable in almost all cases where there is great exposure to the weather, it seems calculated to endure for ever, either in the earth or in dry carpentry above ground; in water it is almost equally so, but in moisture it is more perishable, and when taken from bogs is found to be brittle and in progress of decay; when exposed to the action of sea-water it is, like other woods, subject to the operations of pipe-worms; but they seem but small and poorly-nourished, and to make much slower progress than in such woods as the fir and alder. For all purposes where strength is required, and the degree of flexibility it possesses, and its tendency to warp in drying, are not materially objectionable, oak is suited in the highest degree. It makes the best king-posts, because it is least compressible by the ends of the principal rafters: for ceiling-joists it is not calculated, because subject to warp. In wainscot joinery the presence of nails about the surface should be avoided, on account of a discolouration which takes place around them; if driven in before the wood is quite dry; this circumstance has more than once determined the question of identity, where it was doubted whether the material in some old work was oak or chesnut, the absence or presence of the stain about the bolts denoting which it was, since it is peculiar only to the former: the powder to which oak crumbles in its rotten state is of a fine snuff-brown colour.

30. FIR.—Of this useful description of timber there are various species; the most important, which is the red or yellow, being from what is called the Scotch fir, a tree which is a native of the Scottish Highlands, and almost all other parts of northern Europe; it is common, and thrives in the highest degree, in

\* [We believe in most cases fir is better than oak for king-posts; the latter, by its ordinary immature seasoning, warping and shrinking, after use, so much, as to derange the work greatly.—Ed.]



Russia, Prussia, Lapland, Denmark, Norway, and Sweden—the extensive forests of the two latter consisting chiefly of it and the spruce fir—that from Riga, Memel, and Dantzic, being the most distinguished and esteemed. It is imported in great quantities from Christians, Stockholm, Frederickshall, and several other parts of the above countries, in logs, deals, &c., and is called *Red-wood*.

31. The logs, or balks, are, by workmen, denominated *timber*, in contradistinction to the wood that comes in the form of boards, which is termed *deal*. The boards consist of three sorts, designated according to their scantlings, viz.: *planks*, which are 11 inches wide by 3 or 3½ inches in thickness; *deals*, 9 inches by 3 inches; and *battens*, 7 inches by 2½ inches.

32. The timber sent from Norway does not exceed 18 inches in diameter, and the sapwood of it being considerable, leaves rather a small proportion for the heartwood; but the quality of the latter, in regard to strength and durability, is superior to that in the larger timber from other countries. The timbers exported by Riga, under the names of *masts* and *spars*, are, the former, from 18 to 25 inches diameter, and, usually, 70 or 80 feet long; and the latter, such as are under 18 inches in diameter. The Riga timber is not so hard as that of Norway. Swedish timber is often of that woollen nature mentioned in article 35.

33. Fir grown in cold countries is harder, in a considerable degree, than that which is produced in milder climates: the Scotch fir is propagated, to some extent, by the English in their plantations; but the wood which it there affords is, in quality, inferior to the Scotch-grown timber. It would appear, therefore, that the soil is not of the hardy description which is most congenial: indeed the natural-grown wood from different mountainous districts of Scotland, although confessedly inferior to the best fir that is imported, is still superior, in most respects, to that which is planted and cultivated in England—many of the trees attaining above 90 feet in height and 3 feet in diameter. A striking proof of the difference which exists in fir timbers that are raised in mild and cold climates, is afforded in the *kior* of the Laplanders; this wood is from the under or shaded side of crooked pine trees, and is equal in hardness to box-wood; the natives make use of it for the bottom of their sledges, or that part which is most subject to wear and tear.

34. Fir is little, if in any degree, inferior to oak in point of durability, whatever situation it be employed in. When taken from bogs it is generally much sounder than oak found under similar circumstances; and therefore, as it is also stiff, light, easy to work (if not too full of resin), and stands well, it is preferable to every other wood for carpentry in general; if straight in the grain, the foreign timber makes the best common rafters and purlins, being not so subject to warp with the heat of summer as roof timbers of oak. Besides its almost universal adoption for carpentry, it is also extensively used for joinery, as well as for masts and other parts in ship-building.

35. The wood is of a varied yellow colour, having no larger transverse septa, and the annual rings are very distinct; these, in the best descriptions of timber, are not more than ¼th of an inch thick; in the inferior sorts they are considerably thicker: one portion of each ring is soft and light-coloured, the other is hard, red, and heavy—the pores being filled with resin, which imparts its flavour to both the taste and smell of the wood. In some of the inferior kinds the resinous matter is soft and viscous, rendering the wood troublesome to work; in others, where the resin is not so plentiful, the wood assumes in the sawing a nappy surface, which is also obstructive to the workmen; in both cases, the wood is deficient in stiffness, strength, and durability, and therefore unfit for principal timbers. It may, however, be here observed, that woods abounding in resin have been ascertained to be not more durable than others; as volatile and fixed oils, wax, and resins are equally as susceptible of decay as woody fibre; this accounts in a measure for coatings of paint requiring renewal.

36. In marine works fir is very subject to the pipe-worm, which operates upon it with great and destructive facility, and fattens in it to its largest growth. It has more sapwood

than oak has, but does not lose so much weight by steeping in cold water as some of the harder woods do. The shrinkage in seasoning fir timber from the balk is about one-thirtieth in the width. It is the Scotch fir from which pitch and turpentine are obtained.

37. **WHITE FIR** is imported in deals and planks from the north of Europe and North America—the wood from the former being the produce of the Norway spruce fir, and that from the latter country from the black and white spruces, both of which receive their names from the colour of their respective barks. The Norway spruce, commonly so called, is a native of the mountainous districts of Europe and the northern parts of Asia, abounding in the Norwegian forests, and also cultivated in Britain, where it produces timber very little behind the foreign in quality, being only a little softer in the grain and harder in the knot, which contending properties offer some extra difficulty to the artificer. It is very resinous, and furnishes the well-known Burgundy pitch; it is generally cut at the ages of from seventy to a hundred years. The black and white spruce firs of America are natives of the mountainous and cold northern tracts; the former is said to be the higher-growing tree of the two, and the one furnishing the best wood. The latter, called in Canada *epinette*, or *sapinette blanche*, excels the Norway spruce in toughness, is lighter and less resinous, and more liable to warp in the seasoning. American timber, generally, being brought over in the holds of ships, has the seeds of decay already sown in it when it reaches this country—fungus having almost invariably made its appearance. Of the white deals and planks imported from the Norway and Baltic ports, those from Christians are the most highly approved; the trees are generally cut into three equal lengths, and each length into three boards, which are generally about 12 feet long; a tree, therefore, which takes seventy or eighty years' growth ere it arrives at perfection furnishes nine twelve-foot deals or planks. In this country they, as well as the yellow deal, are sold by the hundred, of six score.

38. The colour of the wood is a sort of creamy white; the annual rings are very distinct, and are of a darker shade in the hard portion; the knots are in general very hard and tough. When properly seasoned and kept dry, it is very durable; and, therefore, suitable for internal joinery, furniture, and cabinet-work; but it does not stand the weather. The straight-grained, tough sorts, however, generally stand very well if properly treated, and are frequently used by the ship-builders for the top-masts: it takes glue better than the yellow wood. The shrinkage in white deal, from its state when stacked in the timber yard to that of perfect seasoning, is said to be ¼th, and that in such as is kept in a dry state, about ⅓th.

39. The **SILVER FIR** is a large tree of quick growth, which abounds in the plantations of Great Britain, but is a native of the mountainous tracts of Germany, Switzerland, and Siberia; the wood which it yields is of a good description, light and stiff, and fitted for both house and ship carpentry: in flooring it will bear a considerable load without bending under it. It is durable, but liable to the destructive inroads of worms; and being subject to decay when employed under water, may be considered as suited only for dry situations or the open air. The compact and resinous part of the annual rings is of a sort of yellowish colour, the softer part whitish. Some one has said that the goldfinch will build in no tree but this.

(To be continued.)

**FINE ARTS.**—The celebrated painting by the late Mr. Heaphy of the Duke of Wellington in Consultation with his Officers previously to a general engagement, was on the 24th instant sold by Forster and Sons to a dealer of the name of Keen, of Green-street, Leicester-square, at a sacrifice of 85 guineas. This picture is known, not only by the fine engraving by Anker Smith, but by Mr. Heaphy having had the express commands of his late Majesty George the Fourth to complete this great national undertaking, and on which he was employed in Spain nearly three years.

## THE NATURE OF DESIGN.

*A Paper read at the meetings of the Decorative Art Society, March 13th and 27th.*

BY MR. CRABB, V.P., MEMBER OF THE INSTITUTE OF FINE ARTS.

(Continued from p. 375.)

FLOWERS offer to us a much more extensive field for observation; from the humble primrose, with its straw-tinted bloom and warm-toned leaf, to the magnificent japonica, whose elegant heart-shaped glossy leaves—stiff, dark-blue green—display its superb flower to the utmost advantage. So true is nature to her principles, that you will not observe any flowering plant, shrub, or fruit-bearing tree, whose bloom does not only harmonize in colour but finely contrast with its own foliage; it is equally remarkable that the shape of the flower or arrangement of petals is such as to improve by contrast the form of leaf. The tribe of fuchsias is a remarkable exemplification; of several distinct sorts, the bloom bears the exact relative proportion of colour and contrast to its leafage, that a skilful colourist might use in matching his tints to execute a work in stained glass. This observation brings home to immediate application for manufacturing purposes the principle advocated; and I am firmly of opinion that persons desirous of acquiring the power of understanding grace in form and beautiful tone of colour will derive the utmost advantage by following out an intimate acquaintance with the productions of nature. I would consequently present the vegetable world as a truly instructive source from whence to derive beneficial studies; outline and colouring from flower and leafage, and gracefulness from the whole.

An enthusiastic admirer of nature, I take pleasure in tracing the varied excellencies of art to their original source. The most perfect productions of the sculptor are but copies of nature, placed in attitude and moulded into perfect form by the resulting skill of long study and experience; and assisted by the highest attributes of genius, we find it eventually creating the matchless frieze of a Parthenon. Architectural proportions are deducible from the same source, and in those magnificent paintings bequeathed to our admiration by the most profound colourists, we discover their principles to have been those of nature, and their compositions are more delightful the nearer they approach to simple natural dispositions.—Raffaëlle was the painter of nature.

I am offering these desultory remarks to induce you to examine the very source and origin of all design; not to remain satisfied with results drawn from other men's labours, but to go to the fountain-head itself. Take but a common serrated leaf, and see with what mathematic precision it radiates from one centre, and how perfectly each point is shaped. The elegant, but casual disposition of the acanthus over a basket originated the Corinthian capital. The beautiful ornaments of foliage in Gothic architecture may be directly traced to nature; they are faithful copies, gracefully and skilfully arranged. Examples from various styles might be usefully adduced, and each would be found to contain some peculiarity and marked principle, deserving the designer's careful attention. The most celebrated and successful artists in the highest walks of art have recommended the study of nature, as originating their chief beauties. To the manufacturing designer, who has less opportunity for deep study, a contemplation of the beautiful productions of the meadow and the woodland will at once afford elegant recreation and valuable improvement.

I know not a word so completely misappropriated and misunderstood in England as *design*; it being generally used to express drawing, or a pattern, which is not its significance in art. The linen-draper aims to catch a stray buyer of a *mousseline de laine* by pinning to it "new design;" various trades are bitten by the same mania, and we may anticipate the butcher frizzing a sheep's head, and ticketing it "new design." It is of the utmost consequence that design should be popularly known as an important art including much beyond mere drawing. Design cannot receive its true appreciation until this takes place; therefore every opportunity should be taken to remove an error by no means confined to the lower classes. It is a word of but recent use, forced into notice by our continental neighbours' successful application of educated art to their manufactures;—occasioning a world of grumbling among our old-fashioned trades-



men, who were well disposed to adhere to their fathers' notion of all foreigners being humbugs, and, as a consequence, stuck to the perfection of their own taste; but some younger men, adopting those foreign notions, sadly confused their trade. The ladies naturally possess a more lively perception of the beautiful than man, and will always be found the first to appreciate the elegancies of refinement. It was thus that, guided by their natural taste, they chose dresses whose improved colouring had come from France, bought French ribbons for similar reasons, and eagerly sought the nicely-fitting French slipper and French glove; all this was declared prejudice, protective duties were tried without success, for he will be a clever statesman to defeat woman when dress is concerned. Customers of a quarter of a century's standing looked at their neighbours, admired the taste or novelty, and bought elsewhere; it became high time for both tradesman and manufacturer to accommodate themselves to the growing change; deficiency of intelligence upon the origin of true taste prevented inquiry into the causes which produced these improved articles in France, and they sought, and still seek, to meet the difficulty by importing and copying patterns. Then came a parliamentary inquiry, and a great mass of evidence was collected; among many others I contributed to state our deficiencies. Subsequently a School of Design was instituted, which has continued putting forward excellent theories, but unsuited for practical purposes, and a continued series of failures has resulted from an unbusiness-like management.

There are very many persons, who, without much thought, and with a deficient capability of comprehension, consider the art of *Devising or Design* to be nothing more than mere drawing, and as easily learned as any mechanical craft. By taking this deteriorating view of the art, it immediately ceases to be held in the estimation to which, from the importance of its varied and extensive application, it is justly entitled.

A creditable designer requires to have naturally a fine perception of the beautiful, a feeling for the charming versatility of form and colouring, a lively imagination, facility in associating ideas and applying the materials collected by study to produce invention, and an extensive acquaintance with the sources of ornament and principles in which the Arts of Design originated among the nations of antiquity, and ultimately arrived at very great perfection. A peculiar knowledge separate from artistic skill is also requisite for the application of design to manufactures. Judicious culture, aided by experience, will produce a purity of taste, a power of adjusting and adapting the separate principles with sound judgment, so as to create the highest excellencies.

A man thus endowed claims respect and attention; and we find in all countries, and in all times where the elegant arts have been appreciated, the artist, in his several gradations, placed in a conspicuous position, and supported in honour and opulence. The nation that would live in after ages, by acquiring distinction in the refinements of art, must elevate the artist, and however indispensed we may be to admit the fact, it is unquestionable that in England this has not been done. A want of appreciation of the artist's labours for the application of fine art has caused secondary design to be neglected, and the inordinate desire to accumulate wealth has caused the softening, elegant refinements of universal art to be subverted by the British standard of man's worth—money.

But brighter prospects are dawning; the successful cultivation of design by our continental neighbours will tend to place us in our proper position. The most powerful and wealthy kingdom must not continue to do less for the encouragement of art than such a state as Bavaria. Although a nation of shopkeepers, we may hope to see a taste spring up among our merchant princes that shall demand a revival of the sumptuous decorations of the old Italian trader. What a cheering hope to think of our City companies and corporate bodies all over the country sparing a little wealth from gross feasting, to decorate their halls, encourage art, and do honour to themselves! The Egyptian Hall may yet present other than its newly poverty-stricken attempt at decoration: some Medici in embryo may spread one dinner less, and cover its naked surface with

decorations suitable for the chief apartment of the first (i.e. the *richest*) of corporations.

Once enable the public mind to understand the real beneficial purposes of art, and it would be fostered: fewer discreditable public edifices erected, and a desire for the universal embellishment of interiors arise, with the capability of appreciating the ennobling and humanizing qualities associated with a love of the fine arts. Architecture, painting and sculpture are all equally incomplete without each other; and design for the manufacturer becomes indispensable. It is in the powers of each one of us to contribute toward the better understanding and consequent appreciation of these social benefits, which are obtained by cultivating the refinements of understanding; and it will be found a means of accelerating the advancement to superior feeling for both art and artists, especially for its appreciation when applied to manufactures.

It is necessary we should constantly keep before us the fact, that our own more humble branches of art are inseparably associated with the success of the higher branches. They cannot be cultivated apart, and when speaking of one I include both. A noble architectural mansion requires the rich embellishments of historic painting, decoration and gilding, sculpture in its halls, elegant furniture and costly plate, more or less in good taste, as the owner is influenced by liberality and fine feeling toward arts. Dress and ornaments partake of the splendour, and thus we have a universal benefit, creating and extending itself to a variety of minor employments.

Design, or creation of form and enrichment, being as essential to manufacturers among the ancient nations as at present, we may consider the arts to have then originated, and to have been systematically encouraged; and, although the existing sources for obtaining certain information are limited, we can arrive at highly interesting general conclusions respecting the actual formation of art, and the embellishment of their manufactures.

Scripture informs us, that before the Deluge, when the habitations were in tents, God had discovered to his people the arts of spinning wool and flax, and the weaving it into stuffs and linen,—and also of forging and polishing brass, iron, &c. The metals being thus rendered subservient to the uses of man, of course received shape for their several purposes. Soon after the Deluge, human industry made several discoveries conducive to the improved beauty of their fabrics: among others, the art of spinning gold thread and interweaving it, if not the actual embroidery of a pattern upon stuffs. The extreme ductility of gold was also known, as we find it beaten into thin leaves, and applied to the surface of wood and metals,—and the secret of casting metals, brass, silver, and gold. They were used to produce figures in imitation of nature, and even statues, vessels for use and ornament, and warlike weapons. Carving upon wood, stone, and marble, was in use,—and the imitation of natural objects by colour (i.e. painting). They became exceedingly celebrated for dyeing their stuffs and silks, giving to them the most exquisite variety of beautiful colours. To all these several discoveries, the art and practice of design must have been an essential addition in their progress to perfection. The East was the cradle of the arts and sciences, and it is sufficient for our present purpose to mention the Eastern empires which, through their long duration and immense extent of power, became associated with other nations of note, as the Egyptians and the Greeks.

(To be continued.)

#### THE STREET ARCHITECTURE OF PARIS AND LONDON.

TO THE EDITOR OF THE BUILDER.

SIR,—Having just returned from a tour by way of Paris and Brussels, I intend, should it prove acceptable to you, to send you, as I can find leisure during the next two or three weeks, a few rambling notes of my tour.

My visit had more immediately in view an examination of the works lately done in the sister arts of painting and sculpture, in which commissions have of late been so very liberally dispensed in France; and, as must be confessed, most ably responded to—paintings and statues fresh from the studio so meeting the eye at every turn, as to make even a most cursory

examination of them a work of considerable time. My intention, however, in the meanwhile, is, as being more immediately within the scope of your journal, to confine myself to the architecture of Paris, in contrast with that which has of late years been performed and is now doing in London in that important branch of art.

That much has been done in Paris of late years in art, and with great care and study, every one, who has lately crossed the Channel I think will allow, and although more latitude of opinion may exist as to *how* it has been done, I have no hesitation in my own opinion that, on the whole, and by comparison, in every branch, it has been done well; and especially so, as I have just witnessed in architecture the execution of designs within the last fifteen years, since when I was last there, which give a lasting proof of the high character of the profession in France. The French feel what we have yet to learn, that taste is not expended in vain on the front of a stable or on a village pump. Professional men will have no difficulty, I think, in understanding me when I say that in every work I met, however small and unimportant, I felt that an architect had been employed, and I felt, too, that it was not done by adding expense, but that the judicious arrangement and combination of the same materials alone make the difference between the work whereon a man of taste and education has been employed, while the mere builder kept in his proper place, and one where, to save the architect's fee, the builder is himself the designer, leading almost invariably to a vulgar excess of ill-placed enrichment, the additional expense of which costs far more than an architect's commission. It is in this apparently unimportant branch of the architect's labours (but of much importance in leading and preparing the minds of the people to a correct appreciation of the noble works of architecture), that the French, in my opinion, shew their superiority over us, while, at the same time, in the magnificent works of the metropolis and the leading provincial towns, a strong effort is making to revive for their appropriate purposes, the two great recognized styles which have shed so much lustre upon the ages in which they respectively flourished, when, by universal consent, they are allowed to have attained that point of excellence which it is enough for an architect of the present day to attempt to imitate. The "Madelain," the "Palais D'Orsay," and the "Notre Dame de Lorette," are great strides towards the one, and the vast sums spending in the completion and restoration of the gorgeous specimens of Gothic in the cathedrals and town-halls throughout the country, give no small proof of enthusiasm in the latter.

In London, on the contrary, nothing has been done on a systematic plan for improving the general character of its architecture, and of late years, in every district, what opportunities have been lost and thrown away. What a noble opportunity, for instance, was lost in the opening of Moorgate and King William-street, for an attempt (and, as I said with reference to what is doing in France, without adding a shilling to the expense) to rival some of the streets of palatial edifices in (not to be too ambitious) some of even the second-rate towns of Italy. It must be annoying, beyond expression, for a man of taste to walk along Moorgate-street, after returning from Paris, to think how little was required to have made it what it ought to have been, and what I cannot but confess I feel that in Paris it would have been made. Ornament is too cheap in London, and too easily had ready-made; and, in this case, there is no want of it; but the directing mind, although having the intention, wanted the knowledge from personal observation of what constitute the features which give so much charm and magnificence to the architecture of the "Grand Canal," "Toledo," and the "Corso."

I have already spent too much of your time and space with preliminaries to enter upon my task in this number, but I cannot omit to remark, that although my observations have suggested themselves to me from comparison, much, as I shall, I hope, shew, has been done in London, which cannot but draw forth admiration from any one who has a feeling for beauty and originality in architecture.

Glasgow, July 2.

"OMEGA."

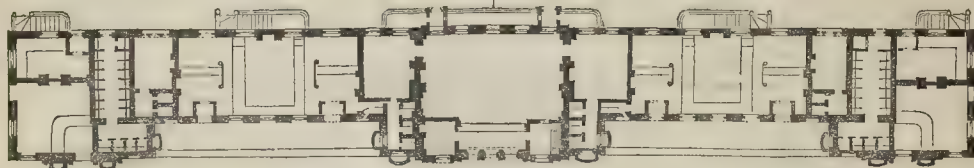


## THE HUNTSBANK STATION

ON THE LIVERPOOL, MANCHESTER, AND LEEDS RAILWAYS.



PERSPECTIVE VIEW.



GROUND PLAN.

In a former number of our journal (see No. 35), we gave our readers a description of the Huntsbank Station of the Liverpool and Manchester and Manchester and Leeds Railways; and being one of the most extensive in the kingdom, we are induced to furnish a perspective view and a ground-plan of this work, emanating from the good taste of Mr. Stevenson, the celebrated engineer. In the original design, the covered ways to the booking-offices were intended to be supported by Roman-Doric columns, but for the convenience of passengers and the removal of luggage, cantilever brackets were substituted,

which alteration in some measure destroys its architectural pretensions, conventionally considered; but so satisfactorily has this been effected, that the present design is far from inelegant or void in its general features; and when its intended purposes are considered, it claims praise, on account of the deviation from routine architecture, for the space afforded by the alteration is decidedly advantageous. The building, which is 256 feet long and 36 feet wide, is in immediate connexion with the covered roof, and, as we before stated, is of the largest area yet executed. It is uniformly divided at the centre, the right half containing booking-

offices for the Leeds and Manchester Railway, with refreshment and waiting-rooms, superintendents' apartments, and other conveniences, upon an extensive scale, and of good proportions and arrangement, as shown by the accompanying plan. The left half contains similar accommodation for the Liverpool and Manchester Railway. The basement-story, which is approached by area-steps at the back of the edifice, contains luggage-rooms, and accommodation for the third-class passengers, with suitable accommodation for the porters and other attendants of the station, and easy communication with the railway and approaches.

## COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.—NO. IX.

## FLUTINGS.—IN THE GRECIAN DORIC.

"FLUTING.—A concave channel. Columns whose shafts are channelled are said to be fluted, and the flutes are collectively called flutings." (Hosking.) Mr. Gwilt observes, "In the investigation of the Doric order, among its more remarkable features are to be noted the longitudinal striæ called *flutes*, into which the column is cut, every two whereof unite, in almost every case, in an edge. Their horizontal section varies in different examples. In some, the flutes are formed by segments of circles; in others, the form approaches that of an ellipsis. The number all round is usually twenty, such being the case at Athens; but at Paestum, the ex-

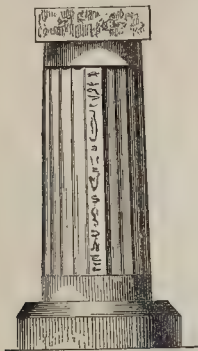
terior order of the great temple has twenty-four, the lower interior order twenty, and the upper interior sixteen only. It has been strangely imagined by some that these flutings, which, be it remembered, are applied to the other orders as well as to the Doric, were provided for the reception of the spears of persons visiting the temples. The conjecture is scarcely worth the refutation; first, because no situation for the *δουροδοκί* (place for spears) would have led to their more continual displacement from accident; and secondly, because of the sloping or hemispherical form in the other orders, the foot of the spear must have immediately slid off. Their origin may probably be found in the polygonal column, whose sides received a greater play of light by being hollowed out, a refinement which would not be long unperceived by the Greeks." (Encyc. p. 64.) Mr. Knight was one of the first to form the conjecture that the *δουροδοκί*, or spear-holder, men-

tioned by Homer in the *Odyssey*, alluded to the flutings of columns; and Lord Aberdeen has been at considerable pains to refute his friend's reasoning. (See Inquiry, p. 113.)

In Mr. Gwilt's edition of Sir William Chambers's treatise on Civil Architecture, is a note contributed by Mr. Charles Barry, with illustrations from buildings in Egypt, whose antiquity is considered earlier than any known existing specimen of Grecian Doric. In one of these is a sketch of a portico of two fluted columns *in antis*, about 5½ diameters high. "The flutes are shallow, and twenty in number, and the capital consists of an abacus only." Another illustration of Mr. Barry's is also very striking; it is an example of a column at Kalapcheic, on the Nile: "The abacus is square, and 11 inches thick; the shaft, which has a trifling diminution, is 7 feet 8 inches high, and 3 feet 2 inches diameter. The circumference is in twenty-four divisions,



whereof four, which are at right angles with each other, are flat faces, covered with hieroglyphics, and the other intervening ones are sunk into flat elliptical flutes  $\frac{1}{4}$  inch deep."



The same writer also tells us that "there are several instances of polygonal shafts in the Egyptian temples. A remarkable one is in a temple at Eluthias, on the right bank of the Nile, a few miles south of Esneh, where, in the interior of a large vestibule, the whole of the roof is supported upon polygonal columns of sixteen sides." Mr. Barry concludes his interesting communication by observing that "the general resemblance of the fluted columns to those of the Grecian Doric order is manifest, and, in addition to many other remarkable indications in the Egyptian temple, clearly points to Egypt as the source of both Greek and Roman architecture." These flutings alluded to above are the reverse of the readings frequently met with in the shafts of Egyptian as well as of Indian columns, and even in Persepolis—seldom, it is true, continued uninterruptedly throughout, being stopped at intervals by rings or annulets. Still the character of these readings is not very dissimilar from flutings, and their origin would appear to be derived from the bundle-pillar, *i. e.* composed of a number of reeds set round a common centre.

The Italian word for a fluting is *scandolature*, and to flute is *scandolare*, answering to the French *canelure* and *caneler*, and best rendered in English by *channel*. Now there is no doubt that this and other words implying hollowness, as canal, kennel, can (a vessel), are derived from the Greek word *kavva*, which is exactly the same in Latin (*canna*), the meaning of which is a reed, or, as we more closely translate it, *cane* (as sugar-cane). The meaning of a fluting, therefore, is a hollow; and if we cut through a reed or cane (which

chant, &c. I can only, therefore, trace the use of the word *flute*, as applied to the channels of columns, in a similar way, viz. that it is a hollow instrument, like the reed or pipe of the ancients, with whom the flute was a familiar and favourite instrument. In the famous "Athenian Marble" in the British Museum, which describes the state of the Erechtheum, the same word is used, *απαθωροῦς* (*arabdotous*), to signify *unfluted*, as respecting the unfinished columns and the bases; the word is compounded of *a*, negative, and *παθῶς* (*rabdos*), which signifies *baculus*, a stick, *virga*, a twig or rod, and *fascis*, whence the well-known *fascies*, carried before the Roman authorities of justice, so called because they were bundles of rods tied round an axe. The words *rudis* and *radius*, both signifying a staff, or measuring-rod, as well as the English word rod itself, are derived from the Greek word *παθῶς*, which springs from a Hebrew word, used sometimes to denote a sceptre, and sometimes a rod. (Exod. xxi. 20, and 2 Sam. vii. 14.) The words chiefly used in Latin authors to denote a fluting, are *stria*, *striatura*, *stria* (*strigae* plu.), all derived from the same verbs, *strigo* or *stringo*, and *stria*, which mean to make channels in timber or stone, to groove. *Striga* signifies a furrow, as in ploughing.

Another word also found in Latin writers for flutings is *cmaibiculi*, or little channels, the diminutive of *canalis*, *quodcavus sit in modum canne* (because it is hollow after the fashion of a reed); this meaning carries us back to the cane, as before alluded to. (*Canalis anima* is often put for a wind-pipe.)

Vitruvius lays it down as a rule, that the flutings should be twenty in number, which agrees with the general practice in Grecian examples; as at Athens, in the Parthenon, Propylea, and Theseum; at Corinth and Delos; at Eleusis, at Rhamnus, and Thoricus; at Bassae, at Cadachio, and Agrigentum (in the great temple of Jupiter a man can stand in the fluting), and at Paestum, in the temple of Ceres, and in the Basilica; whereas, in the bulky columns of the temple of Neptune, the number of flutings is twenty-four, and the only other known\* departures from the usual rule are to be found in two instances,—one, in the delicate columns of the temple of Minerva, at Sunium, wherein are only sixteen channels (whilst there are twenty to the columns of the Propyleum, at the same place), and the other in the upper range of the interior columns in the great temple at Paestum.

The examples wherein the flutings are only shewn at the upper and lower diameters, leaving the shafts to be completed at some future time, are at Eleusis; at Thoricus, at Delos, at Selinus, and at Rhamnus, in the external columns, those of the pronaos being fluted on the front with eleven channels, having on the back nine planes, a remarkable instance of economy. Two gigantic columns still remain near the river Papyrus, in Sicily, fluted to within a few feet of the ground; and in some of the Selinuntine temples, many of the columns exhibit preparations more or less advanced, for flutings, the process being probably interrupted by war.

In Doric columns "the flutes are sometimes segments of circles, sometimes semi-ellipses, and sometimes eccentric curves. They always meet in an arris or edge,\* and follow the entasis and diminution of the column up through the hypotrachelium to the annulets, under which they finish, sometimes with a straight, and sometimes with a curved head. At the base they detail on the pavement or floor of the stylobate." (Hosking.)

The ante of the Doric were never fluted by the Greeks;† and Mr. Hosking judiciously observes: "Fluting on a straight surface must be productive of monotony, as the flutes can only project a series of equal and parallel shadows.

Not so, however, with columns, on whose rotund surface fluting produces a beautiful variety of light and shade in all their gradations, which it could not possess without that enrichment; for on a plain column neither are the lights so bright, nor the shadows so dark as in the former case, nor are they so finely diffused over the whole surface in the one as in the other." Another writer remarks on the advantage of fluting: "It prevents the monotony and heaviness of appearance that would else take place, and without disturbing the proportions of the columns themselves, it imparts to them a certain degree of lightness, and of variety also, since it produces a multiplicity of lines and of distinct lights and shadows, but without the least confusion. These upright lines tend also to produce an agreeable contrast between the narrow channels thus produced, and the massive proportions of the shaft itself."‡

G. R. F.

#### LONDON AS IT WAS IN 1800, AS IT IS IN 1844.

(Continued from p. 370.)

"THE town of London," says a clever, witty writer, in 1735, "is a kind of large forest of wild beasts, where most of us range about at a venture, and are equally savage, and mutually destructive one of another: the strange hurries and impertinences; the busy scramblings and underminings; and what is worse, the monstrous villanies, cheats, and impostures in it." Well, the forest has wonderfully enlarged, the wild beasts, the villanies, and cheats have perhaps proportionally increased; but, for all that, London is a very pleasant place, containing both the bane and the antidote: it is the tree of evil, laden with good fruits; the philosopher's stone to some, the Scylla and Charibdis to others; the pride of every Englishman; the envy of the world!

One man plans, another man executes. Eighty years ago, R. Dingley, an active, spirited, well-informed citizen, the founder of the Magdalen, proposed and carried to a forward state of maturity a plan of a new street, from the front of the Mansion-house to Moorgate. Citizens have of late grown wiser than they were in the days of Queen Elizabeth; as we read that in 1685, in consequence of the great increase of buildings, the citizens of London became alarmed, lest so many new houses should lessen the rent and trade of the old ones, fancying that the inhabitants would remove on a sudden to avoid the danger of having them fall upon their heads; the country gentlemen were also alarmed lest they should draw away the inhabitants, and thereby depopulate the country; and both agreed that the increase of building was prejudicial to the Government. At their earnest supplications, a law was made to prohibit buildings in the city; and such was its effect, that for thirty years afterwards no buildings were erected, but under licence; and the people, for want of accommodation, shipped themselves to Virginia, Maryland, and other newly-settled parts of America. The cottage-law prevented their building in the country. Again, in Oliver Cromwell's time, the citizens took fright, and raised a clamour against the Builders: and the Protector, thinking to raise a revenue by this means, laid a tax upon the foundations. Consequences similar to the above followed—a total cessation of buildings took place, and things continued pretty nearly in this state until the great fire of London.

The nineteenth century ushered in the fruits of the tree of knowledge, and the talisman by which the minds of men were wedded to much ancient usages and customs, shorn of much of its power by the continuous civil wars of this country, was finally broken to pieces by the French Revolution. Men then began to appreciate rightly the powers of mind, and the galaxy of talent, wit, and elocution existing at that period fairly laughed old fashions and old prejudices out of countenance; a social revolution took place of the political one; and the pride of accumulating wealth and power, adorned with heroic deeds and brilliant victories, laid the foundations of a taste for substantial display, and social and intellectual refinement. The eloquence of Pitt, Fox,

\* Mr. Hosking says, that "there are several examples with sixteen" flutes (Treatise on Architecture, p. 35), but I have not discovered more than those at Sunium and Paestum.

\* In the examples of the Propyleum at Sunium, at Rhamnus, at Eleusis, and Thoricus, there is a slight fillet, about 1-12th of an inch, between the flutes.

† Our Builders, who seldom have the opportunity to acquire a knowledge of the nice distinctions and just perceptions of the best Greek architects, reverse in almost every instance their practice respecting columns and pilasters; they flute the latter and leave the former naked; but this is of a piece with the omission of triglyphs, and addition of superfluous members, and other solecisms against good taste, and which must happen as long as builders usurp the legitimate functions of architects.

‡ From observations on "Outlines and Characteristics of Styles," published in Weale's Quarterly Papers on Architecture, a periodical which cannot fail of gratifying those who indulge in the luxuries of literature, and which is got up in a style worthy of that excellent and spirited publisher, to whom the architectural world is so greatly indebted,

is hollow), we have at once a flute. At all events, there is a greater likeness between the flutings of columns and the readings of Egyptian shafts than there is between the former and the marks on the trunks of trees, or the folds of female garments, both of which have been adduced as the probable prototypes. The Latin word *cano*, I sing, is also derived from the same Hebrew word קנן, signifying a cane or reed, whence the Greek *kavva*, and קנן, *cinnamon*, (which again reduced to קנן, signifies *fragrant*), and its meaning is obvious, because instruments formed of a reed were the first musical accompaniments to singing;\* and hence our words canon, canto,

\* Thus *tibia canere* signifies to play upon a flute; and thus Cicero says, *Tibicen sine tibiis canere non potest*.



Sheridan, and others too numerous to mention, the rapid advances of chemistry, mechanics, and the arts, an extending system of instruction, and the encouragement given to learning and learned men, rendered London in 1800 one of the most desirable places in the world.

At the west end of the town a great extension of building took place between Bond-street and Park-street. In 1716, Lord Burlington having built considerably in the neighbourhood of Conduit Mead, situate in the parish of St. George's, Hanover square, the lessees of this open field, which extended over 27 acres of the parish, raised New Bond-street, Conduit-street, Brook-street, Woodstock-street, Silver-street, Great George-street, Pedley-street, South Molton-row, &c.; consisting of 429 houses, 21 stable-yards, and 15 vacant spaces of ground, bringing in a rental of 14,240*l.* 15*s.* It was previously held on lease by the Earl of Clarendon at 2,000*l.* per annum, but at no very distant period before his day, the rental was no more than 8*l.* per annum. These vacant spaces became gradually built over, and the whole space was completely occupied soon after the commencement of the present century.

Marylebone parish was then slowly increasing, field after field disappearing to make way for the multitude of private streets now covering the space within Oxford-street, the New-road, Tottenham Court-road, and the Edgware-road. East of Tottenham Court-road, stood Lamb's-conduit-fields, extending to Great Russell-street, including the two noble houses of Bedford and Montague. Tottenham Court-road had at that time the appearance of being out of town, being partly in the fields, Gorseberry Fair being held near Tottenham Court. The village of St. Mary-borne (vulgarly St. Mary-le-bonne), says Maitland, which is situate in the liberty of Finsbury, manor of Tyburne, and hundred of Ossulston, owes its rise to the fall of Tyburne, which stood at the east end of the Banqueting-house-bridge, almost contiguous to which, where the court-house and pond are situate, stood the church and cemetery. The village of Tyburne going to decay, and its church, denominated St. John the Evangelist, left alone by the side of the highway; it was robbed of its books, vestments, bells, images, and other decorations; on which occasion the parishioners petitioned the then Bishop of London for leave to build a new church elsewhere, which being granted, they built a new church, in the year 1400, in a place where they had some time before built a chapel; and the same being dedicated to the Virgin Mary, it received the additional epithet of *Borne*, from its vicinity to the neighbouring brook or bourne. The village of Tyburne was of great antiquity, for in the Conqueror's survey it appears to have given denomination to the manor of that name, at which time it belonged to the abbess and nuns of Berching or Barking, in the county of Essex. The village of Tyburne was situate on the eastern bank of Tyburne-brook, at the east end of the Lord Mayor's Banqueting-house-bridge, in the neighbourhood of which the citizens of London had nine fountains or conduits of water for supplying the city with salubrious water; but on the formation of the New River, by Sir Hugh Myddelton, these fountains were disposed of on lease for forty-three years, and finally became the property of the nation.

Tyburne Road disappeared, and in lieu of it we have Oxford-street, the noblest avenue in Europe, being much longer than Regent-street, and promising, in a very few years, to rival the latter in the magnificence of its houses and display of goods. The last benefit conferred upon its residents, and the population at large, was the wooden pavement, not obtained without great difficulty, for parish Solons are the most difficult of all to contend against. Thank heaven, the taste for MacAdam and mud is rapidly fading away, and we may soon hope to be able to perambulate all the leading streets of London without endangering our hearing from the violent concussion of the ear produced by the incessant rumbling of wheels of vehicles of every description, or our necks, from the slippery state of the pavements. The Pantheon was a beautiful theatre internally, but an unfortunate speculation—three or four claimants to the property died in the workhouse; as it is now, it is one of the lions of London. A little more uniformity in the buildings of this street is very desirable, but

little to be hoped for, at least for another half-century. Tottenham Court-road is much behind the spirit of the times; it is a great and important thoroughfare, and might command a business rivaling, if not exceeding, Oxford-street; but, with the exception of a few gin-shops, and three or four linedrapers, the houses are better suited to the meridian of Shoreditch.

The wealthy classes of this great metropolis are always in locomotion; the streets and squares now covering Lamb's-Conduit-fields, which have almost all been built since 1800, are undergoing the changes common to all cities increasing in wealth and population. At the time they were built they were eagerly sought after by the gentry, and Russell-square had its ducal resident; retreating before the tide of population, their place was supplied by dignitaries of the law, medical men, and merchants, for convenience-sake; but time is bringing further changes—the houses are now being rapidly deserted—are converted or converting into shops, lodging-houses, and chambers, and in a few years, when age begins to stamp its mark upon them, the last traces of aristocratic, commercial, or professional opulence will vanish from among them.

It is really singular to remark how often a single line of road or houses serves to form a distinct line of demarcation between the extreme conditions of society: a few steps beyond this assemblage of streets and squares, and we enter Somers Town, a vast assemblage of "put up houses," already falling to decay, and inhabited by poverty in its hydra-headed form on the one hand, and by greedy shopkeepers on the other, who, in the provision way in particular, are well-stocked with all the refuse trash of the market; but poverty is a crime, and ought to be cheated, mulcted in weight, mulcted in quality, and caged in eight-foot rooms. Somers Town was a very small hamlet in 1800, and its numerous tea-gardens were then favourite places of recreation for the citizens, and from here they had an uninterrupted view of Hampstead, Highgate, and the whole of a beautiful country north-west.

Our ancestors made many and grievous complaints of sea-coal nuisance, and Sir John Evelyn, in his "Fumifugium," says, that to its abundance may be fairly ascribed diseases of the lungs and numerous other diseases: that it is a reproach to the city, and sullies all her glory, super-inducing a sooty crust or fur upon all that it lights, spoiling the movables, tarnishing the plate, gildings, and furniture, and corroding the very iron bars with those piercing and acrimonious spirit which accompany its sulphur, obscuring our churches, and making our palaces look old, fouling our clothes, and corrupting the waters, insinuating itself into our very secret cabinets and most precious repositories, and destroying, in fact, all things.

If this complaint were considered reasonable and just in his days, what are we to say to it now, when we find our beautiful cathedral, our churches, our palaces and public buildings in mourning, dark as Erebus—when, even at this season of the year, we no sooner enter the forest of houses, than we enter a dense fog, composed chiefly of mephitic vapours, produced almost exclusively from the combustion of sea-coal? The whole lower atmosphere is heavily charged with sulphur and carbonic acid gas, besides other and vast exhalations produced by chemical and mechanical processes. Is it then to be wondered at that so many perish annually from phthisical and pulmonary distempers—that the inhabitants are never free from coughs, rheumatisms, and biliary complaints, which, although not directly fatal, have the effect of poisoning every enjoyment of life? It is true that this state of affairs benefits some 6 or 7,000 members of the faculty; but, as a wise people, we ought to turn our attention more immediately to an evil, which is infinitely greater than in the days of Evelyn, and which is constantly increasing. The benefits of good sewerage are now duly appreciated, why, then, do we neglect the still greater benefit produced by inspiring a pure and wholesome air? Many men of talent have employed their ingenuity in devising means of abating this dreadful nuisance, and their discoveries have been highly satisfactory, so far as applies to large manufactories; but still powers are wanting to enforce their use, and until these powers are obtained, there is little to

be hoped for in this respect. Three years ago, the Mansion House had its face washed for the first time—it is now as black as ever; the soot embracing the front entrance to St. Paul's is sufficient to manure an acre of ground; and during the completion of the exterior of the Royal Exchange, one portion becomes black while another is in the act of purifying.

(To be continued.)

#### CARISBROOK CASTLE.

AMONG the numerous attractions to the Isle of Wight, Carisbrook Castle and its interesting locality, rich in varied beauty, are not among the least. The former is associated with important facts in our national history; the latter has derived considerable advantages from the care with which taste has improved its natural beauties. The announcement that has been publicly made of the sale by public auction, on building leases, of the beautiful plantations partly surrounding the castle, has caused no little excitement among the residents, and of regret to all who visit the island for health or recreation. It is thought, with some appearance of reason, that the Commissioners of Woods and Forests might have stepped in between the threatened desecration of this lovely spot and the public convenience, and for a small outlay have prevented an act of destruction which will be matter of general regret. When Lord Bolton was governor of the island, his lordship, at his own cost, purchased the land in question, which is about eleven acres, and added it to the very small portion of ground which pertains to the castle. He planted most of it with trees and ornamental shrubs; and it now forms a most beautiful plantation, intersected with walks, and greatly adds to the other beauties of the spot. The Hon. T. Powllett, for reasons sufficiently forcible with him, but manifestly at variance with the feelings which actuated his ancestor, recently offered to dispose of these eleven acres of his patrimony to the Crown. A few hundreds would have preserved this lovely spot to the public, and perpetuated its existence, free from invasion, to future generations. The offer was, however, declined. In a few weeks the work of destruction will commence, and the prison of Charles I. will be environed by buildings, some of them on a small scale. Beer-houses and small shops will cover the plantations and fields which have been the resort of visitors; and this beautiful locality will be deserted by those on whom the inhabitants of the island greatly depend for their prosperity as a community. It is not yet too late to avert a proceeding which the public contemplate with regret, and the inhabitants with indignation. We strongly urge upon the Commissioners of Woods and Forests a compliance with the general wish that these eleven acres may be preserved from the threatened alienation, and that they be purchased by the Crown, and appropriated to the public use. The act would be a cheap purchase of popularity. It would reflect as much credit on the Government as it would be fraught with satisfaction and advantage to a numerous class of her Majesty's subjects.—*Globe*.

#### INCORPORATED SOCIETY FOR BUILDING, ENLARGING, AND REPAIRING CHURCHES AND CHAPELS.

PREVIOUS to the long vacation, so necessary to those who labour so constantly during every other season in this great and essential work, the society held two special meetings (on the 1st and on the 15th inst.), in consequence of the numerous and pressing applications for aid which have been made from various rural, manufacturing, and other districts, many of the cases being of great importance.

At these meetings the Lord Bishop of London presided.

The committee having, among other business transacted, ordered the payment of ten grants to places where the works undertaken with their aid have been completed (eight of those grants being for the erection of additional churches), then proceeded to consider the applications for assistance recently received, and eventually decided upon voting new grants of money towards building twelve additional churches or chapels, and towards



re-building, enlarging and otherwise increasing the accommodation in ten existing churches, making in all, at this time, twenty-two grants.

The new buildings are to be erected for two districts in the parish of Gainsborough, and for districts in the parishes of Middleton, in Teesdale, Durham; Ashbourne, Derby; Sandback, Cheshire; Woolwich, Kent; Colverly, Yorkshire; Barnstable, Devon; Bushbury, Staffordshire; Lynn, Norfolk; Gosport, Hampshire; and Didsbury, a chapelry in the parish of Manchester.

The churches to be enlarged or repaired are at Istrad-y-fodwg, Glamorganshire; St. Teoock, Cornwall; Great Bootham, Surrey; Lower Guiting, Gloucestershire; Yordley Hertfordshire; Ninebanks, Northumberland; Kettleborough, Norfolk; Shanlon, Durham; Kirkdale, near Liverpool; and Tarrant Grenville, Dorsetshire.

Five of the districts in which new churches are to be built are situated from one to seven miles from the nearest church or chapel. This is a fact worthy of very serious attention; and although the other districts are nearer to places of worship, they are, in truth, equally destitute of church accommodation, as those churches are fully occupied by the inhabitants of the districts to which they properly belong.

The population of twenty-two parishes now assisted amounts to 462,000 souls; the number of existing churches, seventy-two, containing accommodation for 69,034 persons, and including 18,994 free seats. The free accommodation, therefore, at present is only one seat for twenty-four inhabitants. The additional accommodation to be obtained by the execution of the works just referred to in the application now considered, is 6,199 sittings; 4,940 of these are to be free and unappropriated.

It will be observed that five-sixths of the new seats are to be free; in fact, two of the new churches—namely, those to be built at Middleton and Gosport—will be entirely free; a further evidence that it is of the greatest importance to provide the labouring classes with the means of attending public worship.

Thus the aggregate amount of the population in twenty-five places above referred to, when compared with the present provision of the church-room therein, does not convey a direct idea of the wants of the particular parishes; and without calling attention again to the parish of Manchester, it should be noticed that Middleton, in Teesdale, contains a population of 3,000 persons, and one church with 284 sittings. Woolwich contains nearly 28,000 inhabitants, with one church accommodating 1,500 persons, and a proprietary chapel. Kirkdale, a suburb of Liverpool, has a population of 5,000 persons, rapidly increasing, and 960 sittings in the chapels, 100 only of which are free. Lynn, with more than 1,200 inhabitants, has two churches, accommodating one-sixth of that number, but not affording accommodation for more than 450 persons. Gosport, containing a population of about 8,000 persons, has only a proprietary chapel, containing 1,000 sittings; of these scarcely 300 are free. Sandback, with 6,600 inhabitants, has 1,247 sittings in its two churches; of these sittings only 224 are free; therefore, in these six parishes there is a population of 63,000 persons, 55,901 of whom have no seats provided for them in the existing churches, in which the free accommodation, in fact, amounts to 1,822 seats, or at the rate of one sitting for thirty-five persons.

The board of directors have recently determined that in future they will hold a meeting on the third Monday in July in each year, instead of that hitherto held in October. They have, therefore, adjourned their sittings to the 18th of next November, after one of the most active and efficient sessions known to this society.

**THE NEW DOCKS AT BRICKENHEAD.**—The works for carrying out this great undertaking are to be commenced in the beginning of the month of September next, and they are expected to be completed in three years from that time, so that a dock of one hundred and fifty acres will then be ready to receive vessels of the largest class, and quay walls and fire-proof warehouses will be constructed on its sides.

## CHURCH-BUILDING INTELLIGENCE, &c.

**Danbury Church struck by Lightning.**—A scaffolding has been erected upon the tower and spire of the above church by sappers and miners, for the purposes of a trigonometrical survey, which, in consequence of the inaccuracy of the former one, is now being made throughout the country. Within the outer scaffold by which the ascent is made, is a framework for the steady support of the instruments, and upon the summit of the spire is placed a platform, about nine feet square, upon which an elegantly-constructed octagon tent, to shelter the persons engaged in making the observations, is erected. The sides of the tent are of wood, with the exception of three, which are open, and the roof is formed of cloth. On Thursday week last, about mid-day, during a thunder storm, two of the men who were upon the spire took shelter in the tent, and whilst they were there, the electric fluid entered in the shape of a "fire-ball," as they describe it, exploding, with a loud report, between them, about two feet from the floor, and filling the place with sparks; it then appears to have descended by the conductor, the point of which passed through the floor of the platform. The men, who were for some time rendered insensible by the shock, on partially recovering from their alarm, immediately descended, and providentially reached *terra firma* uninjured. On subsequent examination it was found that a copper nail upon the outside of the tent had been fused by the electric matter—a hole was made through the pole supporting the tarpauling, and even the iron braces used in the construction of the platform were perforated from the same all-powerful cause. The cloth of the tent presented the appearance of a charge of shot having passed through it. This church, standing as it does on the summit of a hill, is necessarily much exposed to tempestuous weather, and in former times suffered severely from its effects, particularly in 1402, when, in the superstition of that period, the mischief was ascribed to the agency of a diabolical spirit.

**Stannington Church.**—On Monday week this church was struck by lightning, and seriously damaged. It has a slated roof, capped at the ridge and edges with sheet lead. There is also a metal pipe descending to an under-ground sough, through which the water from the roof passes. The electric fluid appears to have been collected by the latter, and conveyed by the metal pipe to the spouting, and up to the edging, where, not finding a direct conducting surface to the highest point of the steeple, it discharged itself through the latter in several places, displacing several large stones, and injuring the windows. From this it passed to the bell, without injuring it, thence through the opposite side, displacing much of the ornamental stone-work, and injuring it so much, that it is feared the whole will have to be rebuilt. The fluid appears to have spread out over the surface of the wet roof, and to have discharged itself from several places, perforating the leaden edgings, and furling up the edges from below in such a manner as to leave no doubt as to the direction the fluid has taken. The metal pipe has undoubtedly been the main cause of this unfortunate disaster. Had it ascended to the highest point of the steeple, the fluid would have discharged itself from thence without producing any injury; but conducting, as it did, only part of the way, viz., to the base of the steeple, through the medium of the lead, its destructive and powerful effects were immediately brought into action.—*Sheffield Independent*.

**New Church at Morpeth.**—The foundation of an intended new church has been laid by Lord Morpeth. The site of the church, which is dedicated in memory of St. James the Great, is situate in the centre of the town, and the church is to be built in consequence of the distance of the old parish church, which is about a mile from the town.

**New Church at Clifton.**—This church has been erected by Mr. Dyce, of Bristol, and is built of Bath Stone, cut by machinery, the courses ranging from 5 inches to 7 inches. The expense of the work, it is stated, is less by 20 per cent. than Ashlar facing, and the strength of the building much greater.

**Closing of St. Paul's Cathedral.**—On Sunday last, after the performance of Divine service in the morning, the following notice was affixed to the doors of St. Paul's Cathedral:—"Notice.—There will be no service in this cathedral during the repairs and cleaning. Due notice will be given of the commencement.—St. Paul's Cathedral, July 28, 1844."

**Lay Munificence.**—Mr. James Fussell, of Chantrey-house, in the county of Somerset, is building a beautiful church near his house, in the parish of Whatley, after the designs of Messrs. Scott and Moffatt, architects, which he intends furnishing and endowing at his own expense. He is also building a parsonage-house, stable, &c., for the future incumbents. This magnificent donation to the establishment will, it is believed, amount to nearly 8,000*l*.

A stained-glass window, designed and executed by Mr. Willement, of London, has been introduced in the chancel over the altar-piece, in Faversham Church, at the cost of more than three hundred pounds. A figure in the centre of the window represents the Virgin Mary with the infant Jesus in her arms; on her right is a figure of the Apostle Saint Peter, and on her left that of Saint Paul; the arms of the town and of the Cinque Ports being introduced below.

The King of Prussia has accorded a renewed grant of fifty thousand thalers (7,500*l*.) for the completion of the cathedral of Cologne. His Majesty has, moreover, dedicated a sum of ten thousand thalers (1,500*l*.) to the works of the north tower.

Earl Jermyn, M. P., has sent a second donation of 25*l*. towards the restoration of the Norman Tower, at Bury; and several smaller subscriptions have been likewise received.

Extensive repairs are about to take place in the church at Leverington, near Wisbech. Messrs. Royce and Rickmans, of Peterborough, are the architects engaged to do the works.

On Friday week the Lord Bishop of Worcester laid the foundation-stone of a new church in Garrison-lane, Birmingham.

## RAILWAY INTELLIGENCE.

**Railway from Southampton to Dorchester and Weymouth.**—A meeting was held in the Town Hall, Dorchester, on Friday, of those persons who were favourable to what has been termed the coast line. It was very numerously attended. The Mayor of Dorchester was in the chair. The report of the committee, containing the reports of Captain Moorsom and Mr. Pare, was read. Captain Moorsom stated much in favour of that line to pass by Redbrook, Lyndhurst, Ringwood, Wimborne, Poole, and Wareham, and so to Dorchester, and from Dorchester, by atmospheric traction, over the hills to Weymouth. The expenses of the line between Southampton and Dorchester would be 450,000*l*., and Dorchester to Weymouth 104,000*l*. more. Mr. Pare's report stated that the traffic would amount to 48,752*l*., and that the profit would be 61 per cent. The committee strongly recommended the adoption of this line, and stated that they believed they should meet with the co-operation of the South Western Company. Lord Worsley moved the adoption of the report. Captain Garland seconded the resolution. A long discussion then took place as to whether it could not go from Wareham to Weymouth, and so on to Bridport and Exeter, avoiding Dorchester; and as to whether it could not be called the Southampton, Dorchester, and Weymouth Railroad. Mr. Hodding drew attention to the line from Salisbury, through Shaftesbury to Dorchester. Ultimately, the name of the line was settled to be Southampton and Dorchester, and the resolution was carried unanimously. A vote of thanks was passed to the committee and the mayor.

**The Atmospheric Railway.**—Mr. Cubitt, the engineer of the Croydon line, with his son, Mr. Joseph Cubitt, and several of the directors, have gone to Dublin for the special purpose of observing the working of the Dalkey line, preparatory to their own arrangements to commence the work on the Croydon line. The directors of the Dublin and Kingstown Railway have placed at their disposal the Dalkey line for such experiments as they may deem it necessary to make.



**South Devon Railway.**—The works will soon be in full action; Mr. Brunel has been daily employed with a great number of men in obtaining the necessary information preparatory to the contracts being advertised. The specifications, we understand, are nearly ready, and we have every reason to believe that the public notices will soon be issued. At Dawlish Beach the soundings for the foundation have been ascertained by Mr. Brunel, and have been in some instances about 17 feet, and at other places a much less depth than was at first imagined. The station will be on the site of Mr. Kennaway's house; the cuttings through the cliff will soon be worked out, on to the rocks to the Parson and Clerk. The sand rocks, being easily cut, will soon be gone through, and the outward sea-wall facing, built of the Babbicombe lime-stone rock, will form its outward exterior of the finest workmanship. At Marley, the works will be prosecuted with the utmost despatch, and it is reported that the engineer has some improved system under consideration, which will greatly tend to expedite the work. It is considered certain that the line to Newton will be completed within twelve months, and to Plymouth within two years. The latter is not, however, so certain, as unforeseen contingencies may arise as the works are being prosecuted. At all events we may, we believe, state with safety that the line will be completed to Plymouth as soon as the tunnels can be finished. Every thing appertaining to the line is progressing most favourably, and it is arranged that a public meeting of the shareholders shall take place in Plymouth about the end of August, when a full statement of the proceedings will be laid before them.—*Western Luminary*.

**The Railway via Kendal.**—Preparations are being made, prior to the commencement of cutting the intended line of railway between Lancaster and Carlisle. A number of excavators are now at work in the neighbourhood of Shap, removing walls and fences, making roads, and clearing away all obstructions which stand in the direction of the line. Cart-loads of wheelbarrows and implements to effect this were removed from Kendal some days ago; and the men have entered upon their employment.

**The Railway.**—Mr. Locke, the engineer of the London and York line, has been at Huntingdon during the week, and the survey of the whole line is now nearly completed. A public meeting in support of it will shortly be held, with a view to get the rail as near the town as conveniently can be. The avidity with which the shares have been purchased is evidence of the opinion entertained of its being a lucrative investment, more than the 70,000 having been subscribed for within the month.

**South-Eastern Railway.**—We perceive that the South-Eastern Railway Company, or rather the executive of that company, on Thursday week last, at their special general meeting, have resolved to raise another 199,000*l.*, to construct a branch to Canterbury, to effect alterations, &c., on the Maidstone branch, and to complete and maintain a branch railway, approach, &c., to Folkestone harbour.

**North-Western Railway.**—A scheme has been broached for the purpose of making a railway from Southampton *via* Salisbury, to Bideford Bay, in Devonshire. The plan has been started by some unknown individual, whose prospectus appears in the *Taunton Courier*, and who states that a public meeting on the subject will be shortly called in Taunton.

**Irish Railways.**—The preparatory prospectus of the Irish Great Western Railway has been issued. It is proposed that the line shall run from Dublin to Mullingar and Athlone, a distance of sixty-six statute miles. The expenditure has been estimated by Sir John McNeill at 11,000*l.* per mile. The proposed capital is 730,000*l.*

**Dublin and Cashel Railway.**—On Thursday and Friday week the Dublin and Cashel Railway Bill passed the committee of the House of Lords. The Bill will receive the Royal assent in the course of a few days, and within the next three months from 15,000 to 18,000 Irish labourers will be set to work on the line.

Proceedings have commenced, near Romsey, in the construction of the Salisbury and Bishopstoke Railway.

**West Indian Railway.**—The first railway ever formed in the British colonies is about to be constructed in the island of Jamaica, between Kingston and Spanish Town. The length is twelve miles, though powers have been obtained from the House of Assembly to carry the line some miles further, if the projectors should think it desirable, and from the extraordinary facilities presented by the form of the land on the rich plain which extends from the sea eight or ten miles into the interior, round the greater part of the island, it is not unlikely that it will ultimately be carried much further. Although the engineer and superintendents of the works have not yet left England, yet it is expected, from the easy gradients on the line, the abundant offers of labour already received, and the forward state of the iron-work, sleepers, and so forth, all of which are in course of preparation in this country, that the line will be open in October twelve months. This will be the first line of railway ever constructed by the labour of free negroes, and also the first investment of British capital ever made in the colonies for such a purpose. Nearly the whole of the shares are held in Liverpool, Manchester, and London, and from the great amount of traffic already existing, between Kingston and Spanish Town, as well as the cheapness with which the line will be formed and the business-like hands into which the work has fallen, we have no doubt that the result will be very favourable, and will encourage the formation of railways in other parts of the British colonies.

**Government Railways Bill.**—On Thursday week, Mr. Gladstone informed the House of Commons, that in consequence of communications which he had recently had with several gentlemen who were opponents of this bill, he had agreed to make certain alterations in it, chiefly of omission, which would not at all impair the value of the measure. By doing this, he believed he had entirely removed the objections which had been entertained against it.

**The Landowners and Railways.**—It was given in evidence before the select committee, that no less a sum than 8,500,000*l.* has been expended by railway companies, in England and Scotland, on land and "compensation." This is about an average of 5,000*l.* a mile. On the Paris and Rouen railway, the item was 2,300*l.* a mile. The average in Belgium is 2,750*l.* a mile.—*Railway Record*.

**Proposed Railway.**—At a meeting of the citizens of Hereford, held in the Council Room on Saturday last, William Webb, Esq., Mayor, in the chair, a provisional committee was appointed, with power to investigate and arrange all matters necessary for effecting a railway communication between that city and Gloucester.

**Oxford and Cheltenham Railway.**—It is said that a Bill for a railway from Oxford to Cheltenham direct, will be applied for in the next session of Parliament. Surveys are in the course of being made. The broad gauge will be adopted.

The railway between Turin and Genoa, with two branches between Venice and Milan, has received royal sanction. It is to be executed at the expense of Government, and the Council of State have given directions that it shall be immediately marked out.

**METROPOLITAN IMPROVEMENT SOCIETY.**—The annual meeting of this society took place at the society's rooms, 20, Bedford-street, Covent-garden, on the 25th ult., Charles Fowler, Esq., in the chair. The report of the committee, detailing their proceedings for the past year, chiefly with regard to their efforts to obtain some modification of the window duties, so as to effect sanitary relief in the ventilation of the habitations of the poor, the suppression of the nuisance arising from the smoke of large manufactories, the embankment of the Thames, and other street improvements, various suggestions for the improvement of the Building Act now before Parliament, &c., was read, approved, and unanimously adopted. Thanks were then given to the committee for their past services, and they were requested to continue the same for the ensuing year; and Mr. G. E. Dennes and Mr. G. A. Walker were added to the said committee.

## THE NEW HOUSES OF PARLIAMENT.

THE following is an extract from the report of the committee appointed to inspect the works of decorative art exhibiting in King-street, St. James's, in April and May, 1844:—

"Your committee have examined the specimens of carved wood, and the designs relating to such specimens, which have been sent in by artists desirous of being employed in the decoration of the Houses of Parliament.

"Your committee have recorded their judgment respecting the comparative merit of many of the works in question, and respecting the nature of the employment for which the various artists whose works they have so noticed appear to be fitted. But not being at present in possession of sufficient information as to the extent to which wood-carving may be considered desirable in the Palace at Westminster, or as to the precise character of the works which may be required, they have thought it expedient in general to enumerate the names only without further distinction of the artists whose works have received the commendation of the committee.

"In the department of wood-carving the artists so noticed in the detailed report of the committee are Mr. Cummings, Mr. Ollett, Mr. Ringham, Mr. Freeman, Mr. Browne, and Mr. John Thomas.

"Among the artists in wood, Mr. Rogers did not comply with the terms announced in the notice put forth by the commission, and his name has, therefore, not been inserted in the foregoing list. It is, however, the opinion of the committee, that among the carvers whose works have been exhibited he holds the first place; and they consider him as the person best qualified to be intrusted with those parts of the woodwork of the House of Lords, in which great richness of effect and delicacy of execution are required.

"MARION. "COLBOURNE.  
"T. B. MACAULAY. "B. HAWES, JUN.  
"GEORGE VIVIAN. "THOMAS WYSE."

"The commissioners having had reason to suppose that some of the persons who have exhibited works of decorative art may have employed other hands, or even the assistance of foreigners, in the execution of such works, have resolved that those persons who may be selected for employment in those branches of decoration shall, if the commissioners think fit, be required to produce specimens of their art, to be completed under such conditions as the commissioners may think necessary."

## Correspondence.

BUNNETT AND ANOTHER *v.* SMITH.

SIR,—The above case is reported in your last Number so as to give a colour to the transaction altogether at variance with the facts, and your report might, if left uncontradicted, do us much injury; the representation of "the circumstances which gave rise to the motion," in particular, being altogether untrue, we beg that in your forthcoming Number you will do us the justice to insert the following correction.

The description of the specification of our patent is much garbled and misrepresented; we claim no particular form of hinge, only in combination with a particular form of shutter, and no mention is anywhere made of a "crank-butt hinge." We claim a particular modification of machinery (the endless screw and worm-wheel) for the purpose of raising and lowering our patent shutters, and also revolving iron shutters as heretofore made; such apparatus being admirably adapted to, but never before used for, such a purpose. We can, however, very well afford to let the specification speak for itself, merely stating, that it is absolutely false that a similar contrivance for raising and lowering such shutters "was patented and used thirty-six years ago."



The building in George-street, Mansion-house Place, is *not* an addition to, or part of, the banking-house of Messrs. Smith, Payne, and Co., as was artfully represented on the hearing of this cause, and which, no doubt, had its effect upon the Vice-Chancellor; for, to use his own words, "to do as little injury as possible," he withheld the full injunction which, at the outset of his address, he appeared inclined to grant. The premises in question belong, it is true, to Messrs. Smith, Payne, and Smiths, and have been superintended during their erection by Mr. Beadnell, their principal clerk; Mr. Flower, the architect of the Gresham Club-house adjoining, giving his friendly aid, in the absence of a professional engagement. One of the partners in the house of Messrs. Smith, Payne, and Co., had satisfactorily used our patent revolving iron shutters in his private residence (of which Messrs. Cubitt and Co. were the builders), and had, in conjunction with Mr. Beadnell, decided on their being also used in this building; Mr. Flower also strongly recommended their adoption. The intentions of these gentlemen were, however, frustrated by a clerk in the employ of Messrs. Cubitt and Co., the builders; who, without their knowledge, or that of any of the parties concerned, applied to the defendant, and agreed to introduce eight shutters of his make; an infringement of our patent, which has led to these proceedings.

Messrs. Cubitt and Co.'s clerk stated, in explanation of his conduct, that he had not space enough for our (Bunnett and Corpe's patent) shutters, and had, therefore, adopted those of Mr. Smith (not one of a similar make having been previously put up by him), which were represented as taking up less room. It was proved, however, by the affidavits, and is well known to most builders and architects, that our patent shutters for windows 6 feet 6 inches high (the dimensions of those in question) occupy a space, when wound upon the roller, of 7½ inches only. The space available in the building referred to is nearly 10 inches! and the shutters put up by Mr. Smith actually occupy a space, when wound upon the roller, of 2½ inches. *One inch and a quarter more than our patent shutters, for which (according to Messrs. Cubitt and Co.'s clerk) there was not room!!!*

Much pains were taken to impress upon the Court, and it was repeatedly stated in the defendant's affidavits, that a great saving of room would be effected by the defendant's form of shutter, whereas in the case at issue they really do, and must inevitably under any circumstances, occupy at least *one-eighth more space* than our patent shutters. As to the attempted evasion of our patent by substituting one sort of hinge for another, and by turning our raising gear upside down, we leave that question to be decided by the pending proceedings. We not only deny that any advantage can result from such mis-called *improvements*, either in strength, durability, or economy of space; but we pledge ourselves, backed by the practical experience of eight years of the most extensive employment in the manufacture of revolving iron shutters, that our patent shutters are in every respect superior to those put up by Mr. Smith, and that far from any economy of space resulting from his arrangement, it is the reverse; in the majority of windows his plan would be altogether inadmissible, and is at best a most unmechanical arrangement.

That Messrs. Cubitt and Co. gave orders for the eight shutters in question, from a conviction of their superiority over our own patent shutter, is wholly false, as both Mr. Cubitt and his partner Mr. Alchin assured Mr. Bunnett that they knew not of Smith's shutters being used at the building until apprized of that fact by Messrs. Bunnett and Corpe. So much for the superiority of the defendant Smith's shutters being "evidenced by the selection of Messrs. Cubitt and Co.!"

We are, Sir, your obedient servants,  
Lombard-street, BUNNETT AND CORPE.  
July 29th.

[The account given in our last number was brought to the printing-office at a very late hour on the night previous to publication, and we were not aware of its containing any thing beyond a mere report.—Ed.]

## SHAM COMPETITION.—DERBY PAUPER LUNATIC ASYLUM.

SIR,—I trust you will not withhold from your columns the other communications which you mention having received on the subject of the Derby Asylum and the Southwell Church competitions; as, provided they be concise and to the purpose, the stronger the case of direct favouritism is made out, the better it will be as a lesson for our guidance in like matters for the future.

The very reason which deterred your correspondent "T." from entering on the first-named competition, actuated myself, and I believe the facts to be as stated in his letter. At any rate, the influence possessed by the parties who obtained both the first and the second premium was such as to deter any one cognizant of it from bestowing any time or attention on the subject.

As regards the second competition (for the church at Southwell), many of your readers can vouch for the time which such men as Sir R. Smirke, Mr. Hardwick, and Mr. Tite, have devoted to the examination of designs referred in recent instances to the professional judgment of these gentlemen, by committees who had some *decent* sense of their own incompetency to enter fairly into the question of deciding.

These three professional gentlemen certainly devoted more than *one, two, or three* sittings to the numerous drawings submitted to them before they made their awards.

We know by a letter from the party to whom application for particulars was addressed, that more than one hundred such applications were made (for the terms of the advertisement were calculated to mislead the unwary). Now, supposing that only fifty designs were actually sent in, and valuing them at the moderate average worth of only ten guineas each for *time and actual outlay* bestowed on them, here are 500 guineas thrown away, to please whom? A set of somebodies writing themselves a committee. Of a truth, their haste in deciding and returning the rejected drawings clears them of any possible suspicion of having paid *particular* attention to any of them for the purpose of culling something new for the fortunate *pre-selected* one; and of this negative praise, at any rate, we may let them take their full benefit. But, Sir, who constitute this committee?—and who is the party whose name appeared in the advertisement? His letters were written in a very *epicurean* hand, and he did not so much as claim to himself the distinction of Hon. Sec., as usual in similar cases.

Are there any such people in Southwell as speculative dabblers in bricks and mortar, to whom designs, "*furnished gratuitously*," might be ready-money hints for their own interested purposes?"

Is it not "too bad," that artifices should be resorted to in building an edifice for *religious* purposes, which an individual would neither imagine nor venture to employ in erecting one destined for his *own secular employments*?

Can any of your readers favour me with the information, whose design was selected for the "Hardy Testimonial" near Dorchester? I believe that due time was allowed in that instance for all interested to inspect the designs which were exhibited to the public in Dorchester. It is somewhat remarkable that information, such as that asked above, is almost always omitted when the competition drawings are returned to their respective authors.

Your constant Reader, Φ.

July 22, 1844.

[We think it unnecessary to insert the additional letters alluded to.—Ed.]

## PREMIUM FOR THE PREVENTION OF SMOKY CHIMNEYS.

SIR,—It is generally known by the readers of your journal that you are at all times desirous of doing a duty to the multitude, by informing them of new discoveries, inventions, and improvements, thus benefiting the millions in all countries on the globe. I am pleased to find nearly every day some paragraphs announcing new discoveries, improvements, or experiments for improvements.

The improvements in arts and science, machinery, &c. in modern times are astonishing; and going along the streets of London, beautiful designs of ornaments are met with;

See the original advertisement in the Times newspaper. This part of it did not appear in THE BUILDER.

and the pleasing façades of some of the buildings erected a few years since seem to prophecy that we are very near to a second golden age.

A few days ago I came along the new town of London called Hyde Park Gardens, and I was much pleased to see that the architects in general are anxious not only to imitate, but to outdo, the ancient Grecians, Romans, &c., in the decoration of buildings. I could not help thinking that the inmates must perceive the pleasure the passers-by feel, in looking at the nice façades of their dwellings; but, by looking above the parapets, I found that the inmates of the well-formed and ornamental buildings are not so comfortable as I imagined, because some of the lofty rooms contain bad atmosphere.

The question of your readers may be, "how can a person, in passing a house, know if there is inside a good or bad atmosphere?" In answering this question, I say that every person can see this, by looking over the parapets, at the wonders of the invented ornaments upon the chimney-pots! If the atmosphere in the rooms were pure, as it ought to be, no such nuisances would be seen. When I saw the hundreds of newly-invented apparatus—cows, pipes, caps, and the strange bent figures of pipes in a row, like soldiers, when sitting on a pole in the field behind a tent, I felt very much annoyed, and was certain that the rooms contained an impure atmosphere. Of what use is the well-designed and ornamented façade to the inmates, if their health be undermined by noxious atmosphere?

From thence, I went down Hyde Park and the Green Park to St. James's Palace, and I saw the same nuisances upon St. James's Palace, as well as upon Buckingham Palace, and other buildings in their immediate neighbourhood. At Charing-cross and Trafalgar-square the same mischief is disgracing the place.

When I arrived in the City and close to the Bank, the New Exchange, with its majestic portico, made me forget the nuisance at Hyde Park Gardens, and other places mentioned, because the chimneys were free from disfigurement. In going along the Bank towards the Sun Fire Office, a most splendid façade met my eyes; but lo! what a disagreeable impression did a glance over its parapet produce!—A most ridiculous invention presented itself upon the chimney-pot. The said inventors were not satisfied with a simple or single ventilator (like a certain doctor, an experimentalist, with one large cow), no; they put one disgraceful disfigurement upon another.

I hope the architect of the New Exchange will take care to introduce only such fire-grates into the building as will require no such disgusting disfigurement for the draught of smoke. It is indeed an annoyance to look at such crooked figures as are fixed upon the chimney-pots of the new Bank Buildings, and many other edifices.

That the science requisite for avoiding with certainty such disfigurements is at present unknown to the human race, is proved by the facts mentioned; and particularly through the fact lately produced by some men of science, who have introduced stoves with which the pure atmosphere is changed into noxious vapour, whereby the health of the people is undermined and destroyed, and to which chimney-pots are required to create a draught for the smoke; and by experimentalists, who, feigning to know the science of ventilation, nevertheless set the lives of useful beings in danger through could draughts or noxious atmosphere. And such experimentalists attempt to teach the people the science of warming and ventilation!

Architects would never permit any person to disfigure their masterly works if there were a book in existence in which could be found the knowledge how to construct fire-places and chimneys so perfectly that the smoke would escape through ornamented chimneys as well as through the disfigurements already mentioned.

I do not think it impossible that the science, of avoiding and removing the nuisance in question, exists in nature, and that an offer of a high premium might lead to the discovery.

I therefore pray, in the name of the millions, and particularly in the name of those ladies who are confined to their rooms, and are obliged to inhale the poisonous effluvia from their fire-places, and suffer from illness



on account thereof, that the editor of this valuable journal will assist, by informing the honourable members of Parliament that the millions of sufferers, and architects in general, will thank them if they will take this matter into consideration, and grant a liberal premium to the individual who discovers the laws or rules, by which fire-places may be constructed without mistakes, and the chimneys remain without disfigurement.

If the honourable M.Ps. consider the dangerous action of the smoky atmosphere in apartments, and the indisputable fact, that thousands of females of delicate health suffer and die on account of the bad atmosphere in their apartments, while the individuals themselves and their medical advisers do not perceive the least sign of the dangerous effluvia, they will be satisfied that the matter deserves consideration.

A society of physicians has discovered the above-mentioned dangerous secret action of impure air in apartments, and has reported the facts to their Government.

A nobleman, or gentleman, of large fortune, desirous of benefiting the millions, might meet with success in offering a trifle for the discovery of the above-mentioned science, and would erect for himself a monument in every country in the known world, because the evil is to be found in all civilized countries, and in all situations on the globe.

I am a friend of improvements, through which the health and comfort of the millions may be heightened, and

I am, Sir, your humble servant,  
A LOVER OF SWEET AIR.

### Miscellanea.

**STATUE OF THE DUKE OF SUSSEX.**—The model from which the marble statue of the late Duke of Sussex, which will be erected in the Great Hall of the Freemasons, attached to the Freemasons' Tavern, Great Queen-street, Long-acre, has been completed by Mr. Bailey, R.A., and is now in his studio, in Percy-street. It represents the late Grand Master of the brethren with the decorations of the Garter and the Bath, and in the robes of a knight,—this gives a dignity to the figure, which modern costume alone could not have conferred, and is better than the adoption of Roman or Greek draperies, which would have been inconsistent and incongruous. The figure is of the heroic size, standing about seven feet and a half in height. The great merit is the felicitous representation of character. The features, the figure, the attitude, are all expressive of the character of the original, and, as far as portraiture is concerned, the likeness is perfect. There is also an appearance of life. Stiffness has been avoided without detracting from dignity, and there is an ease and freedom in the outline, which gives as much grace to the figure as is compatible with the fact. Perhaps this is one of Mr. Bailey's best statues; it is worth a hundred of the absurdities which have of late been put forth, and will make English art somewhat more respected than most of the strange productions, which have created more amazement at their absurdity, than admiration at their merits.—*Times*.

**MONUMENT TO THE EARL OF LEICESTER.**—A monument to the memory of the Earl of Leicester has just been completed at Mr. Hall's marble works, Derby. It consists of a mass of sculptured Gothic tracery, forming a cinque-foil arch, resting on buttresses and columns, and open foliage capitals, and surmounted by a pediment and pinnacles, ornamented with panels, crockets, &c. Within the niche formed by the columns and arch, stands a massive tablet containing an inscription, with the capital letters illuminated alluding to his public conduct as a representative for fifty-seven years of the county of Norfolk, his generosity as a landlord, and skill and enterprise as an agriculturist.

**NEW HOUSES OF PARLIAMENT.**—The committee appointed to inspect and report on works of decorative art have recommended the specimens of ornamental metal work sent in by Messrs. Messenger and Sons (Birmingham), Messrs. Bramah and Co., and Mr. Abbott, as the best exhibited by the persons who are desirous of being employed in the embellishment of the Houses of Parliament.

**CURIOUS OLD HOUSE.**—Among the various buildings in West-street, formerly called Chick-lane, now about to be pulled down for the Clerkewell improvements, is a house, supposed to have been built at least 300 years ago, once known as the Red Lion Tavern, but for the past century used as a lodging-house, and the known resort of thieves and the lowest grade of the frail sisterhood. It is situate on the west side of the Fleet River, now called the Fleet Ditch, and used as a common sewer; and from its remarkable adaptation as a hiding-place, with its various means of escape, it is well deserving a visit of the curious. Its dark closets, trap-doors, sliding panels, secret recesses, and hiding places, no doubt rendered it one of the most secure places for robbery and murder. It was here that a chimney-sweep, named Jones, who escaped out of Newgate about three years since, was so securely hidden, that although the house was repeatedly searched by the police, he was never discovered, till it was divulged by one of its inmates, who incautiously observing that he knew whereabouts Jones was concealed, was taken up and remanded from time to time as an accessory to his escape; but when at last tired of prison fare and prison discipline, pointed out the place to obtain his own liberty. He was concealed by parting off a portion of a cellar with brickwork well smeared with soot and dirt, to prevent detection. This cell, or more properly den, is about 4 feet wide by 9 in depth; and during Jones's incarceration therein he had food conveyed to him through a small aperture, by a brick or two being left out next the rafters. It was here, about seven years since, that a sailor was robbed, and afterwards flung naked through one of the convenient apertures in the wall, into the sewer, for which two men and a woman were transported for fourteen years. A skull and numerous human bones have been found in the cellars, some of which have been taken away by Mr. Taylor, the police medical officer. On one occasion, though the premises were surrounded by seven police officers, a thief made his escape by his communications with the adjoining houses, which were all let out to the lowest characters. Numerous parties daily visit the premises, among whom have been many of the police and county magistrates.

**WESTMINSTER BRIDGE.**—The following is the report of the select committee appointed to inquire into the present state of Westminster-bridge, and into the expediency of continuing the present expenditure thereon, or of erecting a new bridge on or near the site thereof, and also into the amount of the bridge estates, and the liabilities thereon; with power to report their opinion, together with the minutes of evidence taken before them, to the House:—"That on a review of the whole of the evidence, no case has been made out to justify the committee in recommending to the House the pulling down the present bridge and the constructing a new one. That it is desirable that the inclination of the roadway over the bridge be improved by lowering its summit and raising its extremities. That the parapets of the bridge be lowered as much as is practicable and consistent with safety.

**METROPOLITAN IMPROVEMENTS.**—On Monday, by direction of the Commissioners of Woods and Forests, workmen were employed in making the excavations for the new sewer which is to pass down the centre of the street that is to connect Holborn with Oxford-street, and which will be about 2,000 feet in length, the new street being about 1,800 feet long. It is expected that this will take about six weeks to complete, and when finished the new roadway will be carried out as fast as possible. In a few days, on the houses in Holborn being removed, there will be a clear view of Oxford-street from Holborn.

**DUNROBIN CASTLE.**—Large additions are to be made to this ancient and weather-beaten pile, whose proud battlements have for ages bid defiance to the storm, and repelled the ruthless invaders of the olden times. Much as we venerate the gray towers of this feudal keep, we readily admit that modern elegance and splendour will form an agreeable contrast to the rough old grandeur of the castle. Quarrying stones for the buildings is already in progress, and a number of unemployed hands will be benefited by the work necessary to complete the buildings.

**NATIONAL GALLERY OF ART IN SCOTLAND.**—A meeting of citizens was held on Thursday night in the Café Royal, to consider a proposal which embraced the double idea of completing the structure of the National Monument on the Calton Hill, and of rendering it a receptacle for works of high art; of making it, in fact, a gallery of the fine arts in Scotland. The Lord Provost was called to the chair. Mr. D. R. Hay explained the scheme, which was in substance that an association should be formed similar to those already known in the country as art-unions; but that the funds so raised should be devoted, the one half to the completion of the monument, the other half to the purchase of works of high art; which, instead of being ballotted for by the subscribers, should be deposited in the gallery to be established in the National Monument. Resolutions carrying out this view were moved and seconded; and a committee was suggested to carry the resolutions into effect.—*Edinburgh Observer*.

### Current Prices of Metals.

July 30, 1844.

	£. s. d.	£. s. d.
<b>COPPER</b> —Brit. Cake, p. ton	83 0 0	84 0 0
Tile .....	82 0 0	83 0 0
Sheet, p. lb.	0 4 0	0 9 ½
Bottoms .....	0 0 0	0 0 0
Old .....	0 4 0	0 8 ½
South Amer., ton	0 0 0	72 0 0
Foreign Cake ..	0 0 0	0 0 0
Tile ..	0 0 0	0 0 0
<b>IRON</b> , British .....	0 0 0	0 0 0
Bars .....	6 0 0	6 5 0
Rods .....	0 0 0	7 0 0
Hoops .....	8 0 0	8 10 0
Sheets .....	0 0 0	9 0 0
Cargo in Wales, Bars	0 0 0	5 10 0
Pigs No. 1, Wales ..	3 10 0	4 0 0
No. 1, Clyde ..	0 0 0	3 0 0
Russian, CND ..	16 0 0	16 10 0
PSI .....	0 0 0	0 0 0
Archangel .....	0 0 0	0 0 0
Swedish .....	3 10 0	10 0 0
Gourieff's .....	0 0 0	0 0 0
<b>LEAD</b> —British, Pig, p. ton	16 10 0	17 0 0
Sheet, milled .....	0 0 0	17 15 0
Bars .....	0 0 0	0 0 0
Shot, patent .....	0 0 0	19 15 0
Red or Minium ..	0 0 0	21 10 0
White .....	0 0 0	23 10 0
Litharge .....	0 0 0	20 0 0
Pig, Spanish .....	0 0 0	16 10 0
American .....	0 0 0	0 0 0
<b>STEEL</b> —English .....	0 0 0	0 0 0
Swedish Keg .....	0 0 0	16 0 0
Faggot .....	0 0 0	16 10 0
<b>TIN</b> —In blocks, p. cwt.	0 0 0	3 13 0
Ingots .....	0 0 0	3 13 0
In Bars .....	0 0 0	3 14 0
Banca .....	3 4 0	3 5 0
Straits .....	0 0 0	3 3 0
Peruvian .....	2 17 0	3 0 0
Plates, p. box, 225 shts.		
No. I. C. 13½ by 10 in.	1 7 6	1 13 0
I. X. ....	1 13 6	1 19 0
I. XX. ....	0 0 0	0 0 0
IXXX. ....	182 lb.	2 9 0
IXXXX. ....	203	2 15 0
No. II. C. 13½ by 9½ in.	105	1 9 0
II. X. ....	133	1 15 0
III. C. 12½ by 9½ in.	98	1 7 0
III. X. ....	126	1 13 0
SDC .....	167	2 13 0
SDX .....	188	2 19 0
SDXX .....	209	3 15 0
SDXXX. ....	230	3 11 0
SDXXXX. ....	251	3 17 0
C. 16½ by 12½ in.	98	1 7 0
X. .... 100 sheets	126	1 13 0
XX .....	147	2 19 0
XXX .....	168	1 19 0
XXXX .....	189	2 11 0
Jaggers, 14 by 10 in.	—	0 0 0
<b>SPELTER</b> —On the spot, ton	0 0 0	21 10 0
Delivery .....	21 5 0	21 10 0
<b>ZINC</b> , English Sheet .....	0 0 0	30 0 0
<b>PLATINA ORE</b> .....	0 0 0	0 0 0
<b>ORSIDEW</b> .....	0 0 0	0 3 0
<b>QUICKSILVER</b> .....	0 0 0	0 4 6

### TO CORRESPONDENTS.

If the correspondent who favoured us with the sketches of Arbroath Infirmary, will favour us with his address, we shall transmit to him proofs of the cuts, which we have had executed.



# The Builder.

NO. LXXIX.

SATURDAY, AUGUST 10, 1844.



NOTWITH-  
STANDING  
fools make a  
mock at sin;  
notwithstand-  
ing the fool  
bath said in  
his heart, there is no God;  
though the unwise deface  
the holy temple by put-  
ting forth his hand pre-  
sumptuously to uphold  
or to work that which  
requires knowledge, with  
which he has not been  
inspired:—still the canon  
of scripture remains un-  
changed; still the temple  
stands, though profaned;  
still is there existing a  
deep and secret know-  
ledge of architecture, however the foolish dis-  
cover it not.

We have hitherto but slightly touched upon the doings at Cambridge in relation to architecture, partly because we have confidently believed the hot rancorous evil would burn itself out,—in the fulness of time cause its own parturition; and partly because we have hitherto had our hands completely full. It is now, however, our intention shortly to go through the whole catalogue of trumpery put forth by the so called Cambridge Camden Society, and to examine it page by page; to separate the small quantity of good from the bad; to expose the weakness and disgusting effrontery of the remainder, and to bring it down to its true level. This we esteem a duty to our church, to our profession, and to society: if architecture were not at present in a most peculiar situation, we should take no such trouble; for the miserable issues of the *Cam. Cam. Society* could not hold a single day, were our art not in that peculiar situation.

It is a strange affront to the London, or proper Camden Society, that it should have had its name parodied by a juvenile set at Cambridge; whose weak and frantic proceedings are in complete antipodean opposition to the cool judgment—the deep, patient, learned, and meritorious antiquarian pursuits of the great man whose name is insulted by their assumption of it: indeed, seeing the ignorance, coarseness, and buffoonery, which are so plentifully sprinkled through the works of this society, we never behold or hear the three repeated letters *CAM. CAM.* without feeling the same sensation as we should were we to see the announcement of the theatrical pantomime of “*Harlequin Camden* :” so singular is the difference between the gravity, the depth of judgment, and the propriety of language of our venerable English antiquarian father—and the meanness and levity of deportment, the weakness of judgment, and the coarseness and scandal of discourse suited only to the level of the gladiator and prizefighter, which the *Cam. Camdenists* have assumed; deficient of that calm, sacred, gentlemanly, and modest demeanour,

which is the humble pride of the true English churchman, and without the possession and practice of which, the foot is not even placed on the first step of religion or of science.

We intended to say no more at present upon the subject of the publications of this society, or of its members, except, that after two of them have had the audacity to blemish their characters as English priests by publishing the translation of Durandus, we have lost all previous remaining confidence in their judgment and usefulness; nor would we take the Eucharist from one, nor have our children baptized by the other: and were such a misfortune to happen to the church, that either of them, after having earned the highest ecclesiastical censure which bishop can bestow, were to arrive at episcopal dignity, and the times were strait, we should feel disposed to move into another diocese.

We propose next week to say a few words relative to the Round Church at Cambridge; in the meanwhile we caution all Englishmen, who love their church and its architecture, to be on their guard against the insidious, false science of this society, which does almost every thing—speaking, writing, construction, choice of materials, as it ought not to be done—and if they have sons to educate, to pause before they suffer them to come within the verge of their spider-web toils; and instead of returning to their families as learned Christian gentlemen, have the mortification of receiving them back as priggish, ribald scribblers, pretending to be ecclesiologists, while performing no one act of modest, deferential piety; that quality which has placed the Church of England in its present high position, and borne it illustriously through good report and through evil report, and given it a worth and power, which the foolish cast-aways of the present day can little injure, however disgusting and indecent their proceedings.

## THE LATE W. H. STUCKEY, C. E.

W. H. Stuckey, C. E., the author of the system of filtering large bodies of water, that goes by his name, died on Thursday, the 14th instant. He was also the inventor of many important discoveries, especially one for a new motive power by a pneumatic process, which has obtained patents in England, France, Holland, Belgium, and Austria; and another for a process of tanning, which, like his filtration, economized space, time, and money. The deceased's system of filtering water was recommended in both Houses of Parliament, and Lords Brougham and Radnor especially called the attention of Government and the Commissioners on the Health of Large Towns to its great utility. In France it is about being applied to all the fountains of Paris, and here to the intended fountains in Trafalgar-square. Mr. Stuckey was born at Cherson, on the banks of the Dnieper, where Howard, the philanthropist, died. He was afterwards a civil engineer and merchant at St. Petersburg, where, having obtained the Governor's (Count Essen's) approbation for his plan for supplying that city with pure water, he was doomed to endure the consequences of arbitrary power. The son of a member of the Government, finding the intended plan to be a profitable one, solicited the contract, and obtained it. Stuckey was ordered to take down his works, and sacrifice his capital. He asked the reason. The reply was characteristic:—“It is your duty to obey, and not put impertinent questions.” Descended from English parents, and with English feelings, he refused. The works were pulled down in the dead of night by 200 men of the fire-brigade. He petitioned seventeen times, without obtaining a single answer. His anxiety at seeing himself so treated, where his brother had been ennobled for his public services by the late Emperor Alexander, and his father acknowledged to be the best builder of the Russian navy, laid the foundation of the disease of

which he died. He refused to state his wrong, during the recent visit of the Emperor Nicholas, as he considered that the Emperor knew nothing personally about the conduct of his Ministry, though the letter of the Marquis of Northampton, as the President of the Royal Society, stating that the Emperor ought to be well received in this country, from the patronage afforded to Englishmen of science by the Russian Government, could in his own case, and a hundred others, be flatly denied. He died a martyr to science—a victim to arbitrary power.—*Sun.*

## MR. GEORGE STEVENSON.

This eminent engineer, at a recent entertainment at Newcastle, gave the following account of himself:—“The first locomotive that I made was at Killingworth colliery, and with Lord Ravensworth's money. Yes: Lord Ravensworth and Co. were the first parties that would intrust me with money to make a locomotive engine. That engine was made 32 years ago, and we called it, ‘My Lord.’ I said to my friends that there was no limit to the speed of such an engine, provided the works could be made to stand. In this respect great perfection has been reached, and in consequence a very high velocity has been attained. In what has been done under my management, the merit is only in part my own: I have been most ably seconded and assisted by my son. In the earlier period of my career, and when he was a little boy, I saw how deficient I was in education, and made up my mind that he should not labour under the same defect, but that I would put him to a good school, and give him a liberal training. I was, however, a poor man, and how do you think I managed? I betook myself to mending my neighbour's clocks and watches at night, after my daily labour was done; and thus I procured the means of educating my son. He became my assistant and my companion. He got an appointment as under-reviewer, and at nights we worked together at our engineering. I got leave to go from Killingworth to lay down a railway at Hetton, and next to Darlington; and after that I went to Liverpool, to plan a line to Manchester. I there pledged myself to attain a speed of ten miles an hour. I said I had no doubt the locomotive might be made to go much faster, but we had better be moderate at the beginning. The directors said I was quite right; for if, when they went to Parliament, I talked of going at a greater rate than ten miles an hour, I should put a cross on the concern. It was not an easy task for me to keep the engine down to ten miles an hour, but it must be done, and I did my best. I had to place myself in that most unpleasant of all positions—the witness-box of a parliamentary committee. I was not long in it, I assure you, before I began to wish for a hole to creep out at. I could not find words to satisfy either the committee or myself. Some one inquired if I was a foreigner, and another hinted that I was mad. But I put up with every rebuff, and went on with my plans, determined not to be put down. Assistance gradually increased—improvements were made every day—and to-day a train, which started from London in the morning, has brought me in the afternoon to my native soil, and enabled me to take my place in this room, and see around me many faces which I have great pleasure in looking upon.”

THE XANTHIAN MARBLES.—The first portion of the Xanthian marbles, which were selected by Mr. Fellowes and his party, at their survey of the extensive ruins on the banks of the Xanthus, in Asia Minor, have arrived in the British Museum. On board the collection was placed on board her Majesty's ship the *Media*, on the twelfth of March last. There were altogether twenty large cases of marbles and casts. The principal of these remains, the Horse and the Chimæra tomb, were left on the ground, in consequence of their great weight; but it is supposed that they, with some other monuments of ancient art, are now on their way to England. The first portion was brought several days ago in waggons from Portsmouth. The cases, each of which weighed some hundred weight, were deposited in the room where cases are placed on their first arrival, and they are being opened under the superintendence of Mr. Hawkins (the keeper), with great care and attention.



## DESTRUCTIVE FIRE AT MANCHESTER.

ON Monday evening, another destructive fire broke out in this town; and in the course of about an hour and a half property to the amount of 25,000*l.* was destroyed. The premises in question formed a pile of buildings, called Irwell-buildings, situate in Blackfriars'-street, the Parsonage, and Water-street, and belonged to Messrs. Robert Charlton, Brothers, calenderers, &c. Messrs. Charlton occupied the lowest story of the building, and several rooms in different parts of the premises, and their fire-proof engine-house was at the extreme angle of the building. The next portion of the premises, in Blackfriars'-street, was occupied by six firms, viz., Garner and Co., Henry Jacquet, Henry Fischer and Co., M. Ralli, Richard Rostron and T. Halstead, export merchants, and Mr. Mendel, also a foreign merchant, had the rooms fronting into Water-street. The building, we understand, with the exception of a small portion which is fire-proof, was lined with wood, and had not a party-wall in it; and, therefore, fell an easy prey to the flames. About a quarter past ten the attention of the police was attracted by seeing several persons standing in Blackfriars'-street, watching the progress made by a light in the third story of the premises next to those used by Messrs. Charlton, who were then at work. The constables perceiving that the light increased, concluded that the premises had caught fire, and at once proceeded to the police-yard, and alarmed Mr. Rose, the superintendent of the fire-brigade, who went to the spot with the Niagara engine, followed by six other engines and a large body of firemen. Upon their arrival at the place, they found that the fire had made an exceedingly rapid progress. It had already reached the fourth story, and was spreading rapidly in all directions. Messrs. Charlton immediately set to work to save such of the goods upon their premises as could be easily removed; but little progress could be made on account of the intense heat. The firemen got into the building occupied by the six foreign houses; but, after a short time, were compelled by the flames to retreat. The Salford engine, and one belonging to Messrs. Wilson, Brothers, were also brought to the spot, whilst Mr. Gould, who occupies a mill in Bateman's-buildings, caused a water-pipe to be attached to his steam-engine, which rendered considerable service. In less than 20 minutes, the whole of the building which is fifteen windows long by five deep, and six stories high, was one mass of flame, with the exception of the engine-house. Such was the intense heat, that the Blackfriars' Hotel and the houses adjoining were several times on fire, and it was only by a continual stream of water from two engines being poured upon them that they were saved. The wind fortunately was not high, or no exertions of the firemen to save the adjoining buildings would have been of any avail.

## LONDON AS IT WAS IN 1800, AS IT IS IN 1844.

(Continued from p. 387.)

SIR WILLIAM PETTY, in 1683, demonstrated that the growth of London must stop of itself before the year 1800, at which time he calculated that the population must be 5,359,000 persons: time, however, has shewn the fallacy of these as well as many other prophecies. The beginning of the nineteenth century was the signal for increase of population, improvement, and extension; and although the war still continued a check to the enterprising spirit of Builders, yet the germs of improvement were gradually unfolding in the north of London, chiefly under the superintendence of that eminent builder, Mr. Burton. The ground belonging to the Foundling Hospital and the Duke of Bedford was the first to go off. Guilford-street was formerly a path, which led from the Earl of Rosslyn's house at the back of Queen-square, and the gardens of Ormond-street, round the front wall of the Foundling Hospital, to Gray's Inn-lane, and was generally bounded by stagnant water, at least 12 feet lower than the square. This place was now raised to a level with the adjoining streets, and a considerable addition made to the garden of the square; and the beautiful view of Hampstead and Highgate was now hidden in by majestic houses with Tuscan pillars. This pleasant prospect

being reserved for a short time to the inhabitants west and north of Brunswick-square.

Bedford House, in Bloomsbury-square, designed by Inigo Jones for the Earl of Southampton, being sold for 5,000*l.*, was pulled down to make room for the elegant houses now standing on the site of this house and garden, embracing Montague-street, the north side of Bloomsbury-square, &c.; and Montague House was soon surrounded with houses. Rosslyn House (formerly Lord Baltimore's, and afterwards the Duke of Bolton's), which forms the south-east corner of Russell-square, becoming built in, lost, with its beautiful view, all value in the eyes of its noble proprietor, was seldom occupied, and finally abandoned; this noble roomy house, after being untenanted for many years past, has been sold within these few weeks, and will soon be lost sight of by additional buildings.

In order to expedite the building of Russell and Tavistock-squares, and the various lines of streets, the proprietors offered leases for 99 years; and the houses being valued from 500*l.* to 4,000*l.*, they lent sums of 150*l.* to 600*l.* for three years to such persons as chose to accept them. Several acres of ground, where now stands Euston-square and other houses, and bounding the New-road on either side, were about this time converted into gardens for culinary and other plants. The only house in Somers Town of any age was the Brill Tavern, which in 1792 was approached by a pleasant path, through a white turnstile where Judd's-place now stands. The principal public structure was a chapel, first called Bethel, afterwards St. Paul's, and in 1803 Bethel Meeting for Anabaptists. The Methodists also had a chapel, and several private places of worship. In the Polygon lived and died the celebrated Mrs. Walsonecraft Godwin, and many years afterwards her equally celebrated husband. Somers Town was then a great place for French refugees, who were noted for their civil, but at the same time unsocial behaviour. The fields between Somers and Camden Town were at this time let out for grazing; and were for several years afterwards let to Mr. Rhodes, the celebrated cow-keeper. Camden Town was a country village of small size, consisting of two road-side public-houses, and a few straggling tenements, commanding an uninterrupted view of Highgate, Hampstead, and Islington; Kentish Town was also a small romantic village, celebrated for the purity of its air, and the simple manners of its inhabitants; its houses were chiefly built of wood surmounted with red tiles.

In the neighbourhood of Kentish Town lived the noted miser John Little. A few days prior to his demise, the physician who attended him observed how highly necessary it was that he should occasionally drink a glass of wine; after much persuasion, he was induced to comply, yet by no means would entrust even his housekeeper with the keys of his cellar, but insisted on being carried down to the door, which, on being opened, he in person delivered out one bottle of wine; when, it is supposed, by the removal from a warm bed into a dark humid vault, he was seized with a shivering fit, which terminated in an apoplectic stroke, and occasioned his death. So great was his antipathy to the marriage state, that he discarded his brother, the only relative he had, for not continuing, like himself, in a state of celibacy. He left 38,000*l.* in vested and landed property. One hundred and seventy-three pairs of breeches, and a numerous collection of other articles of wearing apparel were found in a room which had not been opened for fourteen years. One hundred and eighty wigs were found in the coach-house, which, with other things, had been bequeathed to him by different relations. He died April, 1798.

The vast parish of St. Marylebone was little known or noticed before Pennant's time. Captain Rathbone commenced, in 1721, the erection of Rathbone-place, in which year he died; part of Charlotte-street was built in 1791, and two sides of Fitzroy-square were completed a few years after. The ground on which Cavendish-square, originally called Oxford-square, and its neighbourhood, is built, was sold at first for 2*s.* 6*d.* per foot, afterwards for 1*s.* The following is quoted by Pennant from the "Weekly Medley, Sept., 1719:—"Not far from Tavistock-street lives a man, by profession a measurer and surveyor; this fellow is for everlastingly boasting of himself,

and vapouring of his performances, and has the boldness to style himself the prince of that calling. If towards being a prince of a trade, it is necessary to make himself wealthy and great by undoing all that are subject to his management, he richly deserves the name; for you must understand that as among authors, there is *cacothés scribendi*, so there is *edificandi cacothés*, or an itch of building, that prevails much among our tribe, that dabble in mortar. All the raw and inexperienced workmen that lie under this evil, have been drawn by this booster to build in and about Hanover-square, till they have built themselves quite out of doors in this part of the world, and so are about to cross the water to another climate, and take up their lodgings within the street adjacent to Mint-square (within the rules), where they still rear palaces in imagination, and metamorphose themselves into that species of men called castle-builders."

Newman-street and Berners-street were built between the years 1750 and 1770, and were remarkable for the residence of artists; of whom West and Russell in oil and crayon-paintings, and Bacon, sen. and jun., will long be held in remembrance. The centre house, on the west side of Cavendish-square, was built by Lord Bingley, its first stone being laid in 1723. This house is 153 feet in length and 70 in breadth. Two of the four houses on the north side, which are of stone, were intended as wings to a magnificent palace, projected by the Duke of Chandos, contemporary with Pope. The house running into Harley-street was formerly occupied by Mr. Hope, the celebrated banker, who possessed one of the finest collection of valuable paintings then existing. The sale of his effects after death occupied fourteen days, and laid the fortunes of many brokers and other purchasers. This house was afterwards occupied by another millionaire, Mr. Watson Taylor; it is now divided into several tenements. Welbeck-street is celebrated as formerly the residence of that crack-brain enthusiast, Lord George Gordon; and also of the ever-to-be-remembered Edmund Hoyle, Esquire, who died at the advanced age of 97.

Stratford-place was erected about 1775, on the Banqueting-house ground, which was built under a lease renewable for ever, granted by the Corporation of London to Edward Stratford and others, the proprietors and executors of the present magnificent houses. Here was the celebrated Banqueting-house, used by the Lord Mayor and Aldermen, for taking refreshments, when they visited the city conduits.

For the first 12 years of the present century a very steady annual increase of buildings was perceptible north-west of London; the formation of the Regent's Park gave a remarkable flip to the speculative spirit of the day, and field after field was rapidly swallowed up by the moving torrent of brick and mortar. A new style of building was introduced, by which, however, sterling comfort was sacrificed at the shrine of ornament. The houses, surrounding the Regent's Park, present the maximum of ornament, indicating wealth, but the minimum of convenience. They are, in general, small, violent digressions from true taste; and from their style of building, have the tendency to exclude both light and air so really desirable in this vicinity. Again, a taste was introduced about this time for a kind of non-descript building, termed country box or cottage, and the roads of our suburbs were soon lined with these things of Lilliputian dimensions, divided into four, six, or eight cells, in which people eat, drank, and slept, and performed the ordinary routine of idle life, protecting themselves from the balmy breath of heaven by bulwarks of rheumatic-looking trees and sickly shrubs, and enjoying their *otium cum dignitate* in the midst of brick-fields and stagnant pools. There is something strangely repugnant to the nature of most of us in being compelled to vegetate in these abominable eight-foot rooms, breaking one's shins, or the crockery at every move, sweeping off the china, trading on cats, lap-dogs, and gouty toes, and drinking bad port in a pent up atmosphere replete with carbonic acid gas. The decrease of rent is but a poor consolation for the loss of every comfort.

On the other hand we cannot but confess that many of the buildings more immediately



in the neighbourhood of the Regent's-park, while they do ample credit to the architect and builder, are all that is desirable for family residence, and are suitable for the aristocracy of wealth. Of the mansions within the area of the park, some of them have been remodelled so as to preserve no resemblance to their original form and architectural character, and many of the buildings now in hand are classically beautiful; still there is an evident deficiency of tact in jumbling the poor and rich together, for the latter soon take fright as they find themselves envied by the former.

Entering the city northward from Camden Town, we enter the parish of Clerkenwell, so named from a spring at the lower end of Clerkenwell-green, where the parish clerks of the city used annually to exhibit dramatic representations of historical events recorded in the sacred writings; which representations were well attended by the Lord Mayor and citizens, and occasionally by the nobility. Here was formerly a nunnery founded by Jordan Bristet, a wealthy baron, about the year 1100, in a field adjoining to Clerks or Clerken Well, and dedicated to the honour of God, and the Assumption of the Blessed Virgin. This priory was suppressed by Henry VIII. in 1539. Soon after the dissolution of the convent the ground came to the inheritance of Sir William Cavendish, who, being created Duke of Newcastle, built a large brick mansion on the north side of the church, on the east side of the close, which now bears the name of Newcastle-place.

Where St. John's-square now stands was formerly the Hospital of St. John of Jerusalem, which stately edifice was consumed by fire by the rebels under Wat Tyler and Jack Straw: it was rebuilt with greater magnificence, and eventually suppressed by Henry VIII. It then became a Government store-house, and was finally demolished by order of Somerset, the Protector, who employed its materials in building Somerset House. Near this spot is Cold Bath-fields, and the prison of Bridewell, of which we have a particular and curious account by Waddington; he says:—"The dissolution of monasteries and the suppression of religious houses in 1536, having driven great numbers of priests and others from their asylums, destitute of all provision or means of support, they were reduced to the miserable expedient of begging alms for a precarious existence. In a short time this became so burdensome and expensive to the nation, that a severe statute was made in 1 Edward VI., for the regulation of paupers and the punishment of vagrants. In consequence of this and other ordinary causes, multitudes of necessitous persons resorted to the metropolis for protection and relief; and it appears that some respectable citizens, either voluntarily, or more probably, as a committee instituted for that purpose, contributed liberally towards their necessities. At length, however, their wants became so pressing, and they were reduced to such misery, that in 1552, upon the recommendation of those governors, as they were called, it was thought advisable that a petition, in the name, and on behalf of those unhappy sufferers, should be addressed to the king, "beseeching him, in Christ's name," to grant the old palace of Bridewell to the city of London for their harbour and lodging. This was granted at the earnest representation of Bishop Ridley and Sir Martin Bonner, the then Lord Mayor of London, and when the indenture was presented to this pious monarch, with a blank space left for the value of lands that might be taken in mortmain, he called for pen and ink, and with his own hand wrote, "4,000 marks by the year;" exclaiming, in the hearing of his council, "Lord, I yield thee most hearty thanks that thou hast given me life thus long, to finish this work, to the glory of thy name." The preamble declares that the house of Bridewell was established, and should have continuance "for the suppression of idleness, the enemy of all virtue; and for the nourishment of good exercise, which is the conqueror of all vice. The idle strumpet and vagabond were to be forced and compelled to honest and virtuous exercise, so long as they were whole; but being sick, they were to be taken to St. Thomas's, and when cured, returned to Bridewell; and not set at liberty into the highways, as heretofore, by means whereof was made a sick beggar or whole thief." As an evidence that this establish-

ment and these regulations "had taken effect, and had good success," it is observed, "that no poor citizen at that day begged his bread; but that by some means his poverty was provided for."

(To be continued.)

#### TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLSON.

(Continued from p. 382.)

40. PINE.—Of the pine there are several species, the wood from which being well-adapted for joiners' work, is used in Great Britain; although, from the heavy import duties which are levied on North European timber, there is much temptation to devote Canadian wood to purposes for which its properties every way disqualify it.

41. The Weymouth or white, the yellow, and the pitch pine, are natives of North America; the cluster pine, or *pinaster*, which is to be found in British plantations, belongs to the rocky and more mountainous regions of Europe; extensive woods of it also cover a great portion of the sandy downs on the southern French coast; the influence of sea-breezes seeming to be congenial with its nature. The Siberian stone, or *Cembra* pine, is a beautiful species, which, on account of its ornamental character, is now cultivated to a considerable extent.

42. The timber of the white pine is said to make excellent masts, and to stand the weather moderately well; but being very subject to dry-rot, and otherwise unendurable, it is unsuitable for principal timbers in house carpentry; on the whole, however, it is one of the most serviceable of the American pines, being light, soft, straight-grained, and uniform in tinge and texture; it is very good for many descriptions of moveable articles. It is one of the largest of the species, and is imported to this country in balks, sometimes 30 feet long and 2 feet square. The wood is of rather a rich and dark yellow, and has a particular odour; from the evenness of the texture, and the comparative absence of resinous matter, the annual rings are not very distinct. The yellow pine is also used in Britain for house and ship-carpentry.\* The pitch pine abounds in a soft and fragrant resin, which renders the wood, which is of a deeper colour than that of the Scotch fir, heavy and difficult to work: this timber affords conclusive evidence that the presence of resin is not a guarantee of strength, for it is not very durable at its best, and is brittle when dry. The cluster pine is not so deep in the colour of the wood as the Scotch fir; it reaches to a size greater than that tree, being of a rapid and luxuriant growth, and that, too, in sandy tracts wherein any other tree could scarcely live, attaining in fifty or sixty years a height of as many feet, with girth proportionate: it yields both resin and turpentine.

43. LARCH.—This is another of the pine tribe; and, in the live tree, perhaps the most beautiful of them. It is of rapid growth, tall, straight, tapering, and furnished with pendulous branches, bearing a delicately-drooping and feathery spray. It is, moreover, a very valuable timber, the only drawback to its extensive application in house-carpentry being its want of stiffness, as it is exceedingly durable in whatever situation it is employed; and for ship-building deemed excellent. For joiners' work, and even cabinet-making, it is very available; and, indeed, is in many parts superseding the common fir-wood, being susceptible of receiving a superior surface; and, from the beauty of the wood, when deepened by oil or varnish, the cost of painting is rendered unnecessary. For stairs and floor-boards, besides the above valuable properties, it has to recommend it that of standing more wear and tear than deal will undergo, a circumstance of paramount consideration.

44. Besides the European species, which is indigenous to Siberia, the Alps, Germany, and Italy, and of which the timber of the latter is held in the highest estimation, there are two from America, namely, the black or Tamarack, and the red species; and which are considered somewhat inferior to the former. The European varieties all thrive well in this country; and

\* [But should be almost wholly excluded from work intended to be durable.—Ed.]

the Italian larch, which is a straight tree of quick growth, is being propagated to a considerable extent. Of the American species, the timber of the first-named is said to be in quality almost equal to that of the European—the second is next in quality, and not much behind the other. The European larch yields the Venice turpentine, which the American does not. Unfortunately of the kinds grown in this country, the worst is the most abundant.

45. The sapwood of larch loses two-fifths of its weight in drying; and the timber throughout, a great deal in seasoning; but it stands well afterwards, and is not subject to worms. It is not so easy as fir to work, but the superior finish of its surface compensates for that inconvenience; and it bears well the driving of nails and bolts. In the European kinds the wood is of a yellow colour; but there are two descriptions—one tending more to the red and the other to the white kind: the former is the closer, straighter, and harder of the two, and necessarily the better wood: it has no larger transverse septæ; the annual rings are distinct, their harder part being more of a dark-reddish tinge than the general colour of the wood. The age for felling is from fifty years upwards; but it has been found that by dis-barking a year or two before felling, timber of thirty years' growth is rendered as durable as if cut down at fifty and treated in the ordinary way; the hardness of the wood being thereby considerably increased while dryness is insured; besides its tending to remedy the deficiency in stiffness which disqualifies this timber for some uses; the practice must therefore be a profitable one; and even stripping in spring and felling late in the autumn of the same year, is one which would make amends for the extra trouble.

46. The larch was employed to some extent in ancient Rome, where, however, it does not appear to have been cultivated—Vitruvius having had occasion to lament the obstacles which existed to its more general introduction.†

47. CEDAR.—This also is one of the pines, and a handsome and valuable tree; producing, in several of its species, very beautiful and useful wood; although its scarcity in this country precludes its application to building purposes. The following are some of the best known, namely, the cedar of Lebanon, a native of Mount Libanus; the *Bermudian*, a native of Bermuda and the Bahama Islands; the *Virginian*, a native of the West Indies, North America, and Japan; and the *Brown-berried*, a native of Spain, the South of France, and the Levant.

48. The cedar of Libanus or Lebanon (also called the cedar; being the *cedrus magna* of the ancients), is a tree of considerable size; an evergreen, and coniferous: it is considered, on account of its large dimensions, to be the species from which those immense pillars and beams were formed, that are recorded as having been employed in the construction of ancient temples—its use in that of Apollo at Utica, is mentioned by Pliny. The cones are almost round, are smooth in their scales, and stand erect; the leaves are small, narrow, and thick-set. The Virginian or pencil cedar, is the species used by makers of black-lead pencils in Britain, and which artists who have used those of Continental manufacture will attest to be admirably adapted for the purpose; it is very durable and not subject to worms or insects. The species last enumerated above is supposed to be the famous cedar of the ancients, which they employed for their statuary before the use of marble was known for that branch of art; it is celebrated for its durability, being almost incorruptible. There are some fine cedars grown in this country.‡

49. The colour of cedar-wood generally is a light pinkish brown in the heart wood, and a creamy white in the sapwood; the annual rings are distinct, and consist of two parts—one being light and soft, and the other,

† The stag feeds readily on its young branches; yet a girl died at Lanark, in Scotland, 3rd May, 1840, in consequence of having masticated and swallowed some larch bark the day previous.

‡ The best use for this kind of wood is for the interior of wardrobes, and the shelves and other fittings of libraries; its strong fragrance preventing the destructive operations of moths and other insects. It is also used in superior work, for the seats of water-closets, being more comfortable than mahogany.—Ed.]



which contains resin, harder and darker; it has no larger transverse septæ; but the lesser exhibit, when the wood is smoothed across the growth, a small and beautiful mottling. The grain is straight, and in texture nearly uniform; it is light and easily worked, splits readily, and is rather brittle; it is somewhat bitter to taste, and has a strong and peculiar odour; qualities which effectually fortify it against worms and insects: this exemption, together with its toughness and durability, are the chief properties it possesses—both the latter existing in it to a very high degree: those of strength and stiffness, especially the latter, it is materially deficient in; which renders it therefore unfit for carpentry; it is very useful, however, in cabinet-making, whether for interior fittings, or the outside shell; the figured portions, in particular, being very beautiful when brought to the smooth surface, and high polish of which the wood is susceptible.

(To be continued.)

#### RETROSPECTIVE ARCHITECTURAL LITERATURE.

COLLECTED BY SIR HENRY WOTTON, KNIGHT.

From the best Authors and Examples.

#### THE ELEMENTS OF ARCHITECTURE.

I SHALL not need (like the most part of Writers) to celebrate the Subject which I deliver; in that Point I am at Ease: For Architecture can want no Commendation, where there are noble Men, or noble Minds: I will therefore spend this Preface rather about those from whom I have gathered my Knowledge: For I am but a Gatherer and Disposer of other Men's Stuff at my best Value.

Our principal Master is Vitruvius, and so I shall often call him, who had this Felicity, that he wrote when the Roman Empire was near the Pitch; or at least, when Augustus (who favoured his Endeavours) had some Meaning (if he were not mistaken) to bound the \* Monarchy: This, I say, was his good hap, for in growing and enlarging Times, Arts are commonly drowned in Action: But on the other side, it was in truth an Unhappiness to express himself so ill, especially writing (as he did) in a Season of the ablest Pens; and his Obscurity had this strange Fortune, that though he were best practised and best followed by his own Countrymen, yet after the reviving and repolishing of good Literature (which the Combinations and Tumults of the middle Age had uncivilized) he was best, or at least, first understood by Strangers: For of the Italians that took him in hand, those that were Grammarians seem to have wanted Mathematical Knowledge, and the Mathematicians perhaps wanted Grammar, till both were sufficiently conjoined in Leon Baptista Alberti the Florentine, whom I repute the first learned Architect beyond the Alps; but he studied more indeed to make himself an Author, than to illustrate his Master: Therefore among his Commenters, I must (for my private Conceit) yield the chief Praise unto the French, in Philander; and to the High-Germans, in Guastulus Rivius, who, besides his Notes, hath likewise published the most elaborate Translation that I think is extant in any vulgar Speech of the World, though not without bewailing now and then, some Defect of artificial Terms in his own, as I must likewise: for if the Saxon (our Mother Tongue) did complain; as justly (I doubt) in this Point may the Daughter: Languages for the most part, in Terms of Art and Erudition, retaining their original Poverty, and rather growing rich and abundant in complementary Phrases, and such Froth. Touching diverse modern Men, that have written out of meer Practice, I shall give them their Due upon Occasion.

And now, after this short Censure of others, I would fain satisfy an Objection or two, which seem to lie somewhat heavily upon my self: It will be said that I handle an Art no way suitable either to my Employments, or to my Fortune; and so I shall stand charged both with Intrusion and with Impertinency.

To the First I answer, That though by the ever-acknowledged Goodness of my most dear and gracious Sovereign, and by his long indulgent Toleration of my Defects, I have born Abroad some part of his Civil Service; yet when I came Home, and was again resolved into my own Simplicity, I found it fitter for my Pen (at least in this first publick Adventure) to deal with these plain Complements,

\* Tacit. Lib. 1. Annal.

and tractable Materials, than with the Labyrinths and Mysteries of Courts and States; and less Presumption for me, who have long contemplated a famous Republick, to write now of Architecture, than it was anciently for \* Hippodamus the Milesian to write of Republicks, who was himself but an Architect.

To the Second, I must shrink up my shoulders, as I have learned Abroad, and confess indeed, that my Fortune is very unable to exemplify and actuate my Speculations in this Art, which yet, in truth, made be rather, even from my very Disability, take Encouragement to hope that my present Labour would find the more Favour with others, since it was undertaken for no Man's sake less than mine own: And with that Confidence I fell into these Thoughts, of which there were two Ways to be delivered: The one Historical, by Description of the principal Works performed already in good part by Giorgio Vasari, in the Lives of Architects: The other Logical, by casting the Rules and Cautions of this Art into some comfortable Method, whereof I have made choice, not only as the shortest and most elemental, but indeed as the soundest: For though in practical Knowledge every complete Example may bear the Credit of a Rule, yet, peradventure, Rules should precede, that we may by them be made fit to judge of Examples. Therefore to the Purpose, for I will Preface no longer.

PART I.—In Architecture, as in all other Operative Arts, the End must direct the Operation.

#### THE END IS TO BUILD WELL.

Well Building hath three Conditions; *Commodity, Firmness, and Delight.*

A common Division among the Deliverers of this Art, though I know not how somewhat misplaced by Vitruvius himself, (Lib. 1. Cap. 3.) whom I shall be willing to follow, as a Master of Proportion than of Method.

Now, for the attaining of these Intentions, we may consider the whole Subject under two General Heads:

#### THE SEAT, AND THE WORK.

Therefore, first touching Situation. The Precepts thereunto belonging, do either concern the Total Posture, (as I may term it) or the placing of the Parts: Whereof the first Sort, howsoever usually set down by Architects as a Piece of their Profession, yet are in truth borrowed from other Learnings; there being between Arts and Sciences, as well as between Men, a kind of good Fellowship, and Communication of their Principles.

For you shall find some of them to be merely Physical, touching the Quality and Temper of the Air; which being a perpetual Ambient and Ingredient, and the Defects thereof incorrigible in single Habitations (which I most intend) doth in those Respects require the more exquisite Caution: That it be not too gross, nor too penetrations, nor subject to any foggy Noisomeness from Fens or Marshes near adjoining, nor to mineral Exhalations from the Soil itself: not undigested for want of Sun; not unexercised for want of Wind; which were to live (as it were) in a Lake, or standing Pool of Air, as Alberti, the Florentine Architect, doth ingeniously compare it.

Some do rather seem a little Astrological, as when they warn us from Places of malign Influence, where Earthquakes, Contagions, Prodigious Births, or the like, are frequent, without any evident Cause; whereof the Consideration is, peradventure, not altogether vain: Some are plainly Oeconomical; as that the Seat be well watered and well fuelled; that it be not of too steepy and inconvenient Access, to the Trouble both of Friends and Family; that it lie not too far from some Navigable River, or Arm of the Sea, for more Ease of Provision, and such other Domestic Notes.

Some again may be said to be Optical; such I mean, as concern the Properties of a well-chosen Prospect, which I will call the Royalty of Sight: For as there is a Lordship (as it were) of the Feet, wherein the Master doth much joy when he walketh about the Line of his own Possessions; so there is a Lordship likewise of the Eye, which being a ranging, and imperious, and (I might say) an usurping Sense, can endure no narrow Circumscription, but must be fed both with Extent and Variety: Yet on the other side, I find vast and inde-

finite Views, which drown all Apprehensions of the uttermost Objects, condemned by good Authors, as if thereby, some part of the Pleasure (whereof we speak) did perish. Lastly, I remember a private Caution, which I know not well how to sort, unless I should call it Political, by no means to build too near a great Neighbour; which were, in truth, to be as unfortunately seated on the Earth, as Mercury is in the Heavens, for the most part ever in Combustion or Obscurity, under brighter Beams than his own.

From these several Knowledge, as I have said,\* and perhaps from some other, Architects do derive their Doctrine about Election of Seats, wherein I have not been so severe as a great Scholar of our Time, who precisely restraineth a perfect Scituation, at least for the main Point of Health, *Ad locum contra quem Sol radios suos fundit cum sub Ariete oritur*; that is, in a word, He would have the first Salutation of the Spring. But such Notes as these, wheresoever we find them in grave or slight Authors, are, to my Conceit, rather Wishes than Precepts; and in that Quality I will pass them over. Yet I must withal say, that in the Seating our selves (which is a kind of Marriage to a Place) Builders should be as circumspect as Wooers, lest, when all is done, that Doom befall us, † which our Master doth lay upon Mytelene: A Town, in truth, (saith he) finely built, but foolishly planted. And so much touching that which I termed the Total Posture.

The next in Order, is the placing of the Parts; about which (to leave as little as I may in my present Labour, unto Fancy, which is wild and irregular) I will propound a Rule of mine own Collection, upon which I fell in this manner: I had noted, that all Art was then in truest Perfection, when it might be reduced to some natural Principle: For what are the most judicious Artizans, but the Mimicks of Nature? This led me to contemplate the Fabrick of our own Bodies, wherein the High Architect of the World hath displayed such Skill, as did stupify all humane Reason: There I found the Heart, as the Fountain of Life, placed about the Middle, for the more equal Communication of the vital Spirits; the Eyes seated aloft, that they might describe the greater Circle within their View; the Arms projected on each Side, for ease of Reaching: Briefly (not to lose ourselves in this sweet Speculation) it plainly appeareth as a Maxim drawn from the divine Light, that the Place of every Part is to be determined by the Use.

So then from natural Structure to proceed to artificial, and in the rudest Things, to preserve some Image of the excellentest, let all the principal Chambers of Delight, all Studies and Libraries be towards the East; for the Morning is a Friend to the Muses. All Offices that require Heat, as Kitchens, Stillatories, Stoves, Rooms for Baking, Brewing, Washing or the like, would be Meridional. All that need a cool and fresh Temper, as Cellars, Pantries, Butteries, Granaries, to the North: To the same side likewise, all that are appointed for gentle Motion, as Galleries, especially in warm Climes, or that otherwise require a steady and unvariable Light, as Pinacotheca (saith Vitruvius) by which he intendeth (if I may guess at his Greek, as we must do often even at his Latin) certain Repositories for Works of Rarity, in Picture or other Arts, by the Italians called Studioli, which at any other Quarter, where the Course of the Sun doth diversify, the Shadows would lose much of their Grace: And by this Rule, having always regard to the Use, any other Part may be fitly accommodated.

I must here not omit to note, that the ancient Grecians and the Romans, by their Example in their Buildings abroad, where the Seat was free, did almost religiously scituate the Front of their Houses towards the South, perhaps that the Master's Eye, when he came home, might not be dazzled, or that being illustrated by the Sun, it might yield the more graceful Aspect, or some such Reason. But from this the modern Italians do vary, whereof I shall speak more in another Place. Let thus much suffice at the present, for the Position of the several Members, wherein must be had, as our Author doth often insinuate, and especially, (Lib. 6. Cap. 10.) a singular regard to

\* Joannes Hearnius Instit. Medicin. Lib. 7. Cap. 2.

† Oppidum quidem edificatum eleganter sed imprudenter positum.

\* Aristot. 2. Lib. Polit. Cap. 6.



the Nature of the Region: Every Nation being tied above all Rules whatsoever, to a Discretion of providing against their own Inconveniences; and therefore a good Parlour in Egypt, would perchance make a good Cellar in England.

There now followeth the second Branch of the general Section touching the Work.

In the Work I will first consider the principal Parts, and afterwards the Accessory, or Ornaments: And in the Principal, first the Preparation of the Materials, and then the Disposition, which is the Form.

Now concerning the Material Part, although, surely, it cannot disgrace an Architect, which doth so well become a Philosopher, to look into the Properties of Stone and Wood; as that Fir-Trees, Cypressess, Cedars, and such other aerial aspiring Plants, being by a kind of natural Rigour (which in a Man I would call Pride) inflexible downwards, are thereby fittest for Posts or Pillars, or such upright Use; that on the other Side, Oak and the like true hearty Timber, being strong in all Positions, may be better trusted in cross and traverse Work, for Summers, or girding and binding Beams, as they term them. And so likewise to observe of Stone, that some are better within, and other to bear Weather: Nay, to descend lower, even to examine Sand and Lime, and Clay, (of all which Things Vitruvius hath discoursed, without any Dainties, and the most of new Writers) I say, though the Speculative Part of such Knowledge be liberal, yet to redeem this Profession, and my present Pains from Indignity, I must here remember, that to chuse and sort the Materials for every part of the Fabrick, is a Duty more proper to a second Superintendant over all the under Artizans, called (as I take it) by our Author, Officiator, (Lib 6, Cap. 11,) and in that Place expressly distinguished from the Architect, whose Glory doth more consist in the Designment and Idea of the whole Work; and his truest Ambition should be to make the Form, which is the nobler Part (as it were) triumph over the Matter; whereof I cannot but mention, by the way, a foreign Pattern, namely, the Church of Santa Giustina in Padua. In truth, a sound Piece of good Art, where the Materials being but ordinary Stone, without any Garnishment of Sculpture, do yet ravish the Beholder (and he knows not how) by a secret Harmony in the Proportions. And this, indeed, is that End, which, in some degree, we should aim even in the privatest Works; whereunto, though I make haste, yet let me first collect a few of the least trivial Cautions belonging to the Material Provision.

Leon Baptista Alberti is so curious, as to wish all the Timber cut out of the same Forest, and all the Stone out of the same Quarry.

Philibert de l'Orme, the French Architect, goes yet somewhat farther, and would have the Lime made of the very same Stone which we intend to employ in the Work, as, belike, imagining that they will sympathize and join the better by a kind of original Kindred. But such Conceits as these seem somewhat too fine among this Rubbish, though I do not produce them in Sport; for surely the like Agreements of Nature may have oftentimes a discreet Application to Art: Always it must be confessed, that to make Lime without any great Choice of Refuse-Stuff, as we commonly do, is an English Error of no small Moment in our Buildings: Whereas the Italians at this Day, and much more the Ancients, did burn their firmest Stone, and even Fragments of Marble, where it was copious, which in Time became almost Marble again, or at least of indissoluble Durity, as appeareth in the standing Theatres. I must not here omit, while I am speaking of this Part, a certain Form of Brick, described by Daniel Barbaro, Patriarch of Aquileia, in the largest Edition of his Commentary upon Vitruvius: The Figure triangular, every Side a foot long, and some Inch and a half thick, which he doth commend unto us for many good Conditions; as that they are more commodious in the Management, of less Expence, of fairer Show, adding much Beauty and Strength to the mural Angles, where they fall gracefully into an indented Work; so as I should wonder that we have not taken them into Use, being propounded by a Man of good Authority in this Knowledge, but that all Nations do start at Novelties, and are indeed married to their own Molds. Into this Place might aptly fall a Doubt, which some have

well moved, whether the ancient Italians did burn their Brick or no; which a Passage or two in Vitruvius hath left ambiguous. Surely, where the natural Heat is strong enough to supply the artificial, it were but a curious Folly to multiply both Labour and Expence. And it is besides very probable that those Materials, with a kindly and temperate Heat, would prove fairer, smoother, and less distorted than with a violent: Only they suffer two Exceptions, First, that they are likely by such a gentle drying, to be the more ponderous, an important Circumstance to the main of the Work in the Compilement. The next is of no less moment, That they will want a certain sucking and soaking Thirstiness, or a fiery Appetite to drink in the Lime which must knit the Fabrick. But this Question is to be confined to the South, where there is more Sun and Patience; I will therefore not hinder my Course with this incident Scruple, but close that Part which I have now in hand about the Materials, with this principal Caution, that sufficient Stuff and Money be ready before we begin; for when we build now a Piece, and then another, by Fits, the Work dries and sinks unequally, whereby the Walls grow full of Chinks and Crevices; wherefore such a pausing Humour is well reproved by Palladio, (Lib. 1, Cap. 1,) and by all other. And so having gleaned these few Remembrances touching the Preparation of the Matter, I may now proceed to the Disposition thereof, which must form the Work. In the Form, as I did it in the Seat, I will first consider the general Figuration, and then the several Members.

(To be continued.)

#### A GLANCE AT THE INTERIOR OF THE CHURCHES IN THE DEANERY OF SPARKHAM, IN NORFOLK—NO. II.

WITH NOTICES OF THEIR ACTUAL CONDITION.

*Morton-on-the-Hill, antique Helmingham.*—The little church of Morton, with its slender round tower, occupies a position of scenic beauty not frequently occurring in this county. Looking down from among the tall fir-trees, which embower the summit capped by it, over the long valley of the Wensum,

"Exulting and abounding river

Making its waves a blessing as they flow,"

the edifice forms, in its rude antiquity, picturesque background to the fine mansion that rises immediately beneath. Pass within the sanctuary and learn how frail and liable to decay even the strongest work of man; come forth again to confess how lovely, as well as enduring, are the features of nature.

But decay is not the only enemy with which our sacred piles have had to contend; covetousness, and a taste which it were complimentary to call "debased," have wrought in aid here. The neglect of a wordly age has, moreover, joined to impair what had escaped the ravages of fanaticism. A change has happily come over the views of many in this respect, but zeal—patient and temperate zeal to restore the diminished honours of his worship—has yet a wide range of usefulness. To return, however, to the subject more immediately in hand.

The form, or rather the ground-plan, of this church, is somewhat peculiar, a north aisle or chapel ranging with the east end of the nave, while it falls short of the other's length by about one-third. A screen probably crossed this aisle, separating the eastern portion of it from the rest to form a chantry: that an altar stood within it we gather from the piscina in the south wall yet visible, and John de Weston, by his will, dated June 4, 1375, bequeathing his body to be buried in the chapel next the chancel of the church of St. Margaret the Virgin in Helmingham.\* Inarched in the north wall of the chapel is an antique monument without inscription, but bearing a cross cut in wood: two grave-stones on the pavement, charged with brasses exhibiting portraits in armour, were to be found here about the middle of the last century. An altar-tomb, also inarched, bears a memorial to one of the Southwell family, former lords of the soil here, albeit "the place thereof knoweth them no more."

We were pained to detect in every portion of this interesting relic, manifest tokens of neglect, and consequent dissolution. "If a

man's stable for his horse," says the Homily, "yea, the sty for his swine, be not able to hold out water and wind, how careful is he to do cost thereon; yet the world thinketh it but a trifle to see their church in ruin and decay." A niche in the north wall of the chancel, and opposite to it a small window at less than man's height from the sward, may recall the watchings of the sepulchral light, anciently observed on Easter eve. We have cast aside such mummeries, some one will say; true, but in parting with them, we have grown careless also of God's house, and the inestimable privileges there vouchsafed to us. Modern affluence can be liberal enough in its expenditure on secularities, but ask a pittance for the wants of the sanctuary, and *deficit crumena*, the purse labours under a consumption. Far better were it, however, that we should insist, like David, on laying our *shekels*, as well as our prayers, on the altar of peace-offering.

Seem we over earnest? At a time when the average repair of our churches is so depressed, it reflects small credit on any parish to find the condition of *theirs* infinitely below that average. We should feel ourselves not unjustified in passing severe comment, but would avoid at some sacrifice the risk of individual application; mindful of a certain Sir Roger de Coverley and his advice, "to take care how we meddle with country squires, the ornaments of the English nation, men of good heads and sound bodies."

But in serious earnestness be it asked, why should not a Diocesan Architectural Society, be established among us? If such an association had been in existence during the last twenty years only, it could hardly have proved altogether inoperative against the Vandalizing, which has been even in that space perpetrated. This by way of appeal; we would raise a spirit like Nehemiah's, that should go forth, and restore all the desolations of our Zion: "Why should not my countenance be sad, when the place of my fathers' sepulchres lieth waste?" Neh. ii. 3.

We next propose to treat of the neighbouring church of Weston Longueville and its condition. C. T.

#### THE LATE DR. DALTON.

THIS celebrated chemist and philosopher died on the 19th ult., at Manchester, in his 78th year. He was a native of Kendal, but has for a long series of years been connected with Manchester, where for more than half a century he has been an active and invaluable member of the Literary and Philosophical Society in that town, having, together with his friend Dr. Edward Holme, M.D., F.L.S., been elected on the 25th April, 1794. Indeed, they were the oldest surviving members of the society, with the sole exception of Sir George Philips, Bart., who became a member of it in 1785. Dr. Dalton had been president of this society since 1817. In 1768, he commenced his "Meteorological Observations," which have been continued to the present time. In 1793, he published a volume of "Meteorological Observations and Essays," a work which displays much original thinking, and the germs of some of Dalton's after discoveries. Some time afterwards he was appointed to the situation of Professor of Mathematics and Natural Philosophy in the New College, Mosley-street, Manchester. He resided for about six years within the institution, with which Dr. Barnes was contemporaneously connected as Theological Professor, and continued to hold his office until the college was finally removed to York. On withdrawing from the college, in the year 1799, Dalton began to teach mathematics and natural philosophy at his own residence. The deceased was a member of the Society of Friends.

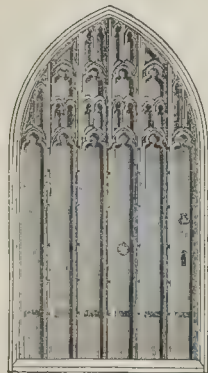
BEACON ON THE GOODWIN SANDS.—The beacon recently erected on the eastern edge of the Goodwin Sands remains firm, and bids fair to be as effectual and substantial as that of Captain Bullock's on another part of the sands, and which has withstood the tempests of three winters. The new beacon is 45 feet high. It has been placed as a guide to ships passing on the outside of that dangerous bank:

\* Parkin's History of Norfolk.

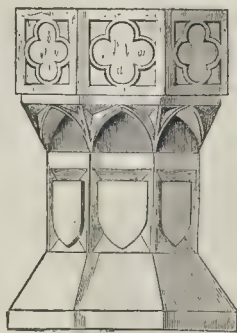




VIEW OF ROCKHAMPTON CHURCH, GLOUCESTER.



PORCH DOOR.



ELEVATION OF THE FONT.



Plan of the Ribs of the Door.

PISCINA IN THE CHANCEL.



FRONT.



HALF PLAN.



SECTION.

## TO THE EDITOR OF THE BUILDER.

SIR,—The above is a small church of the 14th century, situated in a secluded spot about two miles from the market-town of Thornbury; but is seldom visited by persons having a taste for antiquarian pursuits, being at some distance from the main road. It harmonizes well with the surrounding scenery; (and where is there an ancient church that does not?)

This rural temple is of small dimensions, and consists of a chancel, nave, tower, and south porch. The tower is of three stages, and a handsome little tower it is. The buttresses at its angles are finished a few feet below the parapet, which is pierced with cinque-foiled panels, and gives a pleasing effect to the whole. At the north-east angle is a belfry turret, finished at its summit with a pyramidal

capping: the pinnacles have five foil-headed panels sunk in them. Ivy is growing very luxuriantly on the western side, and adds to the rural appearance of the building.

At the south-east angle of the nave is a small square turret, doubtless erected to receive the water from the piscina in the interior wall. I could not perceive any aperture but the one shewn in the view above. In the porch there is a very good oak door of perpendicular date, such as is not often found in small churches; a sketch of it is here inserted.

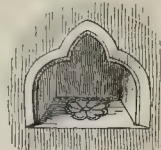
The windows are simply square-headed, two-light five-foiled ones, with a hood-moulding and a wide splay on the interior, excepting those of the tower, the west and belfry, which are pointed two-light trefoiled windows with tracery, and one in the nave of debased character.

On the south side of chancel are four sedilia of equal height, with seven-foiled heads, and a shield in the centre of each compartment; the seat is formed on the window-sill, and projects 8½ inches beyond the face of wall; near it, on the eastern side, is another piscina, with a cinque-foiled headed arch; a doorway on the north side has been blocked up many years. The roof is semi-circular, and of little or no interest. The chancel arch is plain. In its right position, at the west end of the nave, stands the font, which is of rather poor design; it is 2 feet 10 inches in height, depth of bowl 9½ inches, ditto of interior 6½ inches, diameter across top 1 foot 10½ inches.

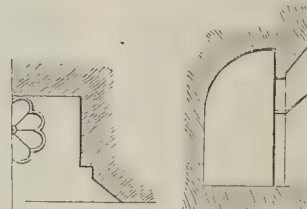
On the summit of the porch-gable is placed a dial, which by no means improves the effect of the church.

Of the history of this little edifice I at present know nothing, but may at some future time; if so, I will send it. J. N. H.

PISCINA IN THE SOUTH WALL OF THE NAVE.



Front.



HALF PLAN.

SECTION.

## LECTURES ON ARCHITECTURE AND ANTIQUITIES.

## Lecture IV.

## ROMAN ARCHITECTURE.

"Roma, Roma, Roma, non e più come era prima."\*

ROME, regal, republican, imperial, papal Rome, has for ages excited the wonder of the world, from the time that Romulus planned his humble capital,† over whose walls his brother Remus leaped in contempt, until the days of the emperors, whose word was a law to the whole world, and under whom the seven-hilled city arose into a magnificence and splendour worthy of the mightiest nation that ever lived. There is a fascinating influence shed over the history of this wonderful people from which the mind is perhaps never wholly freed. From our childhood we are led to look upon the Roman heroes as almost placed above the ordinary standard of mortality. Brutus and Caesar, and Pompey and Cato, and the Scipios, and the Decii, and Fabricii, and a long train of illustrious characters, "men more than kings," appear as beings of a superior mould; whilst the names of Virgil, Horace, and Ovid, are synonymous with all that is most exquisite in the regions of poetry; and the orators, philosophers, and historians of Rome occupy the chiefest niches in the Temple of Fame. It is from the recollection of her immortal names that the traveller derives so much of his pleasurable emotions when he visits the eternal city, where

"The very dust we tread stirs as with life,  
And not a breath but from the ground sends up  
Something of human grandeur." ROGERS.

It is true that Rome has become  
"The Niobe of nations;" BYRON.  
that she has fallen from her proud pre-eminence,

"But falling (she has) kept the highest seat,  
And in her loneliness, her pomp of woe  
Where now she dwells, withdrawn into the wild,  
Still o'er the mind maintains from age to age  
Her empire undiminished." ROGERS.

\* "Roma, Roma, thou art no more what thou hast been."

† According to Cato Rome was built 752 B.C. According to Varro 754 B.C.



In addition to the magnificent buildings erected by the Cæsars,

"When Rome in noon-tide empire grasp'd the world,"  
THOMSON.

modern Rome attracts the observation of the visitor by the scarcely less splendid structures which arose under the auspices of the popes, who, calling themselves, in the pride of humility, "the servants of servants," assumed a power little inferior to that of the former imperial masters of Rome, trampled upon prostrate kings, compelled haughty emperors to perform the offices of menials, issued their imperious mandates to the ends of the globe, and thundered forth their dreaded anathemas against kings, or a whole people, who presumed to question their infallibility.

"Those ancient men, what were they, who achieved  
A sway beyond the greatest conquerors;  
Setting their feet upon the necks of kings,  
And thro' the world subduing, chaining down  
The free immortal spirit? Were they not  
Mighty magicians?" ROGERS.

Their power, like that of their predecessors, is gone, it is to be hoped, for ever; but, whilst we condemn their presumption in arrogating to themselves an authority to which they had no just pretension, we must do them the justice to admit that they patronized the fine arts, encouraged learning, and promoted taste. The religious structures erected by them were adorned with the productions of men whose "pencil had a voice;"\* and the matchless paintings of Michael Angelo, of Raffiello, and Corregio, in particular, with a host of others who trod in the footsteps of those "divine masters," divide the attention of the tourist with the buildings; and above all these attractions are perhaps to be named those statues in the Vatican and Capitol, of which we can hardly speak in measured terms. The Apollo Belvidere, that unrivalled model of manly beauty, has been well described by the noble author of "Childe Harold" (Canto iv. St. 161); an earlier description may therefore be welcome, it is that of Thomson:—

"All conquest-flush'd from prostrate Python came  
The Quiver'd God. In graceful act he stands,  
His arm extended with the slackened bow,  
Light flows his easy robe, and fair displays  
A manly-softened form. The bloom of gods  
Seems youthful o'er the beardless cheek to wave;  
And sweet subsiding to a native smile,  
Mixt with the joy elating conquest gives,  
A scatter'd frown exalts his matchless air."

This statue was found (as was also the Fighting Gladiator) in the ruins of the ancient city of Antium; in Flaxman's opinion it is only a copy! What must the original have been? The famous group of Laocoon and his sons has been also nobly described by Lord Byron, but the following apposite lines by Mrs. Hemans are less familiar:—

"And mark yon group, transfixed with many a  
throe,  
Sealed with the image of eternal woe:  
With fearful truth, terrific power, express,  
Thy pangs, Laocoon, agonize the breast,  
And the stern combat picture to mankind,  
Of suffering nature and enduring mind.  
Oh, mighty conflict! tho' his pains intense  
Distend each nerve, and dart thro' every sense;  
Tho' fixed on him, his children's suppliant eyes  
Implore the aid avenging fate denies;  
Tho' with the giant-snake in fruitless strife,  
Heaves every muscle with convulsive life,  
And in each limb Existence writhes, enrol'd  
'Midst the dread circles of the venom'd fold;  
Yet the strong spirit lives,—and not a cry,  
Shall own the might of Nature's agony!  
That furrow'd brow unconquered soul reveals,  
That patient age to angry heaven appeals,  
That struggling bosom concentrates its breath  
Nor yields one moan to torture or to death!"†

This sublime group was the joint production of Greek sculptors, Agesander, Apollodorus, and Athenodorus of Rhodes. The statue called the Dying Gladiator, supposed to be only a copy of the famous work of Cteslaus,† and likewise well-known in Lord Byron's graphic description, I prefer therefore to quote again from the author of "the Seasons," who thus alludes to the "Dying Other":—

"Supported on his shorten'd arm he leans,  
Prone agonizing, with incumbent fate  
Heavy declines his head, yet dark beneath  
The suffering feature sullen Vengeance lours,  
Shame, indignation, unaccomplish'd rage,  
And still the cheated eye expects his fall."

This statue was found in the gardens of Sallust, the right arm was entirely restored by Michael-Angelo. Countless as the stars are the unrivalled works, the productions of Greek artists, which adorn the different galleries at Rome. Well therefore might the author of "Italy" exclaim,

"Who would not say the forms  
Most perfect, most divine, had by consent  
Fleck'd thither to abide eternally,  
Within those silent chambers where they dwell  
In happy intercourse?" ROGERS.

It is not wonderful, therefore, that such a combination of the beautiful and sublime in architecture, painting, and sculpture, should have made Rome what it is, the metropolis of the fine arts, and a point of attraction to all who have opportunity, leisure, or wealth, wherewith to gratify their taste or curiosity by a sight of the treasures it contains. And what has Greece to offer to the general traveller to compare with this? After having viewed all the magnificence of the eternal city, he sees in Athens and other parts of Greece, with slight exceptions, nothing but broken columns, fragments of marble, ruins on every side, the mere wrecks of once-mighty fabrics;—here are no paintings,—the works of Zeuxis and Apelles are lost for ever;—here are no statues,—the performances of Phidias, of Praxiteles, of Lysippus (who, himself, alone produced 600 works), have either disappeared, or have been removed to distant countries. Unless a person, therefore, have a strong relish for art, and a previous acquaintance with the outlines of Grecian architecture, he will, no doubt, be disappointed in the remains of that style.

Before we proceed to notice the structures of Rome, we shall pause to consider the five orders of architecture which form the standard of the Roman and Italian schools. We have seen in the last lecture that the Greeks had but three orders, the Doric, the Ionic, and the Corinthian; to these the Romans added two more, the Tuscan and the Composite. The Roman Doric, Ionic, and Corinthian orders are derived from those of the Greeks; it was a restless spirit of innovation, and a desire for novelty, which prompted the addition of the two other orders. The Roman Doric differs from its Grecian proto-type in many respects. The first step taken to infringe upon the solid simplicity of the Greek model, was to lengthen the shaft of the column in proportion to its diameter, so that when the two orders are drawn to one height, the difference of proportion is so great, that the lower diameter of the Roman column will be only equal to the upper diameter of the Grecian column. Instead, too, of the shaft of the column resting securely at once upon its platform, as in the early and best examples of Greece, the Romans placed theirs upon a base (and sometimes upon lofty pedestals); they likewise frequently left the shafts unfluted, which omission gives them an unfinished appearance when compared with the Greek models. A still greater deviation took place in the capital; the members of the Greek capital are actually retained, but mouldings are added above, and a necking is placed below. The Greek proto-type has always been admired for its simplicity; and the excellent effect produced arises from the very few lines of which it is composed. As this order was the favourite of the Greeks, and as the capital is one of its great beauties, we will search a little into its origin, for which purpose we must retrace our steps to Egypt. In the front of a cavern-tomb at Beni-hassan are two fluted columns, which are simply covered with the flat square member called the abacus. "In this representation," observes Mr. Gwilt, who gave the sketch from Mr. Charles Barry, "the reader will in it be struck by the appearance of the Doric column almost in its purity. Wilkinson is of opinion that the date of these tombs is 1740 B.C., an antiquity that can be assigned to no example in Greece." In the interior of another excavated temple at Kalapothie, 25 leagues above the first cataracts, are fluted columns, which are also crowned with the abacus (as in the sketch which has appeared in THE BUILDER under

the glossarial article "Column," which is also taken from Mr. Gwilt's edition of Sir W. Chambers' "Civil Architecture"). Denon has given some similar columns, which he says decorated the galleries of the temple at Karnac. All these seem to afford strong proofs of the origin of the Doric; but the echinus is absent: and the more tasteful eye of the Greek led him to discover that something was wanting to ameliorate the unsatisfactory appearance occasioned by the shaft running up at once to a member which overhung it so much; he added, therefore, the moulding called the echinus, which connects the two in the most harmonious manner. This simple arrangement is quite destroyed by the Roman plan of placing superfluous mouldings above the deep abacus, which had been always hitherto the crowning member. The entablature loses much of its imposing and simple effect from the needless repetition of mouldings; and the architrave is made considerably less than the frieze, a practice not in accordance with common sense, as well as an offence against good taste; for, as the lowest member, it has to support the weight of the frieze and cornice, and therefore should at least be equal in height to the frieze. The TUSCAN order so much resembles the Roman-Doric, that it is difficult to conceive why it was introduced. The chief distinction is that the triglyphs are omitted, and that there are fewer mouldings; it is, in fact, a sturdy copy of the Doric. An example of this order was executed by Inigo Jones in the church of St. Paul, Covent Garden. This was done under peculiar circumstances; he then Earl of Bedford sent for him, as he wished to build a church for the parishioners, but told him that he would not go to any great expense, "in short," he said, "I would not have it much better than a barn." "Then," said Inigo Jones, "you shall have the handsomest barn in England." It appears, therefore, that economy determined the architect in his choice of the plainest of the orders, in which he has even dispensed with the frieze, a practice allowed by Vitruvius. On the whole, Inigo Jones has made the most of his meagre materials in this, which is one of the very few applications of the Tuscan order; it is, however, to be regretted that he finished his portico by pilasters instead of columns, and that he has carried out the entasis to such an excess, as to be a caricature of the Greek models; in which the swelling outline was hardly perceptible, and its existence only of late years actually determined.

In the Ionic order, likewise, the Romans deviated greatly from the original models; they made its capital much more shallow than in Greek examples; and the shaft is generally plain and more drawn out, whilst the architrave is not so bold, and much of its effect is lost by the introduction of numerous mouldings. But if the Romans were not happy in their imitation of two of the orders, it must be confessed that in the third they have been extremely fortunate; and their Corinthian may vie with the richest specimens of art in any country. It became their favourite order, as the Doric had been of the Greeks; and the luxurious masters of the world, calling in the aid of Greek artists, carried out this style to its utmost height of perfection; and if Rome could not boast of a Parthenon or Erechtheum, it could point with pride to its temples of Jupiter (*Sutor* and *Tonans*), of Mars, of Venus (*Genetrix*, built by Julius Cæsar), and to its unrivalled Pantheon.

The fifth order of the Romans, the Composite, is a compound (whence its name) of the Ionic and Corinthian; and may be considered to bear to the latter order the same relation that the Tuscan does to the Doric; and with it, may be looked upon as unnecessary. The unpractised eye would not readily discern the difference between the Corinthian and the Composite, the chief distinction being in the capital of the column, which is a hybrid mixture, having the Ionic volutes, with their accompaniment of enriched ovolo, placed above the acanthus leaves of the Corinthian. We may be quite satisfied that no Greek artist contributed to this debased style, which arose during the declining periods of architectural purity, and which possesses no charm either of richness or novelty, which should supersede the use of the two orders, upon which it is founded. Whilst the admirer of Greek simplicity must deprecate the alterations which

\* All the 364 churches of Rome contain monuments of art or antiquity.

† The original work was executed in bronze.



the Romans introduced into the orders, he cannot withhold from them the meed of praise at the manner in which the practice of the art was applied, and the wonderful combinations they produced. The works of the Greeks were chiefly temples, their religious feelings confining architectural grandeur almost entirely to sacred buildings;\* but the Romans employed their architecture not upon temples only, but upon amphitheatres, palaces, triumphal-arches, baths, aqueducts, and bridges; in short, upon every object on which they could exercise their love of splendour. In most of these the arch was a conspicuous feature; and whoever made that important discovery, the credit is due to the Romans of being the first who appreciated and applied its mighty powers.

Rome, under Romulus, who died 714 B.C., occupied only the Palatine hill, as we learn from Livy, and from Ovid:—

"Inde petens dextram, porta est ait ista Palati,  
Hic Stator, hoc primum condita Roma loco est."  
TRIST. iii. El. 1.

Servius Tullius inclosed the seven hills of Rome by a wall; and from his time to that of Aurelian the walled limits were nearly the same: their extent was about 7½ miles. Aurelian took in the Field of Mars (*Campus Martius*), and the Pretorian camp.

Of the buildings erected by the early kings of Rome, we have few traces: constructed either of brick or stone, they made way for the more sumptuous edifices of marble, which were introduced after the conquest of Greece, 146 B.C., when, on the fall of Corinth, (taken by the Consul Mummius), Macedonia and Greece being reduced to the condition of provinces, Rome became, in truth, the Mistress of the World.

"She who was nam'd Eternal, and array'd  
Her warriors but to conquer; she who veil'd  
Earth with her haughty shadow, and display'd  
Until the e'er-canopied horizon fail'd  
Her rushing wings."

CHILDE HAROLD, Canto iv. s. 84.

With the riches thus acquired, and with the spoils of the inestimable treasures of art, collected from every conquered country, Rome gradually became the centre, not merely of political importance, but of the cultivation of the arts; and the new capital of the world became the resort of Grecian, and other distinguished artists, secure of patronage from the wealthy citizens of a place, "whose private individuals, going out as governors of provinces, which had once been empires, after holding in their governments the state of kings, returned home in numbers, with all the wealth of which they stripped its tributaries, and lived as individuals with the income of monarchs." (Hope on Architecture, p. 55.)

An honourable exception to those in power, who made enormous fortunes during their governments, is the Consul L. Mummius, named above, who returned home from the fall of Corinth, without any increase of fortune; and was so unacquainted with the value of the paintings and works of arts, which formed the rich plunder of that city, that he said to those who conveyed them to Rome, "that if they lost or injured them, they should make others in their place."

The names of several Greek artists are recorded, who resided at Rome during the time of Caesar and Pompey—namely, Arcesilaus, Pastiche, Zephyrus, and Criton; and in later times, Hermodorus, architect of the temple of Jupiter Stator, Cyrus, celebrated in the time of Cicero, Porphorus, one of the architects of Augustus, Saurus and Batrachus, (whose works were marked with a lizard and a frog, the meaning of their names), and Apollodorus, the architect of the emperors Trajan and Hadrian, were Greeks by birth.

The wonders of Rome are so many that it is difficult to know where to commence our inquiry; but having, in the last lecture, noticed the orders in their chronological arrangement, it is not so necessary to do so in the present instance. The information respecting the temples and public buildings of ancient Rome will be chiefly derived from the publication by Messrs. Taylor and Cressy, architects, whose work is the best in our language, many of its

illustrations being on a large scale, and the admeasurements carefully given. The magnificent work of Piranesi, which is so costly that it cannot be purchased entire at much less than 500*l.*, is not of essential service to the architectural student, as it consists chiefly of perspective views without measurements.

The immediate neighbourhood of the Sacred Way was a congeries of architectural wonders. Standing on the steps which lead to the Capitol, the spectator sees on the right hand, and on the left, and before him, "a marble wilderness," the ruins of temples and arches which once crowded with their magnificence that narrow spot—

"Once,  
And long, the centre of their universe,  
The Forum, whence a mandate, eagle-winged,  
Went to the ends of the earth."—ROGERS.

The vista is finished by the mighty Colosseum, alas! too, a wreck. At the foot of the Capitoline-hill, and looking towards the Sacred Way, which wound its passage in front, stood the temple dedicated to JUPITER TONANS, erected in honour of the Thunderer, by Augustus, as a mark of his gratitude for his escape from lightning, which killed his armour-bearer at the side of his litter, on his return from his expedition against the Cantabrians in Spain.† Three noble fluted Corinthian columns alone remain to denote the former splendour of this temple; they were buried nearly up to their capitals when Camporesi reduced the hill, and laid them open. The columns are of white marble, nearly ten diameters high, their whole height being 46 feet 5 inches, whereof the base is 2 feet 6 inches, and the capital 5 feet 6 inches; the lower diameter of the shaft is 4 feet 8 inches; the height of the architrave is 3 feet 1 inch; of the frieze 3 feet 3 inches; and of the cornice 3 feet 8 inches. In its original arrangement, as gathered from coins, it is presumed that it had a portico of six columns, (though Palladio conjectured that it was octostyle,) with returns of seven columns, the nature of the ground behind not admitting a portico in the rear. The columns are very well proportioned, and the example is frequently employed by modern architects.

Opposite to this temple, and separated from it only by the narrow road of the Sacred Way, stood (as it is called) the temple of Concord, of the Ionic order, having a portico of six columns of granite 42 feet high, and two more on each flank, forming the projection of the portico, the remainder of the temple having, it is supposed, only a pseudo-dipteral arrangement; the details of this building (said to have been erected by Tiberius, nephew of Augustus) are in a very debased style of art. Beyond the temple of Concord, on the same side of the Sacred Way, was the edifice known as the temple of JUPITER STATOR (the Immoveable), beyond all dispute the noblest and richest specimen of Corinthian architecture in Rome, or in the world. Of this temple, originally founded by Romulus, but rebuilt in the age of Augustus, only three columns remain with their entablature of the finest white marble, so beautifully wrought, and so delicate in design, that it must be a matter of the deepest regret that no more of the once magnificent structure should be in existence. From excavations made in the Roman Forum, over the whole surface of which the earth had accumulated to a depth of twenty feet, it is ascertained that these three columns belonged to one flank of the temple, and that from them again were two more columns to the front portico, which was octostyle, and the flanks were supposed to have had twelve columns (counting both angles) terminating in a portico in the rear. The effect of this fabric must have been very imposing, as we may judge from the dimensions; the front of the temple, when entire, must have extended nearly 100 feet. The columns are 48 feet 4 inches high, and the entablature 12 feet 10 inches; the diameter of the columns is 4 feet 10½ inches, and the distance between them is 7 feet 6 inches. The capitals are the most enriched that were ever executed, and are easily recognized from

all other Corinthian examples by the central volutes intertwining, instead of only touching each other. This example has been imitated both on a large and on a small scale very extensively in London. This example served as a model for the once noble portico of Carlton House (the columns only of which were applied to the National Gallery), and Sir John Soane copied this example in the new Privy Council Office and Board of Trade in Whitehall. Of these remains Valadier justly remarks that "they are a monument of the best age of Roman architecture, in which we see united magnificence with beauty, sublimity of idea with perfection of execution,—the acme of architecture with that of sculpture." Authors differ widely as to the real destination of this building. Albertino considered that it was a temple of Vulcan; in this opinion Labacco, Palladio, and Pomponio Leto concur; Ligorio and Marliani call it the temple of Jupiter Stator, which, according to the accounts of Cicero and Livy, was at the foot of the Palatine Hill; in this notion also agree Gamucci, Fauno, and Ficoroni; whilst Nardini, Venuti, the great critic Nibby and others, contend that the columns belonged to the Comitium. Valadier inclines to the opinion of Piranesi, that the columns in question formed part of a temple erected by Posthumus in honour of Castor and Pollux. From all that we can gather, amidst these conflicting statements, we may reasonably look upon this building as of the age of Augustus and the work of Greek artists. Hermodorus, a native of Salamis (and therefore a Greek), is said to have been the architect of this splendid temple.\*

(To be continued.)

#### CHURCH-BUILDING INTELLIGENCE, &c.

*New Church at Westwood Heath.*—This church, which is in the parish of Stoneleigh, was consecrated on Thursday, the 25th ult. The first stone of this building was laid in the summer of 1842, by Lady Leigh; and Lord Leigh not only gave the site of ground upon which the edifice stands, but has amply endowed it. The subscriptions among the parishioners of Stoneleigh, for the erection of the building, amounted to nearly 1,600*l.* The church is a neat edifice, and of that style of ecclesiastical architecture so much in vogue in the days of the Third Edward. The architects are Messrs. Scott and Moffatt, of London. It is sufficiently capacious to afford ample accommodation for about four hundred persons.

*All Saints' Church, Hunmanby.*—This ancient church was lately re-opened for divine service, having been completely restored in a becoming manner. The interior is now being embellished with fresco painting and scripture sentences, by Mr. Weld Taylor, of London, artist,—a species of decoration well worthy the attention of all who are interested in the revival of church architecture and adornment. The chancel of the church has also been repaired, and is to be beautified by a painted east window, the gift of Captain Mitford, R.N., of Hunmanby Hall.—*Hull Packet.*

The old church of St. Peter's in the East, Oxford, founded by St. Grimbald in the 9th century, and recently much restored and beautified by the zeal and care of the late vicar, the Rev. W. K. Hamilton, is now undergoing further repairs. Holywell church, having been disencumbered of its old and inconvenient pewing, besides being enlarged by a new aisle, presents an almost perfect specimen of an Anglo-Catholic church—thanks to the munificent gift of 1,000*l.*, and the presiding taste of the late curate, the Rev. E. S. Bathurst, Fellow of Merton College.

Lord Morpeth laid the foundation-stone, on Thursday week, of a new church in the borough of Morpeth, in the presence of his brother-in-law and sister (the rector and the hon. Elizabeth Grey), the Rev. Dr. Hook, and a large concourse of spectators.

A monument has recently been erected in Haworth Church, in remembrance of the late Rev. William Weightman, M.A., a native of Westmorland, and a graduate of University College, Durham, who was three years curate of Haworth, and who died on the 6th of September, 1842, aged 26 years.

\* The cut of this remain will be given when the subject is resumed in our magazine.

\* "Dost thou flow,  
Old Tiber, through a marble wilderness?"

—CHILDE HAROLD, c. 4, 73.

† Tonanti Jovi sedem consecravimus liberatis periculum, cum expeditione Cantabrica per nocturnum iter, lecticam ejus fulgur pectusque, servumque prælucentem examinasset.  
—SUTTONS, lib. 5.

\* Thus Lycorgus made a regulation that, in the dwelling-houses of the Dorians, the doors should be only fashioned by the saw, and the ceilings by the axe.

† Via—the Palatine, Aventine, Celian, Esquiline, Viminal, Quirinal, and Capitoline.



BY HENRY G. MONTAGUE, ESQ., PROFESSOR  
OF NATURAL PHILOSOPHY.

EGYPT was contemporaneous with the Assyrian empire, which made way for the Babylonian, Median, Persian, Macedonian and Roman. In discovering and tracing the invention, cultivation, and improvement of the arts and sciences, their origin and progress, we perceive the nearer we approach those countries once inhabited by the sons of Noah, the more perfect is the knowledge of those arts : so that in after times, when men desired to revive the forgotten arts, they found advantage in going back to their original source. The people of Asia were of a warlike cast, varying according to the nature of the country they inhabited ; thus the arts of manufacture would be early applied to offensive weapons and armour. Their steel was of excellent temper and variety of form. They had helmets and cuirasses of brass, which, it is recorded, fitted so well the body as not to intercept motion and agility of limb. Greaves covered the thighs and legs of the horsemen ; their brazen shields, of great length, were very celebrated, and their horses were usually armed, the faces, chests, and flanks being covered in brass. Now we read that this armour was distinguished for its elaborate workmanship, its richness and costliness ; *design* must therefore have largely entered into its original construction and subsequent embellishment. Their chariots, body and wheels, were elegant, and of great strength ; the pole, axletrees, &c., armed with scythes. In later ages, luxury and extravagance rose to excess : it became the custom for the court and wealthy men to make the most profuse display of magnificence and pompous splendour, calculated to dazzle the eyes of a people. In war they went to the field accompanied by their wives and concubines, each in proportion to his ability. The equipage of such a troop must have been immense, and the most exquisite dainties were to be procured wherever this host might be encamped. They had their jewels, and vessels of gold or silver ; their garments were richly shining with gold,—the dresses of the women, of the nobles, and of the king, were equally numerous and magnificent. A people thus disposed to luxurious enjoyment would naturally seek to enrich and embellish with the refinement of art every manufacture that could promise the creation of new ideas or new pleasures. *Design* would be lavished upon



their robes, their armour, weapons, and plate, and upon all the artificial wants of a vast voluptuous nation.

Their cities in time became of wonderful magnificence. Nineveh was one of the most extensive and celebrated. A description of Babylon may probably give us the most perfect idea of the gigantic grandeur of their undertakings. Babylon was situated upon the banks of the river Euphrates, in an immense plain of fat rich soil, intersected by long, straight canals, bordered by lofty poplar or lime trees. Its area was about 60 miles, and an exact square, enclosed by walls every way prodigious, 360 feet in height, and 87 feet in thickness, built of brick, cemented by bitumen, a glutinous slime arising out of the earth, binding far stronger than lime, and even growing harder than the bricks or stone. Exterior, and lined, was a vast ditch, and the earth dug in forming it composed the bricks. On every side of this square were 25 gates, 100 in all, of solid brass; with towers 10 feet above the wall. From each gate in this great square went 25 streets in straight lines, being 50 streets, each 15 miles long and 150 feet broad, crossing from gate to gate at right angles, cutting the city into 676 squares; around these squares were built the houses, detached, and three or four stories high—their fronts richly decorated. The hollow of the square was as gardens, or open space, not building; thus, half the area of the city formed pleasure grounds; the river ran through the city bordered by quays and a wall, having brazen gates to each street, and steps to the water; and a kind of tunnelling covered the river for three miles: the plan of erecting this singular structure is on record, and deserves our attention. The snow melting on the mountains of Armenia caused, in summer, the Euphrates to overflow the country, much as the Nile does Egypt; to preserve the city, an immense lake was dug, and canals connecting it with the Tigris; when this was ready the course of the river was turned into it, and subsequently the lake remained as a reservoir to supply the canals, which, intersecting the immense plains, fertilized the country all the year. The bottom of the river was sandy, and to secure for the arches a firm foundation, large stones were bound together by chains and melted lead; the immense structure was then erected, and the channel throughout the city lined with brick. At either end of this bridge was a palace, connected by a tunnel, built under the bed of the river. Near the old palace stood the Temple of Belus, and to the new one was attached the hanging gardens. The latter surrounded by three concentric walls, seven miles in circumference; considerable space existed between each wall, and they were adorned by an infinite variety of sculpture and ornament,—one represented Semiramis on horseback, throwing her javelin at a leopard, and her husband, Ninus, piercing a lion. These works of art must have been in relief, and a knowledge of their existence is highly interesting. The hanging gardens of all these mighty structures became the most celebrated; they contained a square of 400 feet each way, and were carried up in a succession of decreasing arched terraces to a level with the city walls; stairs ten feet wide led from terrace to terrace, flat stones were laid upon the arches, then rushes, floated in bitumen, and two rows of brick covered by thick sheets of lead, upon which lay the mould of the garden, so deep that the greatest trees might take root; groves, plants, and flowers adorned the gardens, and an engine was contrived to raise water for their use; in the spaces between the supporting arches were spacious apartments commanding magnificent prospects. The Temple of Belus was a prodigious tower, used for worship and for astronomical purposes, for which the people were famed. The riches of the temple are described as immense, consisting of statues, tables, censers, cups, and various sacred vessels, mostly of pure gold, and richly wrought. Of the extent and magnificence of these cities there can be no doubt, and it is equally certain that a people so powerful and luxurious would as far as possible embellish their manufactures with elaborate workmanship; slight traces remain to guide our inquiries, but from the unvarying habits of the Eastern nations we may presume the many beautiful fabrics of India to have descended from them; rich carpets and woven shawls of elaborate design remain a staple commodity of Persia. Their silver and arms are

skillfully worked and elaborately inlaid in intricate and often exceedingly elegant patterns. The existing architectural edifices and interior decorations of India are full of peculiar beauty, and deserve our attentive consideration: the design is made to produce effects not known elsewhere, and we must regret the deficiency of popular acquaintance with their detail and ornamental disposition.

With Egypt and Egyptian art we are better acquainted; its prodigious edifices stand at this day attesting the truth of what might otherwise be considered fabulous: the pyramids, labyrinth, and mighty temples. Egypt was an extraordinary country; two narrow straight lines of vivid green bordered the river; mountains on one side, desert on the other, with a cloudless canopy of deep blue sky. The popular habits and architecture partook of the stern unchangeable colossal character of the country; all art was imbued with the feeling; their statues received an ideal god-like expression; every head alike and the same in sentiment, whatever the action of the body. This remarkable trait was adopted and carefully preserved by the Greeks: the trunk was moulded perfect, yet but one unvarying expression of feature marked the embodying of poetical symbols in stone. The head of the Memnon in the British Museum is full of beauty, and is one of the finest known. Their Temple of Karnac covered forty acres; ten acres occupied by buildings, and its approaching avenue of colossal sphinxes one mile in length. It is considered that these vast spaces were not solely devoted to the priesthood: the Pharaoh himself probably residing there, upon the broad terraces which such vast buildings afforded, raised in the air, removed from vermin, inundations and annoyances, to which the inhabitants were peculiarly subject; the Arab villages are placed upon them at the present day. This Temple Palace was approached by an avenue of sphinxes, and the Pylau were seen from afar raising a vast front of uniform surface; upon one was engraved, in square sunk lines, the Pharaoh's warlike attributes, battles and sieges; upon the other his peaceful attributes and sacred duties. The first court was of immense extent; there, under a colonnade, the king sat in judgment; the sculpture and paintings of the ceiling being appropriately designed to symbolize the passage of the soul through human vicissitudes to final judgments. The columnar grove came next, 325 by 266 feet, being a luxurious cool waiting-hall for the whole court: above was a paved surface, upon which buildings of wood were erected, and concealed by the external face of the temple walls. They were very extensive, and called the ivory palaces, habitations of cedar and sandal wood, where the Pharaoh might be glad, and live exempt from inconveniences of the nether world. Design must have entered largely into the construction, embellishments, and ordinary service of the Egyptians; we know the son was bound to follow the trade of his father, that manufacturing arts were fostered, and the higher arts diligently though peculiarly cultivated. The design and execution of single colossal figures, also, the sphinxes, are full of fine artistical feeling; usually, they emblematically represented kings. The two lions in red granite, given by Lord Prudhoe to our Museum, were sculptured 3,000 years ago, and are remarkable for their treatment being in many points equal to the best efforts of Grecian art. The working of so hard and unkind a material displays a knowledge of anatomy and other great principles of sculpture truly surprising: they must also have required excellent tools. Bas-reliefs were frequent, and art appears to have been in its highest excellence about 800 B.C.; after which, the great principles of design were lost amid exuberance of ornament; which, as in Greece and Italy, at all subsequent times, accompanied a decline of the arts.

In the description of their festivals, with the vessels and ornaments used, we arrive at some little notion of the ordinary applications of art to manufacture. Take the inauguration of Ptolemy, 300 B.C., when Egypt was at an extraordinary height of grandeur and power; it is one of the most celebrated solemnities of ancient history, and is fully described in Rollin's "Alexander's Successors;" we find separate processions and decorations, emblematic of each god; priests, troops, and multitudes of persons, clothed in robes of varied colours of

purple, deep red, and saffron, brocaded habits and rich embroideries of gold thread; elaborately wrought and sculptured plate, to an immense extent; cups set with jewels, and profusion of rich manufactures. The ambition of the king upon such occasions was to display the greatest possible amount of treasure; during the games which succeeded, forty-three crowns of gold were given to the victors.

Just glancing at Tyre, the abode of those haughty and voluptuous merchants, kings of the sea, whose riches accumulated by dealing in all the fabrics of the East, and whose bales would discover the embroidered Tyrian wool, we pass to the most celebrated and illustrious nation of the world—Greece; the favoured of climate and geographical position. Wars and admixture with the great contemporaneous nations, especially the Persians and Egyptians, may in a great measure be considered to have introduced the Arts to her in considerable advance. Her laws, institutions, chariot-races, games of the gymnasium, and all others, of which they were passionately fond, were directed to exalt the mind and refine the understanding, rendering it capable of appreciating and desirous of obtaining the highest perfection in fine art; civilization had just arrived at that state when the manners of men become polished, without ceasing to be natural, and consequently their attitudes and gestures expressive and emphatic, without degenerating into coarseness or violence. The Greeks were idolaters, and their love of beauty was a principle of their religion; the more beautiful a face or form could be rendered, the greater chance of the artist receiving the present blessing and immortal honours of the gods; beauty was so much prized among this acute and highly gifted people, that all those possessing it were ambitious of making it known through great artists to the world; statues were erected to the most beautiful children, and the Lacedæmonian women kept in their bed-rooms models of the finest forms. The philosophers recommended to all classes the study of art, and the government seconded those recommendations; the priests found the religious feeling rendered more acute by painting and sculpture; and the authorities discovered that, by commemorating great national events in temples and public halls, they gave an additional impulse to the ardent emotions of patriotism; add to these, the natural inherent genius of the people, and we find in result those miracles of perfection of Art upon which the world continues to gaze with almost incredulous wonder.

In Pericles, unbounded magnificence, and a spirit of sublimity was united with equal taste and judgment; he determined that a temple should be erected to Minerva, excelling in every refinement, beauty and costliness, which the advanced state of the arts could supply. In this spirit the Parthenon was built, and enriched with the most perfect specimens of sculpture that art ever produced; exhibiting a display of constructive knowledge of the human figure, skill in execution, and effect of design, unparalleled. (The drawings upon the walls are after the equestrian frieze.) The Greeks did not alone confine themselves to stone or bronze for sculpture; the Olympian Jupiter, at Elis, was of gold and ivory, 60 feet high, the eyes of precious stones; and the Minerva of the Parthenon, 40 feet high, made of ivory, and the ornaments of gold, both of exquisite workmanship. When this temple was built 500 B.C. art was at its zenith, and the most celebrated sculptors contended for the honour of its embellishment. The Greeks were consummate masters of effect, and by a wall, prevented a clear view of their temples being obtained until the spectator came within a certain range, and then the temple was approached upon its angle, displaying the architecture and embellishments in the finest point of view.

The Greek mind became enlarged and enriched by science and literature, and versed in all the arts of civilized life and elegant accomplishments. The greatest men of mighty nations listened to Athenian philosophers, and long after her subjugation to Rome did she support this superiority. Her coins, intaglios, and medals, for ages, were remarkable for their beauty and intelligence; and her bronzes are the finest in existence. A constant demand existed for sculptors, by cities and warriors desirous of propitiating their gods,



by erecting temples, or bestowing statues: this occasioned art to be equally profitable and ennobling.

This refined people paid great attention to ornamental design for domestic use; the exquisite variety and beauty of their drawing would appear to be inimitable, for after all our attempts, we return and acknowledge their supremacy. These fine designs were used upon their architecture, their gold and silver vessels, and embroidered on their dresses, and gave form to the ordinary familiar household vessels. Grecian history shows the greatest solicitude to have existed upon the important connection between arts and manufactures: they had laws for protection, and for restraining the emigration of artists. A stranger exhibiting a new manufacture in Athens, obtained the rights of a citizen, and some of the most illustrious men were sons of manufacturers. Athens and Ægina were the great manufactories of Greece in all works connected with the fine arts, and had more commissions than any other nation; their bronzes, vases, and candelabras being especially celebrated. This progress to a perfect state of art was gradual, but always well directed; their admirable works of a minute or minor kind upon armour, vases, medals, and general bronzes, were unquestionably executed by men of high talent, who might have failed, or quitted the higher branches of art, for the service of the manufacturer.

(To be continued.)

#### RAILWAY INTELLIGENCE.

**Railway Changes.**—Amongst the recent alterations in the railway arrangements, the South-Western Railway Company's trains to Hampton Court now stop at Kingston, instead of Esher. The extraordinary extension of building in this neighbourhood would scarcely be credited by those who have not visited it of late—indeed it has become by far the most important station on the line; the number of passengers during the past year being upwards of 150,000. The new town, commenced but a few years since, has risen into actual existence, and in addition to residences of great variety and extent, which seem to be occupied as soon as built, a very beautiful church is in the course of erection, and if it may be judged from what has already been accomplished, it adds another creditable evidence to the good taste which has been brought forth by the interest recently taken amongst the aristocracy, the clergy especially, and indeed by all classes, in the revival of the church architecture of our ancestors.—*Evening Paper.*

**The Cheltenham and Great Western Railway Station.**—We learn that the branch line of railway leading to the new station is finally marked out, and that active operations will be commenced forthwith. Jessop's Nursery-garden, so long the theme of admiration to our numerous visitors, will be the site of the station. A continuation of Clarence-street to a point in St. James's-square, in proximity with the station, is contemplated, and would, we think, prove a great public convenience.—*Cheltenham Chronicle.*

**Bristol and Exeter Railway.**—It is understood that the directors of this railway, in consequence of the amount of business transacted at the Tiverton Road Station, are willing to cut a branch to the town of Tiverton, provided they can obtain the voluntary cession of the land from the owners. This is necessary, in consequence of the expiration of the period fixed by the Act of Parliament for taking it compulsorily.

**The new Tunnel in Liverpool.**—It is intended that the terminus of the new tunnel, which the Liverpool and Manchester Railway Company propose to form under the town of Liverpool, shall be at the north end of the town. The company will thus be able to receive and discharge goods and merchandise with ease at both ends of the docks, and merchants and shippers will be able to effect great savings in cartage.

**Sherborne.**—An engineer was busily engaged on Saturday last in taking the levels in several meadows and fields in and adjoining the town, for the intended line of railway from Salisbury to Taunton. The same gentleman will extend his survey—westward, to Exeter; south, to Dorchester and Weymouth; and also to Bath.

#### PATENTS RELATING TO ARCHITECTURE, ENGINEERING, &c.

Granted between 25th of June and 25th of July, 1844.

[SIX MONTHS FOR ENROLMENT.]

Guy Carlton Coffin, of Lunsford, Wilts, Esq., for certain improvements applicable to locomotive, marine, and stationary engines. July 3.

Anthony Lorimier, of Clerkenwell Close, Middlesex, bookbinder, for certain improvements in the apparatus and means of facilitating drawing from nature or models. July 3.

Henry Smith, of Stamford, Lincolnshire, agricultural implement maker, for certain improvements in the construction and arrangement of hand-rakes and horse-rakes, and in machinery for cutting vegetable substances. July 3.

John George Bodmer, of Manchester, engineer, for certain improvements in locomotive steam-engines, and in carriages to be used upon railways, in marine engines and vessels, and in the apparatus for propelling the same, and also in stationary engines, and in apparatus to be connected therewith. July 3.

Octavius Henry Smith, of Wimbledon, Surrey, Esq., for certain improvements in steam-engines, boilers, and condensers. July 3.

Thomas Syson Cundy, of Cutler-street, builder, for certain improvements in the construction and arrangement of stoves and fire-places. July 3.

Daniel Stafford, of Grantham, gentleman, for improvements in apparatus for preventing what is termed smoky chimneys or flues, and for the extinction of fire in chimneys or flues. July 3.

Timothy Fisher, of Liverpool, mechanic, for improvements in locomotive engines. July 10.

William Bedington, jun., of Birmingham, manufacturer, for improvements in the construction of furnaces. July 10.

William Newton, of Chancery-lane, Middlesex, civil engineer, for certain improvements in the manufacture of wire from zinc, and the application of the same to various useful purposes. July 10.

Henry Highton, of Rugby, Warwick, master of arts, clerk, for certain improvements in electric telegraphs. July 10.

Robert Beart, of Godmanchester, Huntingdon, gentleman, for improvements in apparatus for boring in the earth and in stone. July 10.

John McBride, manager of the Nursery spinning and weaving mills, Hutchesontown, Glasgow, for certain improvements in the machinery and apparatus for weaving by hand, steam, or other power. July 15.

James Harrison, of Irwell House, Bury, Lancaster, manufacturer, for certain improvements in machinery or apparatus for spinning cotton and other fibrous substances. July 15.

Henry Davies, of Norbury, Stafford, engineer, for improvements in the construction of certain steam-engines, also in the application of steam to such engines. July 15.

Jacques Bidault, of Paris, merchant, for improvements in applying heat for generating steam, and for other purposes, which improvements may be employed to obtain power. (Being a communication.) July 17.

Charles Armengaud, of Paris, engineer, for improvements in apparatus for heating apartments and other places, and in apparatus for cooking. (Being a communication.) July 18.

General George Wilson, of Cross-street, Islington, machinist, for certain improvements in the construction of chimneys and flues, and in furnaces, stoves, grates, or fire-places generally. July 24.

William Brockedon, of Devonshire-place, Queen's-square, gentleman, for improvements in covering the roofs of houses and other buildings, in covering the valves used when propelling by atmospheric pressure, in covering the sleepers of railways, and in covering parts of stringed and keyed musical instruments. July 24.

John James Russell and Thomas Henry Russell, both of Weynesbury, Stafford, tube manufacturers, for improvements in the manufacture of welded iron tubes. July 24.

James Kite, of Hoxton, coal-merchant, for certain improvements in constructing chimneys, and in the means used for sweeping the same, parts of which improvements are applicable to other like useful purposes. July 24.

Edward Pace, of the firm of Messrs. Taylor and Pace, of Hackney, in the county of Middlesex, gentleman, for improvements in the machinery for figure weaving in silk, and other fabrics. July 24.

#### SCOTCH PATENTS.

Granted between the 22nd of June, and the 22nd of July, 1844.

James Kennedy, of the firm of Bury, Curtis, and Kennedy, of Liverpool, Lancaster, engineer, and Thomas Vernon, of the same place, iron ship builder, for certain improvements in the building or construction of iron and other vessels for navigation on water. Sealed June 24.

Walter Frederick Campbell, of Islay, Argyle, Scotland, Esq., for an improved rotatory engine, to be driven by steam or other power. June 25.

Robert Foulerton, of the Jamaica Coffee House, Cornhill, in the city of London, master mariner, for improved machinery for mooring vessels and other floating apparatus. June 25.

Edmund Morewood, of Thornbridge, Derby, merchant, and George Rogers, of Searisdale, in the same county, gentleman, for improvement in coating iron with other metals. June 27.

Robert Dawson, of Brick-lane, Middlesex, civil engineer, and William Symington, of East Smithfield, Middlesex, civil engineer, for a method or methods of drying, seasoning, purifying, and hardening wood and other articles, either in a manufactured or unmanufactured state, parts of which are applicable to the preparation and desiccation of animal, vegetable, and mineral substances. July 1.

John McBride, manager of the Nursery spinning and weaving mills, Hutchesontown, Glasgow, for certain improvements in the machinery and apparatus for weaving by hand, steam, or other power. July 9.

William Henry Phillips, of Bloomsbury-square, Middlesex, engineer, for certain improvements in the means and apparatus for subduing and extinguishing fire, and saving life and property, and in obtaining and applying motive power, and improvements in propelling. July 15.

#### Correspondence.

##### COMPETITION IN BUILDING.

SIR,—Being one of the so-named second-class builders, I beg to call your attention to a most important matter as regards the competition for general affairs of public buildings, which in most cases imposes on our anxiety to do business, and at the same time occasions us to incur a very great outlay of time and expense in forming estimates for the same. In most cases a specification is drawn up, and which, from the tenor of its wording, permits great opportunities of shuffling through it, and puts the good and trustworthy tradesman from the mere chance of doing justice to his employers and himself. Now, through your intercession, a great boon might be conferred by calling a meeting of this class, to demand in such cases a blank bill of quantities, prepared by a surveyor, and which would give occupation to hundreds of men, who are now literally without employment, and who have been educated for this purpose. If such were the arrangements made, we should be enabled with pleasure to enter into competition, having better data on which to construct our estimates; whereas, we now sign a contract to fulfil all things according to the true intent and meaning of the said specification, and are bound, as men of honour, to give perfect satisfaction, having a reputation to lose. There could scarcely be a complaint made to this arrangement, for if the public are to have the advantage of our experience and method of doing business, it is only fair they should accurately state what is required, and only receive the originally intended benefit. I have observed that in some of your reports on estimates, tenders have been accepted which in



one or two instances were about one-fourth the amount of the calculations made by respectable and moderate men. The evil does not rest here, for the person offering a high price labours under the stigma of being an exorbitant and extravagant person to intrust works in his hands. I believe your journal is the only medium through which such an arrangement could be brought about. I therefore trust the matter will not rest here, but that some of your correspondents may aid me in calling the attention of the trade generally to this all-important arrangement.

Should you favour us with some remarks on the matter, you will have the thanks and good wishes of many on the success of your endeavours. This matter must be kept alive, and it remains for you, Sir, to effect very much good to the public by so doing.

A LOVER OF FAIR PLAY.

August 6th, 1844.

#### THE HARDY TESTIMONIAL.

Sir,—In answer to an inquiry in *THE BUILDER* of August 3rd, respecting the Hardy Memorial, I beg to say that the committee have selected a design from one of those forwarded by amateurs; and have awarded the premiums of 5*l.* each to Mr. T. Glegg, architect, Chatham, and Mr. Henry Barnes, architect, Dorchester, to signify their approval of designs sent by those gentlemen.

Z. Y.

#### Miscellaneous.

**DESTRUCTION OF BLAMPHAYNE-HOUSE.**—This mansion, the seat of Sir Edward Marwood Elton, situated at Colyton, being a few miles from Exeter, and one of the most antique structures in that part of the country, has been totally burnt down. Its ancient construction and picturesque situation formed a very great attraction in the country, it having been erected in the reign of Queen Elizabeth by Mr. Thomas Marwood, one of Sir Edward's ancestors. The mansion was of considerable extent. The fire broke out last Wednesday, and it was supposed that from age, the brickwork of the roof had in some way parted, and formed a cavity under the rafters, where the soot collected, and the flue of one of the chimneys taking fire, soon communicated to the mass, for the upper part of the building was in flames before the alarm was given, and the domestics encountered some difficulty in preserving themselves. Every endeavour was made to check the entire demolition of this interesting edifice, but all was of no avail, and within an hour after the discovery, the building, with all its ancient relics, was reduced to ruins.

**CALEDONIAN CANAL.**—The repairs on the canal are proceeding rapidly. The number of workmen employed is estimated at 1,200. At Bennaive several of the locks have to be wholly renewed. The pressure of the waters of Loch Lochy will also be rendered less dangerous by the construction of a new lock at Gairloch. The late drought reduced the waters of Loch Oich to a lower level than was ever remembered, affording facilities for removing, in the course of the channel through the lake, some hundreds of trees, consisting chiefly of the finest black oak—some of the blocks 3½ feet in diameter, and other logs 25 to 30 feet in length. They must have lain in their watery beds for centuries.—*Times*.

**THE FITZWALTER BARONY.**—Sir Brook William Bridges, of Goodnestone Park, has succeeded to the ancient and honourable titles of the house of Fitzwalter. The title was granted to the ancestors of the present noble lord by Edward I. whose reign commenced in 1272. Lord Fitzwalter has lately been making extensive alterations at his princely seat at Goodnestone, and the whole pile is undergoing reparation and improvement. His lordship has renovated the parish church, and beautified the interior with coloured and painted glass windows, new seats, &c. &c.

**OXFORD.**—Considerable restorations and repairs are going on at several of the colleges in Oxford, among which Magdalene, Brasenose, and All Souls are the most conspicuously active. At Worcester College additional buildings are in course of erection for the students.

**BRITISH MUSEUM.**—The King's or Royal Library in the British Museum is undergoing a complete renovation, and not before it was wanted. It was dingy in the extreme, nothing having been done to it since it was first built, some sixteen or seventeen years. As neither this nor the general libraries are open to visitors on the public days, few are aware of the existence of this magnificent room, which is not alluded to in the catalogue. It is by far the most ornamental and most extensive of all the galleries, being 300 feet in length, 41 in breadth, and 30 feet high. The centre compartment is much wider than the other two, for there it expands to a width of 53 feet, owing to which circumstance the perspective acquires a considerable degree of variety, whereas had the room been continued from end to end, without other break or division than that perhaps of columns, although the first impression might, perhaps, have been equally striking, it would quickly have given place to a feeling of monotony. The Corinthian columns of highly-polished granite contribute very much to the architectural character of this noble apartment. All the fittings-up are carefully executed in the very best mode of workmanship. The lofty marble door-cases, with doors of oak and bronze, are not the least remarkable features. The library, which now contains about 80,000 volumes, was collected by George III., and presented to the nation by George IV. The gift was one worthy of a sovereign, and the room is worthy of the splendid collection it contains.—*Times*.

A highly-interesting geological discovery has been lately made at the Pentwyn Iron Works, near Pontypool. While the workmen engaged in one of the mine levels were proceeding with their operations, they encountered a fossil tree of considerable size. It was in an erect position, and perpendicular to the plane of stratification. The circumference at the base, immediately above the point of junction with the roots, is six feet, and from thence it diminishes to four feet, in a height of about five feet.

**SALE OF CWM CELYN AND BLAINA IRON WORKS.**—This fine mineral property was sold by Mr. White, of Coleford, at the Westgate Hotel, on Wednesday week, for 87,000*l.* The purchaser is Mr. Stodart, of Bath, for self and some of the leading shareholders of the recent company.

**TIMBER IN NEW BRUNSWICK.**—In one week in the early part of last month, it was estimated that upwards of 70,000 tons of squared timber passed Woodstock on the river of St. John. The lumber men had been highly favoured by three or four days successive rains.

—*Halifax Morning Post*.

**BRICKS GOING TO ENGLAND.**—A Philadelphia paper says Mr. George Snyder, a well-known brickmaker, is now completing an order for 30,000 bricks for Mr. Gibbons, a gentleman in London.

The trustees of the British Museum have made great acquisitions at the recent sale of the library of his royal highness the late Duke of Sussex. The number of lots purchased for the library of the British Museum is 1,150.

Workmen are erecting a fence around the Dock Company's ground, on the west side of the Humber Dock Basin, preparatory to the construction of the intended new Western Pier.

The yew tree in Gresford church-yard, Wales, is upwards of 31 feet in circumference. This giant of nature is probably not surpassed in the principality, or indeed, in England.

Public baths, the cost of which is estimated at 1,500*l.*, are about to be erected at Bolton. The land for the purpose has been given by the Earl of Bradford.

Sir M. De la Beche arrived at Merthyr, on Tuesday, to prosecute a government inquiry into the sanitary condition of large towns.

#### TO CORRESPONDENTS.

The notice relative to moving "bodily" the gallery of the chapel in the Liverpool-road, Ilington, did not arrive in time for us to be able to present on the occasion; but we shall insert any account of the operation which may be sent to us. The Elizabethan Gate we cannot insert without it be accompanied by sections of its component parts.

#### Current Prices of Metals.

August 6, 1844.

	£.	s.	d.	£.	s.	d.
<b>COPPER</b> —Brit. Cake, p. ton	83	0	0	—	84	0
Tile .....	82	0	0	—	83	0
Sheet, p. lb.	0	0	0	—	0	9½
Bottoms ..	0	0	0	—	0	0
Old .....	0	0	0	—	0	0
South Amer., ton	70	0	0	—	72	0
Foreign Cake ..	0	0	0	—	0	0
Tile ..	0	0	0	—	0	0
<b>IRON</b> , British .....	0	0	0	—	0	0
Bars .....	6	0	0	—	6	5
Rods .....	0	0	0	—	7	0
Hoops .....	8	0	0	—	8	10
Sheets .....	0	0	0	—	9	0
Cargo in Wales, Bars	0	0	0	—	5	10
Pigs No. 1, Wales ..	3	10	0	—	4	0
No. 1, Clyde ..	0	0	0	—	3	0
Russian, CCND .....	16	0	0	—	16	10
PSI .....	0	0	0	—	0	0
Archangel .....	0	0	0	—	0	0
Swedish .....	9	10	0	—	10	0
Gourieff's .....	0	0	0	—	0	0
<b>LEAD</b> —British, Pig, p. ton	16	10	0	—	17	0
Sheet, milled .....	0	0	0	—	17	15
Bars .....	0	0	0	—	0	0
Shot, patent .....	0	0	0	—	19	15
Red or Minium .....	0	0	0	—	21	10
White .....	0	0	0	—	23	10
Litharge .....	0	0	0	—	20	0
Pig, Spanish .....	0	0	0	—	16	10
American .....	0	0	0	—	0	0
<b>STEEL</b> —English .....	0	0	0	—	0	0
Swedish Keg .....	0	0	0	—	16	0
Faggot .....	0	0	0	—	16	10
<b>TIN</b> —In blocks, p. cwt. ...	0	0	0	—	3	13
Ingots .....	0	0	0	—	3	13
In Bars .....	0	0	0	—	3	14
Banca .....	3	4	0	—	3	5
Straits .....	0	0	0	—	3	3
Peruvian .....	2	17	0	—	3	0
Plates, p. box, 225 shts.—						
No. I. C. 13½ by 10 in.	1	7	6	—	1	13
I. X. ....	1	13	6	—	1	19
I. XX. ....	0	0	0	—	0	0
IXXX. ....	182	lb.		—	2	9
IXXXX. ....	203			—	2	15
No. II. C. 13½ by 9½ in.	105			—	1	9
II. X. ....	133			—	1	15
III. C. 12½ by 9½ in.	98			—	1	7
III. X. ....	126			—	1	13
Small { SDC ..... 200 shts. 167						
Double { SDX ..... 15 by 11 188						
SDXX ..... 209						
SDXXX ..... 230						
SDXXXX ..... 251						
C. 16½ by 12½ in.	98			—	1	7
X. .... 100 sheets 126						
Double { XX ..... 147						
XXX ..... 168						
XXXX ..... 189						
Jaggers, 14 by 10 in.	—			—	0	0
<b>SPELTER</b> —On the spot, ton	0	0	0	—	21	10
Delivery .....	21	5	0	—	21	10
<b>ZINC</b> , English Sheet .....	0	0	0	—	30	0
<b>PLATINA ORE</b> .....	0	0	0	—	0	0
<b>ORSIDEW</b> .....	0	0	0	—	0	3
<b>QUICKSILVER</b> .....	0	0	0	—	0	4

#### Tenders.

**TENDERS delivered for building Workmens' houses for the New Union Mill Company, in Mill-street, Birmingham.**—W. H. Norton, Architect, High-street. July 7.

Warden .....	£537
Briggs .....	520
Dudley .....	465
Line .....	437

**TENDERS for building a New Independent Chapel in Graham-street, Birmingham.**—W. H. Norton, Architect, High-street.

Briggs .....	£2,024	0
Dossett and Webb .....	2,001	0
Heafield .....	1,845	0
Turner .....	1,838	0
Warden .....	1,721	0
Kemp and Davies .....	1,713	0
T. Norton .....	1,700	0
Williams and Roberts .....	1,672	10
Horton .....	1,620	0

Williams and Roberts' tender accepted.



# The Builder.

NO. LXXX.

SATURDAY, AUGUST 17, 1844.



AST week we intimated our intention of saying a few words relative to the Round Church at

Cambridge,—of course meaning principally with regard to the work, which for so long a time has been going on by and at the instance of the Cam. Cam. Society.

At first sight it appears very generous for a body of persons, non-parishioners principally, to come into a parochial district, and to concentrate therein

upon its ancient church the outlay of a large amount of both time and money, and to have involved itself to a great extent; this to some may appear even noble, and we are willing to give the Cam. Camdenites every credit which they deserve: but if these *Camms. Camm.* have fallen into error, they must not expect, or rather they ought not to expect, that mere bullying will serve their purpose, any more than it will the supporting of the errors of any other persons, or of any person whatever. They are ardent to have churches restored, so are we as ardent as they—in many things more so: but in doing this we should not commit the indecency of running counter to the proper recognized parochial pastor. Such a proceeding is of itself a most gross act of indecency; an offence against that bond of peace, which is the greatest blessing of any and every church, and is, indeed, thoroughly subversive of a Catholic church: and we believe if the Cam. Camdenists have so far forgotten as members of that Church, their duty to become pious, useful, and peaceable members of it, and for which indeed they were sent to Cambridge—and if they have set an example of insubordination between the priest and people in the parishes over which ministers more advanced in theological knowledge, of greater forbearance, and who have brought the weight of years and experience—that all this will return upon themselves. They are breeding, they are nurturing hornets' nests, from which, when they become parochial clergy, they will be stung; and when they come themselves to work in parishes, they will have the full benefit of their perverse teaching, their breeding of dissension, the building up of hay and straw, and the blowing of stubble into men's eyes; theirs will be such a case as that of the French king who, assisting the American republicans, caused to be reflected back upon France the republican principle, which in a few years afterwards swept away the French monarchy. We know so many acts of indecency committed in various places by the Cam. Camdenists, that we are bound to say that we believe no body, great or small, reverend or irreverend, ever acted with greater indiscretion; none ever with less dignity; none ever so contrary to the

recognized feelings of propriety in the conduct of ecclesiastics of whatever church, party, sect, or persuasion; and if it be asserted that among them are to be found one or two—who, having by office the ordering of churches—that only makes the case the worse; for an improper assumption of power which they do not by law possess, an interference where they have no right, a pertinacious infringement even in trifles of the recognized office of others, is, in fact, only insidiously undermining their own authority in quarters where they themselves of right bear authority. In fact, they sap the foundation of the very first principles of Christianity, which is peace; and all their preaching of "*peace! peace!*" while they will have no peace, is vain. We would that the young Cam. Camdenists remember what Judge Best said when Sergeant Wild was skirmishing with him, "*I am pained at witnessing my brother take so much trouble to assail and lower that bench which he is one day fated to adorn.*"

Those who would uphold, or at least excuse the Cam. Camdenists on the score of zeal, little honour them; for by all recognized principles and feelings, young men, who go to our Universities, are considered to be under a state of strict tutelage; are to be on their guard, lest the vagaries of their own invention, the breakings out of their own minds, not sufficiently chastened down to decency and propriety of conduct, should appear in opposition to those reasonable maxims, and to that staid dignity of deportment, which the doctors, who teach them, and who have grown hoary in a state of self-denial, the self-denial of tongue-luxury, and whom, in fact, they discredit by such license of tongue and deportment. Mere zeal goes for nothing. There is hardly any crime which stains humanity, which has not arisen from zeal. Nearly all the higher classes of crimes—the trial of which employs our judges—have arisen from zeal; zeal not under command, and like a steam-carriage with no director.

We believe the appeal which is now being made for the raising of the balance due upon account of the work done to the Round Church would not have been necessary had any proper care been taken; for we doubt not that the whole fabric might have been rebuilt for a much smaller sum.

We now proceed to make a few observations upon the so-called restoration itself.

In the first place, we beg to give our opinion, that if the church had been left alone, it would in seventy years have been in better condition of repair than it will now be seventy years hence. Those acquainted with building materials know that the Bath stone unfortunately imported into Cambridge for the work is not fit for the purpose; multitudes of the churches and other buildings which have been erected in London during the last twenty-five years of this material are, so far as their masonry goes, mere ruins; but as we are engaged in an accurate survey of the whole of them, and intend shortly to give the result, it is unnecessary for us to say any thing more thereon at present, except that the neighbourhood of Cambridge possesses better and more durable kinds of native stone, and which ought to have been used in preference. Again, we think little credit is due to the Cam. Camdenists for increasing the quantity of building attached to this edifice, in the latest and most degraded style of Gothic architecture; this, of itself, we consider to be a tasteless squandering of money.

We by no means approve of some of the other alterations, and we shall be able to shew

on the proper occasion that the roofing is formed in opposition to competent scientific authority.

The defects of the old fabric of this church have taught the Cam. Camdenists no prudent caution. The stones in places were falling from the crowns of the semi-circular Romanesque arches, and the walls are forced over by the weight of the crowns of the Romanesque vaultings; and yet with these dissipating effects, which are proper and inherent to the very nature of Romanesque architecture, and can alone be in any way avoided in that immature style by the use of a vast proportionate quantity of materials, and which are all avoided by the Pointed style, in the state in which it was at the building of Westminster Abbey. Indeed in Romanesque architecture substance will not alone prevent fracture of the work. We can bring a host of instances, besides the one at Barleston, which we gave in No. 68 of THE BUILDER. At the Church of St. Bartholomew the Great, Smithfield, the large arches of the crossing have settled hideously in a similar way; and at Westminster-bridge, which we shall touch upon shortly, the fractures of the great semi-circular arches have occurred just where the Pointed architects left off carrying the work any further towards a crown.

On the whole we think the work of the Church of St. Sepulchre, Cambridge, has been rashly, unscientifically, and extravagantly done; for half the amount of money which has been expended, it ought to have been more soundly, more scientifically, and more tastefully performed; its material ought to have been better, and its fabric ought to have been rendered more durable.

We shall next week give a review of the translation of Durandus, by which our right-minded readers who do not know this precious work, will see what degree of reliance is to be placed in Cam. Cam. judgment. We shall not enter into the question whether there should be a "*credence-table*," or whether an altar-table should be of stone or wood, believing these things to be of themselves idle questions; but after the partial advocacy of the presiding authority at Cambridge, and the subsequent inhibition, viewed in connection with a society tinctured with such trifling, and whose leading members dare to idle their time, and to squander that of others who ought to be better employed, by the issue of such rabbinical trumpery as Durandus, we can no longer look upon such behaviour and such apparent trifles as innocent.

## THE PROJECTED EMBANKMENT ON THE RIVER THAMES.

We have obtained a printed copy of the Bill recently introduced by the Government relative to the Thames embankment. It is entitled, "*A Bill to empower Her Majesty's Commissioners of Woods to form a Terrace and Embankment, with convenient Landing-places for the Public on the Middlesex shore of the River Thames, between Westminster and Blackfriars-bridges.*" The measure, which was under the care of Lord Lincoln, M.P., and Sir G. Clerk, contains no less than 84 clauses, with a copious schedule. It is, of course, laid on the shelf until next session, being merely brought in and printed for the information of hon. members, and to afford them an opportunity of considering its provisions during the ensuing recess. Power is given to the Commissioners of Woods and Forests to carry out the purposes of the Act, the expenses to be defrayed out of the fund to be created for the execution of improvements in the metropolis. The third clause, which will be most interesting to the public at large, enacts that it shall be lawful for (that is, it empowers) the Commissioners of Woods and Works to make and



construct a raised terrace and public roadway or communication from or near Whitehall-place, in the parish of St. Martin's-in-the-fields, in the city of Westminster, on or along the bed or shore of the river Thames, on the Middlesex and city of London side thereof, to or near to Chatham-place, Blackfriars, in the city of London; also to embark certain portions of the bed or shore of the river, on the Middlesex side, from Westminster-bridge to the said intended roadway, at or near the northern pier of the intended Hungerford Suspension-bridge, and also from time to time to alter, widen, divert, and remove all causeways, piles, stairs, bards, or landing-places, on the shore of the river, or projecting from the bank thereof, on the side aforesaid between Westminster-bridge and Chatham-place; and to drive other piles, and construct other causeways, piers, stairs, &c., in such situations and in such manner as they (the commissioners) shall deem best suited to the convenience of the public; and to remove all mud-banks and obstructions on the bed or shore of the river, and to deepen, scour, and cleanse the same bed or shore on the Middlesex side, and to dredge and deepen any other parts of the river between Westminster-bridge and Chatham-place aforesaid; and also to make and maintain all necessary and convenient ways and communications from Whitehall-place, Villiers-street, the Savoy, Wellington-street, Surrey-street, Norfolk-street, and Arundel-street, to the intended terrace and roadway, and to construct and maintain all necessary viaducts, roads, bridges, embankments, quays, basins, banks, walls, locks, sewers, culverts, drains, arches, landing-places, tide-gates, piles, and other necessary works. The remaining clauses would not interest our readers, as they merely relate to the details of measures by which the purposes of the act are to be carried into effect.—*Times*.

#### THE NEW HOUSES OF PARLIAMENT.

THE following is an abstract of the second report from the Lords' select committee on the progress of the building of the Houses of Parliament.—That the Committee appointed last session recommended that the architect should so conduct his operations as to secure the occupation of the new House of Lords, with temporary fittings, at the commencement of the session of 1844; and that, if he should find that more time would be required, that he should report the same to the Commissioners of her Majesty's Woods and Forests, in order that such report might be communicated in due time to the house. That instead of the new House of Lords being covered in by Christmas last, as was stated to be practicable by Mr. Barry, in his evidence last year, it is now only in course of erection. That Mr. Barry now states, that if great exertions are made, the House of Lords, the lobbies at each end of it, the corridors connecting the same with the front building and the libraries, the committee and other rooms belonging to the House of Lords, may be covered in before winter; and the committee, having examined the building, with the clerk of the works and one of the contractors, are of opinion that the whole of these apartments may be prepared for the use of the Lords by April next. That the committee do not recommend that any temporary fittings should be prepared, but that all the works connected with the buildings above mentioned should be advanced with the greatest possible speed. And the committee have examined Mr. Barry, with respect to the style of internal fitting and decoration, and he has distinguished those parts of the building, to which he considers the more costly and elaborate style should be applied. In respect to the remaining portions of the internal arrangements, the committee entertain the strongest opinion, both in reference to economy and despatch, that the committee-rooms and secondary apartments should be completed in the most simple and solid manner, consistent with the character of the general building, but not involving any extraordinary expenditure. In respect to the deviations from the original plan, it has been satisfactory to learn that they have not been of a character to vary or affect the builder's contract; and that no future deviations are to be allowed, without the previous sanction and authority of the Commissioners of the Woods and Forests.

#### WHITECHAPEL IMPROVEMENTS.

WORKMEN have been this week employed in pulling down the mansion in Essex-street, Whitechapel, which was in the occupation of the Earl of Essex, the favourite of Queen Elizabeth, shortly before his death. In a few days nothing will remain of the building. It is situated on the east side of Essex-street, and was at the rear of the houses forming that street. It is three stories high. The attic windows are latticed, and the rooms on the first and second floors are about 14 feet square. There is a part of the spacious staircase remaining, and the joists and girders are in as good preservation as when originally placed in the brickwork. The property was sold a few days ago by order of the Commissioners of Woods and Forests, with 25 other houses, which are to be taken down for the improvements in that neighbourhood. At a short distance from this spot, between Elliston-street, Petticoat-lane, and Houndsditch, is another large mansion, which will be demolished for the purpose of having new buildings erected on its site. This was the palace where Queen Elizabeth occasionally resided. The building, the walls of which are very strongly constructed, is four stories high, and some of the windows are latticed. The ceilings of the ground and first floors are ornamented with different devices, coats of arms, figures, &c., among which may be distinguished roses, fleurs-de-lis, and the word "Britannia." There are also several Latin inscriptions, scarcely legible. There is a quantity of oak panelling in various parts. The premises were for some years latterly used as a common lodging-house, where beds were let out at 3d. a-night, and it was known as the "big-house." The rooms are now used as carpenters' workshops. This property belongs to Mr. Hutchinson, who, at the last general election, contested the borough of the Tower Hamlets.

#### ARTESIAN WELLS AT SOUTHAMPTON.

DURING the meeting of the Royal Agricultural Society, Dr. Buckland delivered a lecture on Artesian wells, and in particular on that which is now in progression at Southampton. Though uncompleted, it is a work of immense magnitude, vying with the great well at Grenelle, by which Paris has been lately supplied. The depth of the Southampton well is at present 1,300 feet. The shaft descends through 78 feet of alluvium, 300 feet of clay similar to the London clay (which is a general substratum in the Southampton basin), and through another 100 feet of plastic clay, before it reaches the chalk, through which it descends 100 feet still further. Thus from the surface a well has absolutely been built downwards nearly 570 feet, and under such difficulties from irregularities in the strata that four iron cylinders have been placed in points where no attempt at masonry could have proved successful. Not the least singular part of this work is the manner in which this underground well has been built from the summit level downwards "into the very bowels of the land." This is a matter, however, which it would be tedious to describe; suffice it, therefore, that after reaching a depth of nearly 600 feet, the operations of the masons were suspended, and the boring-rods were brought into operation, and employed until, through their instrumentality, the contractors have reached a depth of 1,300 feet. As might be expected, the supply of water is already abundant. It now rises within 40 feet of the surface, and by the aid of powerful steam-engines no less than 55,000 gallons a day are literally poured into the town of Southampton. It is expected that the water will soon rise to the surface, when the supply will be immensely larger than even this.—*Hull Packet*.

#### BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE first general meeting of this new association will be held at Canterbury, in the first week of next month, under the auspices of the Archbishop of Canterbury, who was one of its early members. Its plans are the study and preservation of English antiquities, and the opposing and preventing, as far as possible, all injuries which ancient national monuments of every description may from time to

time be threatened; and it is proposed to carry these objects into execution by holding general meetings at different parts of the country, on the plan of the British Association. Its proceedings are arranged under four sections:—1. Primæval Antiquities; 2. Mediæval Antiquities; 3. Architecture, and 4. History; at which papers will be read and discussions entertained. The sections will meet on the morning of each alternate day of the week; the other days to be occupied with visits to monuments, &c. The members will have free access to all the stores of the cathedral not exhibited on other occasions; and Lord Albert Conyngham, the president, has invited the members to be present at the opening of some Saxon barrows in his park, on one of the mornings. The unrolling of an Egyptian mummy will form an object for one of the evening meetings by Mr. Pettigrew. A local council, consisting of the mayor, and several leading persons at Canterbury, has been formed for making arrangements, and a full attendance of members is expected. The number of these at present exceed 1,000, including the names of 12 bishops and 12 deans, with many leading antiquarians.

#### PETROLOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 399.)

"A general treatise on rocks," says Pinkerton in his admirable attempts at classification, "cannot be founded on any theory of their formation, however plausible; as the opinions of the author will be biased by that theory, and he will be inclined, like Buffon, to reject or pass in silence any substance which interferes with his pre-conceptions. Thus jasper is totally omitted by Werner, though it forms a chain of mountains in Siberia of more than 1,000 miles in extent, spreading even to the islands between that region and America." Modern geologists have contributed to establish the truth of this axiom, for in diving into the mystic theories of these men, we invariably find them vainly endeavouring to model natural phenomena to their views and purposes, instead of taking nature for their guide, and endeavouring to penetrate to the primary fountain from whence the several phenomena proceed. M. de Saussure, one of the most celebrated mineralogists of his day, after forty years' close application to this science, after traversing every region of the Appennines, with the ardent desire and ambition to form a system of petrology, gave up the idea in despair, the various rocks running so much into each other as to defy classification. But our modern men of science, who have scarcely passed the precincts of the closet, are less scrupulous in this respect, favouring the public from time to time with many illustrated fables, within which truth is hidden as in a well, from whence few people are capable of extracting it. When the unlearned reads of *lava*, he is naturally led to expect that, like chalk, it is a characteristic body consisting of certain compounds united in definite proportions of each; and, further, when he is told that lava is a volcanic product, he is led to suppose that the material of lava is generated by volcanic heat, the whole interior of the earth being filled with this material in a state of heat of fusion: he is not prepared for the fact that under this one universal and misplaced term, geologists comprise almost all the numerous varieties of rock known to us, from simple carbonate of lime to the very heterogeneous mixtures termed basalts, trapps, granites, &c.; nay, some geologists contend that all crystalline rocks are lavas, which, on cooling down under immense pressure, assume the crystalline form: thus the reader is led astray, and the smatterer in science walks abroad upon the earth talking ridiculous nonsense of plutonic and volcanic rocks, and fancying every hollow and natural chasm of the earth is the mouth of an extinct crater. This abuse of terms, leading to a thousand other absurdities, is so common in the present day, that much of the varied, complicated, and beautiful phenomena of creation is completely veiled from vulgar observation, and the end and aim of nature is perverted to suit ridiculous and unnatural theories.

The notion of granite being the universal



base of the superficial crust of the earth was no sooner set aside by men of sound reflection, than theorists invented another term (trachyte) to supply its place; and Humboldt, who on many occasions draws largely on the credulity of his readers, speaks of whole volcanic mountains formed of this material, which is to be considered as lava in its changed state: thus errors promulgated by learned men are received and perpetuated, standing as an almost impregnable barrier against truth, and the stumbling-blocks to discoveries of much greater importance.

Mr. Lyall, in his very interesting romance termed "Elements of Geology," gives an analysis of minerals most abundant in what he is pleased to term volcanic and hypogene rocks; and, on reference to his analysis, the reader will readily perceive that their character is determined by mere modifications of mixture of silica, alumina, magnesia, lime, potash, soda, iron, and manganese, with the occasional omission of one or more of these ingredients. The earths, in their disintegrated or divided state, exhibit the like combinations, and the accident of flood or fire acting upon them cannot by any means obliterate or change the nature of these earths. We find them forming the lower as well as the upper beds, the ingredients of sedimentary deposits, and the ingredients of lavas, in the state of mud, of clay, of slate, of porphyry, jasper, and various other rocks. We see them continually abstracted from the inner beds of the earths, and ejected as rivers and torrents of mud from volcanoes, as well as in the melted or lava form. On the other hand we see them in the sediments of rivers and seas gradually and progressively increasing in extent, and gradually undergoing changes in their disposition and chemical and mechanical combinations, as they are influenced by local influences of temperature and association. It is therefore idle to say that such a rock is volcanic under any circumstances, unless we are to presume that the action of internal heat upon terrestrial masses is productive of these earths. No one presumes that a brick is volcanic, simply because the bed from whence it was abstracted is open to the observation of all; like glass it is admitted to be an artificial product, and so is obsidian, but lava in general is not; for although abstracted from the interior beds and united with water, or acted upon by fire, its character and composition remain unimpaired: but where the melted material assumes an artificial state of induration, the term may then be applied; but even then I think unwisely, when it gives rise to a system of generalization so utterly at variance with nature.

It is acknowledged that the upper crust of the earth consists of series of overlying beds, locally disposed and locally varying from each other, and being of homogeneous as of mixed qualities. Every one of these beds, however deeply disposed at present within the earth, was once the uppermost; and while in this position was the particular subject of moving or disturbing causes. While beneath the waters in its disintegrated state, it was subject to division by tidal currents, to local intermixture of sedimentary deposits, and to intersection by deposits of nature differing from its own taking place in those divisional parts. Again, on dry earth it was subject to the like action of streams and rivers, of grooving or channeling out in various directions, of intermixtures with other earths, or of minerals conveyed within its matrix by percolating waters. In every state it was subject to fracture, dislocation, separation of parts, and partial decay; and having undergone these changes, we can readily conceive its becoming covered in by succeeding depositions, its fractures and inequalities filling up by the overlying matter, and forming dikes and other intervening beds, now so commonly and so fondly ascribed to volcanic causes alone. Every person who has traversed regions of the tropics during the dry season of the year, or in rainless regions, cannot fail to have observed the enormous and deep-seated rents and fissures which take place in the earth's superficial crust, and many a time and oft it is that these fissures extend to and divert the course of waters from the natural beds, which rushing into the aperture thus made, carry with them material varying in its nature from the beds in which it is finally deposited. Earthquakes, whether proceeding from volcanic action, or the pent up vapours

generated within the bowels of the earth, are productive of the like effects.

It is my wish to render these matters more familiar to my readers, in order to shew them, that however tempting the science of geology may appear, and however imposing its assumptions, that there are facts in nature militating against these assumptions, and presenting in their purity and simplicity a natural solution to phenomena which men delight to robe in the veil of mystery. Trap is said to be of volcanic origin, but the very facts brought forward in support of this supposition, prove the direct negative. In England, in the islands of Arran, Sky, and other parts of Scotland, it is the overlying bed, and is always found filling in the vertical fissures, dykes, and veins of the underlying rock, taking the form of the opening, and continuously appearing the whole extent of it. The fissures are, in general, those common to many consolidating beds, which, contracting in their parts, as acted upon by the long and intense atmospheric heat, separate, and present to the view deep vertical fissures; and these rocks afterwards in this state being covered in by the loose earth, the fissures fill up with the same substance.

Again, if the fissures thus formed, exist in disintegrated masses, then we generally find that the filling in material when united with water, alters by combination the character of this bed to such an extent as it is capable of permeating. This is exemplified by a striking example quoted by Mr. Lyall, in favour of his theory, of the mass being projected from beneath. The dyke is 134 feet wide, and consists of a rock, variously termed by different writers, a compound of felspar and augite. Strata of shale and argillaceous limestone, through which it cuts perpendicularly, are altered to a distance of 30 and 35 feet from the edge of the dyke. The shale as it approaches the trap, becomes gradually more compact, and is most indurated when nearest the junction. Here it loses part of its schistose structure, but the separation into parallel layers is still perceptible. In several places the shale is converted into a hard porcellaneous jasper. In the most hardened part of the mass the fossil shells principally products, are nearly obliterated; yet even here their impressions may frequently be traced. The argillaceous limestone undergoes analogous mutations, losing its earthly texture as it approaches the dike, and becoming granular and crystalline. But the most extraordinary phenomena is the appearance in the shale of numerous crystals of analcime and garnet, which are distinctly confined to those portions of the rock affected by the dike.

In Antrim the chalk is converted into granular marble near the basalt, and many other examples of change are adduced by geologists to shew that the intruding matter has caused a manifest change in the contiguous beds. What then, in this respect, becomes of Sir John Hall's hypothesis, that crystalline rocks are formed under exceeding high pressure, accompanied with a corresponding high degree of heat, the intruding matter could have had upon the vertical beds whose fissures it filled in, no effect other than that daily exhibited by the filling in of earths or marl; for if in the melted liquid state of lava, instead of contributing to the density of the beds in contact, it most probably, by abstracting some portion of their material contributed to their expanding power, and instead of crystallizing, would have caused them to become more pulverulent: but these beds have evidently acquired earths at the points of contact which they previously did not possess, and such as are received by loose deposits or simply cohesive rocks through the agency of water, by the introduction of carbon or of mineral gaseous or fluid bodies. The dike is in general compact and highly silicified, and the bed in contact has evidently received the excess of silica in its external parts, whereby it has become a harder and more ponderable body; nay, in many instances the intruding matter filling up these dikes or fissures, has evidently blended with the primary bed to a limited extent, proving thereby, that the one and the other were in their decomposed state; and this is particularly observable in some of the limestones, which by contact present a compound union of lime and aluminous earth.

Brochant's able summary against the Volcanic, and in favour of the Nepturian theory,

embraces the facts, that if true basalts are found among the products of burning mountains, they are extremely rare, and modern eruptions have not produced any. Their prismatic and tabular form is not peculiar to trap, but extends also to gypsum, marls, and sandstones. They often repose immediately over coal, as at Messner, near Cassel; and, we may add, many of the coal beds of this country. They embrace the remains of animals and vegetables; they often contain hydraulic agates. There is no appearance of vitrification, nor have real craters ever been discovered; all those which have been cited being natural hollows or chasms. Mandelstein has certainly some resemblance to porous lava; but it is palpably manifest that some mandelsteins are not volcanic. Rocks might re-combine, but substances would certainly be left, as at present, denoting the action of fire. In Bohemia and different countries, beds of basalt have been observed to alternate with grit or stratiform limestone. There are many basaltic regions where basalt is only found in summits. Basalt has no appearance of fusion; heated in a furnace it melts to glass. The prismatic division of basalt has been attributed to the water of the sea. The conical form of basaltic mountains is common to all submarine hills formed by contending tidal action over a wide area of the sea.

But the most unanswerable argument against the volcanic formation of rock, is the fact demonstrable to all men, and open to observation, that those particular varieties which it is insisted upon are volcanic, are even now to be observed in every stage of formation, both in Asia and Africa. Dolomieu, a very attentive and accurate observer of rock, has expressed his opinion that the basalt of the ancients is not a volcanic product. Of the vast number of Egyptian monuments examined by him in the Borgean Museum, many, he says, are formed of stones having qualities attributed to basalts, but not one is volcanic. In this I can most fully bear him out, for all the Siderous rocks, of which I about to speak, abound in Egypt, and are disposed in the pure oceanic and undisturbed strata, and could not possibly be formed by volcanic action. Again, we observe the material of which they are composed in the newest formations, disposed on either side of the Red Sea; and also the progressive stages of their formation, and of transition into other varieties of rock. These beds are most decidedly marine deposits, and abstracted from the waters by their gradual decrease; these masses of matter, after long exposure to atmospheric action, become gradually cemented together by silica, in like manner as porphyry, amygdolite, jasper, and other amorphous rocks; the difference of the one and of the other being only in the nature and qualities of the bodies, and fragments of bodies, of which they are composed; all of them boasting a common parentage, a simultaneous development, and common properties, and being subject to the like atmospheric influences in those regions where they abound.

**SIDEROUS ROCKS.**—Having in the above general remarks on the modern theories concerning the origin of all crystalline and many amorphous rocks, spoken of basalt, I shall now proceed to consider the division under which it is placed.

Siderous rocks are those rocks which are particularly characterized by the great quantity of iron they contain; it being, in general, uniformly diffused throughout the whole bed, gives this rock a marked and decided character, manifest to observation, and confirmed by fracture and analysis. The distinguishing characters of siderites are generally basaltic, sometimes only marmoric hardness; fracture commonly foliated, sometimes radiated; weight siderose, sometimes approaching to the barytose; lustre splendid, shining between vitreous and pearly, opaque, the green sometimes translucent on the edges; colour generally black, sometimes of a greenish grey. It sometimes composes entire mountains, but more commonly occurs disseminated in veins or nodules in granite, or beds of gneiss.

Siderites, says Pinkerton, may be characterized by their silky or crystalline appearance, basalts by their dull earthy aspect; the one, in fact, is the mere modification of the other, and in a different stage of change; for basalt, upon long exposure to a dry hot atmosphere, passes of necessity into the crystalline form of



siderite; this remark also applies to those rocks which geologists, after Werner, denominate trap, and embracing the recent series; the latter term being, in many cases, useless, as applied to basaltic bodies.

Siderites are extensively distributed over many regions of the earth, varying in composition, and consequently in external character, from the pure oceanic depositions, to the numerous and varied unions of these deposits with pure vegetable and aluminous earth. In their simplicity of structure they are merely coherent masses of earth, mechanically held together, but so lightly, as to be readily separable by the fingers, and from thence they gradually acquire hardness, or, strictly speaking, like the porphyries, with which they are often confounded, they gradually silicify. Mountains of black hornblende exist in Siberia, vast strata in Saxony, and basaltic formations are very extensive in many regions. Ironstone is very abundant in this country. Specimens of siderite and basalt on analysis have been found to consist of

Siderite.		Basalt.	
Silex ..	37	Silex ..	50
Argil. ..	22	Argil. ..	15
Mag. ..	16	Mag. ..	2
Lime ..	2	Lime ..	8
Ox. of iron	23	Iron ..	25
	100		100

Coarse basalts embrace the common whinstones of the north of England and Scotland. Slaty basalt, green stones, and slates, form mountains in Sweden, often metalliferous. Some of the interior pillars of cathedrals, whinstone from the Salisbury Crags, the Malvern Hills, and much of the pavement of London, is of compact basalt; although, latterly, this material has been superseded by granite.

#### RETROSPECTIVE ARCHITECTURAL LITERATURE.

##### THE ELEMENTS OF ARCHITECTURE.

COLLECTED BY SIR HENRY WOTTON, KNIGHT,  
From the best Authors and Examples.

(Continued from p. 395.)

FIGURES are either simple or mix'd; the simple be either circular or angular: And of circular either compleat or deficient, as Ovals; with which Kinds I will be contented, tho' the Distribution might be more curious.

Now the exact Circle is in truth a Figure, which for our Purpose hath many fit and eminent Properties, as Fitness for Commodity and Receipt, being the most capable; Fitness for Strength and Duration being the most united in his Parts; Fitness for Beauty and Delight, as imitating the Celestial Orbs, and the Universal Form: And it seems, besides, to have the Approbation of Nature, when she worketh by Instinct, which is her secret School; for Birds do build their Nests spherically: But notwithstanding these Attributes, it is in truth a very unprofitable figure in private Fabricks, as being of all other the most chargeable, and much Room lost in the bending of the Walls when it comes to be divided, besides an ill Distribution of Light, except from the Centre of the Roof: So as anciently it was not usual, save in their Temples and Amphitheatres, which needed no Comparitions. The Ovals and other imperfect Circular Forms, have the same Exceptions, and less Benefit of Capacity: So as there remains to be considered in this general Survey of Figures, the angular and the mixed of both. Touching the angular, it may perchance sound somewhat strangely, but it is a true Observation, that this Art doth neither love many Angles, nor few. For, first, the triangle, which hath the fewest Sides and Corners, is of all other the most condemned, as being indeed both incapable and infirm (whereof the Reason shall be afterwards rendered) and likewise unresolvable into any other regular Form than it self in the inward Partitions.

As for Figures, of five, six, seven, or more Angles, they are surely fitter for *Military Architecture*, where the Bulworks may be laid out at the Corners, and the Sides serve for Curtains, than for Civil Use, tho' I am not ignorant of that famous piece at Caprarola, belonging to the House of Farnese, cast by Baroccio into the form of a Pentagon, with a Circle inscribed, where the Architect did ingeniously wrestle with diverse Inconveniences

in disposing of the Lights, and in saving the Vacuities. But as Designs of such nature do more aim at Rarity than Commodity; so, for my part, I had rather admire them than commend them.

These things considered, we are both by the Precepts and by the Practice of the best Builders, to resolve upon rectangular squares, as a Mean between too few, and too many Angles; and through the equal Inclination of the sides (which make the right Angle) stronger than the Rhombe, or Lozenge, or any other irregular Square. But whether the exact Quadrat, or the long Square be the better, I find not well determined, though in my own Conceit I must prefer the latter, provided that the Length do not exceed the Latitude above one-third part, which would diminish the Beauty of the Aspect, as shall appear when I come to speak of Symmetry and Proportion.

Of mixed Figures, partly circular and partly angular, I shall need to say nothing, because having handled the simple already, the mixed, according to their Composition, do participate of the same Respects: Only against these there is a proper Objection, that they offend Uniformity, whereof I am therefore opportunely induced to say somewhat, as far as shall concern the outward Aspect, which is now in Discourse.

In *Architecture* there may seem to be two opposite Affections, Uniformity and Variety, which yet will very well suffer a good Reconcilement, as we may see in the great Pattern of Nature, to which I must often resort: For surely there can be no Structure more uniform than our Bodies in the whole Figure, each Side agreeing with the other both in the Number, in the Quality, and in the Measure of the Parts: and yet some are round, as the Arms; some flat, as the Hands; some prominent, and some more retired; so as upon the Matter we see that Diversity does not destroy Uniformity, and that the Limbs of a noble Fabrick may be correspondent enough, though they be various; provided always that we do not run into certain extravagant Inventions, whereof I shall speak more largely when I come to the parting and casting of the whole Work. We ought likewise to avoid enormous Heights of six or seven Stories, as well as irregular Forms; and the contrary Fault of low distended Fronts is as unseemly: Or again, when the Face of the Building is narrow, and the Flank deep, to all which Extremes some particular Nations or Towns are subject, whose Names may be civilly spared: And so much for the general Figuration or Aspect of the Work.

Now concerning the Parts in Severalty: All the Parts of every Fabrick may be comprised under five Heads, which division I receive from Baptista Alberti, to do him right; and they be these:

The Foundation.

The Walls.

The Apertions, or Overtures.

The Comparition.

And the Cover.

About all which I purpose to gather the principal Cautions; and as I pass along, I will touch also the natural Reasons of Art, that my discourse may be the less mechanical.

First, then, concerning the Foundation, which requireth the exactest Care; for if that happen to dance, it will mar all the Mirth in the House: Therefore, that we may found our Habitation firmly, we must first examine the Bed of Earth (as I may term it) upon which we will build; and then the Underfilings or Substruction, as the Ancients did call it: For the former, we have a general Precept in Vitruvius, twice precisely repeated by him, as a Point indeed of main consequence; first Lib. 1. Cap. 5. And again more fully, Lib. 3. Cap. 3. in these Words, as Philander doth well correct the vulgar Copies.

*Substructionis Fundationes fodiantur (saith he) si quænt inveniri ad solidum, & in solidum.* By which Words I conceive him to commend unto us, not only a diligent, but even a jealous Examination what the Soil will bear, advising us not to rest upon any appearing Solidity, unless the whole Mold through which we cut, have likewise been solid; but how deep we should go in this Search, he has no where to my remembrance determined, as perhaps depending more upon Discretion than Regularity, according to the Weight of the Work; yet

Andrea Palladio hath fairly adventured to reduce it into Rule, allowing for that\* Cavassone (as he calleth it) a sixth part of the Height of the whole Fabrick, unless the Cellars be under Ground, in which case he would have us (as it should seem) to sound somewhat lower.

Some Italians do prescribe, that when they have chosen the Floor or Plot, and laid out the Limits of the Work, we should first of all dig Wells and Cisterns, and other Under-Conduits and Conveyances for the Suillage of the House, whence may arise a double Benefit, for both the Nature of the Moil or Soil would thereby be safely searched; and moreover, those open Vents will serve to discharge such Vapours, as having otherwise no issue, might peradventure shake the Building. This is enough for the natural Grounding, which though it be not a Part of the solid Fabrick, yet here was the fittest place to handle it.

There followeth the Substruction or Groundwork of the whole Edifice, which must sustain the Walls; and this is a kind of artificial Foundation, as the other was natural, about which these are the chief Remembrances: First, that the bottom be precisely level, where the Italians therefore commonly lay a Platform of good Board; then that the lowest Ledge or Row be merely of Stone, and the broader the better, closely laid without Mortar, which is a general Caution for all Parts in Building that are contiguous to Board or Timber, because Lime and Wood are insoceable, and if any where unfit Confiners, then most especially in the Foundation. Thirdly, that the breadth of the Substruction be at least double to the insistent Wall, and more or less, as the Weight of the Fabrick shall require; for as I must again repeat, Discretion may be freer than Art. Lastly, I find in some a curious Precept, that the Materials below be laid as they grew in the Quarry, supposing them, belike, to have most Strength in their natural and habitual Posture. For as Philippe de l'Orme observeth, the breaking or yielding of a Stone in this Part but the breadth of the Back of a Knife, will make a Cleft of more than half a Foot in the Fabrick aloft, so important are fundamental Errors; among which Notes I have said nothing of Pallification, or plying of the Ground-plot, commanded by Vitruvius when we build upon a moist or marshy Soil; because that were an Error in the first Choice, and therefore all seats that must use such Provision below (as Venice, for an eminent Example) would, perhaps, upon good Enquiry, be found to be at first chosen by the Counsel of Necessity.

Now the Foundation being searched, and the Substruction laid, we must next speak of the Walls.

Walls are either entire and continual, or intermitted, and the Intermissions be either Pillars or Pilasters, for here I had rather handle them than, as some others do, among Ornaments.

The entire Muring, is by Writers diversely distinguished: By some, according to the Quality of the Materials, as either Stone or Brick, &c., where, by the way, let me note, that to build Walls and greater Works of Flint, whereof we want not Example in our Island, and particularly in the Province of Kent, was (as I conceive) merely unknown to the Ancients, who observing in that Material a kind of metallic Nature, or at least a Fusibility, seem to have resolved it into nobler Use, an Art now utterly lost, or perchance kept up by a few Chymicks. Some again do not so much consider the Quality, as the Position of the said Materials; as when Brick or squared Stones are laid in their Lengths, with Sides and Heads together, or their Points conjoined like a Network (for so Vitruvius doth call it, *Reticulatum Opus*) of familiar Use, as it should seem, in his Age, tho' afterwards grown out of request, even perhaps for that subtil Speculation which he himself toucheth; because so laid, they are more apt in swagging down, to pierce with their Points, than in the adjacent Posture, and so to crevice the Wall. But leave such Cares to the meaner Artificers; the more essential are these:

That the Walls be most exactly perpendicular to the Groundwork; for the Right Angle, thereon depending, is the true Cause of all Stability both in artificial and natural Positions, a Man likewise standing firmest when he stands uprightest. That the massiest and

\* Under-digging, or Hollowing of the Earth.



heaviest Materials be the lowest, as fitter to bear than to be born; that the Work as it riseth diminish in Thickness proportionally, for ease both of Weight and of Expend; that certain Courses or Ledges of more Strength than the rest, be interlaid like Bones, to sustain the Fabrick from total Ruin, if the under Parts should decay. Lastly, that the Angles be firmly bound, which are the Nerves of the whole Edifice, and are therefore commonly fortified by the Italians, even in their Brick Buildings, on each side of the Corners, with well squared Stone, yielding both Strength and Grace: And so much touching the entire or solid Wall.

The intermissions (as hath been said) are either by Pillars or Pilasters.

Pillars, which we may likewise call Columns (for the Word among Artificers is almost naturalized), I could distinguish into simple and compounded. But (to tread the beaten and plainest way) there are five Orders of Pillars, according to their Dignity and Perfection, thus marshalled:

The Tuscan.

The Doric.

The Ionic.

The Corinthian.

And the Compound Order, or, as some call it, the Roman, others more generally, the Italian.

In which five Orders I will first consider their Communities, and then their Properties.

Their Communities (as far as I observe) are principally Three: First, They are all round, for though some conceive *Columna Atticæ*, mentioned by Vitruvius, L. 3. Cap. 3. to have been a squared Pillar, yet we must pass it over as irregular, never received among these Orders, no more than certain other licentious Inventions of wreathed, and vined, and figured Columns, which our Author himself condemneth, being in his whole Book a professed Enemy to Fancies.

Secondly, They are all diminished or contracted insensibly, more or less, according to the Proportion of their Heights, from one third Part of the whole Shaft upwards, which Philander doth prescribe by his own precise measuring of the ancient Remains, as the most graceful Diminution. And here I must take leave to blame a Practice grown (I know not how) in certain Places too familiar, of making Pillars swell in the middle, as if they were sick of some Tympany or Dropsy, without any authentic Pattern or Rule, to my Knowledge, and unseemly to the very Judgement of Sight. True it is, that in Vitruvius, Lib. 3. Cap. 2. we find these Words, *De adjectione, quæ adicitur in mediis Columnis; quæ apud Græcos Evraçis appellatur, in extremo libet erit formatio ejus*; which Passage seemeth to have given some countenance to this Error. But of the Promise there made, as of diverse other elsewhere, our Master hath failed us, either by slip of Memory, or injury of Time, and so we are left in the Dark. Always sure I am, that besides the Authority of Example, which it wanteth, it is likewise contrary to the original and natural Type in Trees, which at first was imitated in Pillars, as Vitruvius himself observeth, Lib. 5. Cap. 1. For whoever saw any Cypress or Pine (which are there alleged) small below and above, and tumorous in the middle; unless it were some diseased Plant, as Nature (though otherwise the comeliest Mistress) hath now and then her Deformities and Irregularities.

Thirdly, They have all their Undersettings or Pedestals, in Height a third part of the whole Column, comprehending the Base and Capital, and their upper Adjuncts, as Architrave, Frize, and Cornice, a fourth part of the said Pillar; which Rule, of singular Use and Facility, I find settled by Jacobo Baroccio, and hold him a more credible Author, as a Man that most intended this Piece, than any that vary from him in those Dimensions.

These are their most considerable Communities and Agreements.

Their Properties or Distinctions will best appear by some reasonable Description of them all, together with their Architraves, Frizes, and Cornices, as they are usually handled.

First, therefore, the *Tuscan* is a plain, massy, rural Pillar, resembling some sturdy well-limbed Labourer, homely clad, in which kind of Comparisons Vitruvius himself seemeth to take Pleasure, Lib. 4. Cap. 1. The Length thereof shall be six Diameters, of the grosset of the Pillar below, of all Proportions in truth

the most natural; for our Author tells us, Lib. 3. Cap. 1. that the Foot of a Man is the sixth Part of his Body in ordinary Measure, and Man himself, according to the Saying of Protagoras (which Aristotle doth sometimes vouchsafe to celebrate) is *τὸ πᾶν ἀνθρώπου σχῆμα μέτρον*, as it were the Prototype of all exact Symmetry, which we have had other Occasion to touch before: This Column I have by good warrant called Rural, Vitr. Lib. 3. Cap. 2. and therefore we need not consider his Rank among the rest. The Distance or Intercolumiation (which word Artificers do usually borrow) may be near four of his own Diameters, because the Materials commonly laid over this Pillar, were rather of Wood than Stone, through the Lightness whereof the Architrave could not suffer too thinly supported, nor the Column itself, being so substantial. The Contraction aloft shall be (according to the most received Practice) one fourth part of his Thickness below. To conclude (for I intend only as much as shall serve for a due Distinguishment, and not to delineate every petty Member) the *Tuscan* is of all the rudest Pillar, and his principal Character, Simplicity.

(To be continued.)

#### A GLANCE AT THE INTERIOR OF THE CHURCHES IN THE DEANERY OF SPARKHAM, IN NORFOLK.—NO. III.

WITH NOTICES OF THEIR ACTUAL CONDITION.

(Continued from p. 395.)

Weston Longueville.—“Since the stormy and eventful period of the great rebellion, the injuries which our churches have sustained are, for the most part, the results of shameful neglect and tasteless reparations.”\* The interior of this spacious edifice will, we fear, render some among its former wardens liable to imputations like these; although, from the tokens of recent care for its externals—the roof, walls, &c.—we had at first hoped to find it otherwise. The building consists of a large square tower, with pointed windows on the west side ranging with those in the aisles; a nave, having its roof supported by tall octangular pillars, the intervening clere-story receiving light through quaterfoil windows, two aisles, and a roomy chancel. The roofs are covered with lead throughout, that of the porch only excepted, which is tiled. The arch here is surmounted by a horizontal range of panels, formed of dressed freestone, filled in with squared flints. In the angle above occurs

“A little Gothic niche that ’erewhile held

The sculptured image of some patron saint.”

Its apex supports a shield charged with armorial bearings, probably those of the founder. In the steeple are five bells.

The octagonal font, a massive structure of the Norman period, has its capacious bowl leaded, and duly supplied with a drain; it rests on four small shafts, encircling a large cylindrical stem, the whole set on a square pedestal. Beneath this, two square steps admit of easy descent to the pavement level. On a projecting piece of masonry, attached to the upper one for the convenience of the officiating priest, may be traced an effigy of our Lord, coarsely sculptured in the attitude of the crucifixion; this stands centrally between the door, and much in advance of the tower arch, thus separating, as it were, an antechapel parvise from the main body of the church. A huge wood framed lock on the south door merits inspection, if only for the rudeness of its workmanship.

Advancing up the nave, where the supply of seats is partial, and these of very debased character, we happen upon one of those specimens of a higher and purer feeling for the Lord's honour which, although “few and far between,” at times cheer us amid the barren poverty round about. Offering, as it does, a fine model of what should characterize the furniture of a Gothic church, comely adorned, and befitting the Almighty Presence, we will essay to prove accurate in our description. The ends of this seat, which is low and unenclosed, are surmounted by finials or crests, having the

apex spear-shaped, and terminating at the neck in a chevron. The *quasi* elbows are sculptured, each with the figure of an eagle, having its cloven head retorted, and the wings reversed. These support the seat, adjusted so that none might by any means sit with their faces upward from the altar. The back presents a plain boarding under, but above the seat a course of perforated tracery runs along beneath the hand-rail or capping, the reverse side of which is carved with the Tudor flowers in the hollow, and the head is embattled. Below this rail we find a broad shelf, placed for accommodation of those occupying the next seat, and somewhat elevated above that on which it addresses. Such was the goodly array of open pews or benches in which our ancestors were content to worship; they knew that with God there is no respect of persons, and carefully avoided the least token of it in portioning out His sanctuary. But now *inebriatur sæculum*—the age is steeped to the lees in fastidiousness.

The pavement, more especially that of the north aisle, is in a wretched state; shewing that a position ever so elevated affords no security from damp. The avenues are largely occupied by flat grave-stones, many of them charged with heraldic bearings; three are inlaid with brasses, but only one demands our notice, it lies in the north aisle. The effigy of a lady, wearing the “miniver cap” of the period, and having two children standing at her feet, has this inscription—“Of your charity, pray for the soule of Elizabeth, late wife of Firman Rookwood, Esq., daughter and heir of Sir John Timperley, Knt., who died May 13, 1533.

A feature of considerable rarity occurs in this church—a large altar stone or slab,\* marked with small crosses at each corner and in the centre, symbolical of the five wounds. It finds place as a flag-stone in the cross avenue of the nave flags, without the chancel screen; and has not, as is now generally the case, the incised face reversed. This interesting relic is well worthy of careful regard and protection, so few having escaped the profanation of the civil wars, in the reign of Charles I.

The lower section of the screen has its panels decorated with paintings of the apostles, each carrying the emblem by which he was anciently recognized. The keys, and that form of the cross known as St. Andrew's, speak for themselves; the new figure, bearing a fish, probably designates the elder James; a spear should indicate St. Thomas; the club Simon the zealot; the square St. Jude; we assign to “the loved apostle John” the feather or pen of the succeeding portraiture; to the lesser James the pilgrim's staff and scrip next given; a hatchet and a slaying knife may point out respectively Matthias and Bartholomew; while a club and a censer, each accompanied by a book, denote, we take it, the first Philip, the other Matthew the evangelist. Admonitory scrolls, lettered in small English characters, wreath about these figures; and above them might once be read at whose charges the work was executed. . . . . *Hoc opus fieri fecit.*

The perforated part, supported on light shafts in form of buttresses, has its ogive arches surmounted by a double line of perpendicular tracery, separated by embuttled transoms intersecting the apex of the lower range, the whole being elaborately foliated and otherwise enriched. We regret to add that the loss of its doors, and other mutilations, impair, though they cannot efface the beauties of this elegant relic. An open archway in the south angle shews that the roof loft was gained by an inward staircase in that direction.

The sedilia and piscina deserve more than cursory examination. They are canopied by fretted ogive arches, springing from clustered pillars, the whole inserted in a square-headed compartment, having its spandrels and cornice enriched with four-leaved flowers, grotesque figures, &c. An elegant little niche of much smaller dimensions, situate in the north wall opposite, might not improbably have been used as a table of prothesis or credence.

We pass on to the parish-church of Lyng.

C. T.

\* Barr's “Anglican Church Architecture.”

† Sturtevant's “History of Churches.”

\* See “A Few Hints, &c., for the use of the Cambridge Camden Society.”





MR. THOMAS'S PRIZE FRESKO OF "PHILOSOPHY."

(Drawn on the Wood by Mr. THOMAS himself.)

THE above is from Mr. Thomas's design entitled the Throne of Intellect, in which the principal figure, "Philosophy," forms the subject of the fresco by the same artist.

The oil-painting (exhibited with the cartoon and fresco) is intended to present as nearly as possible the effect to be produced by the whole

design, when executed in fresco. The centre figure, Philosophy, tramples on the emblems of Force and Tyranny. The progression of mind is indicated from the simple properties of matter (Geometry), as extended to the planetary system by Astronomy; and Philosophy, supreme in perception of Divine order, points to the Author of All.

The allegorical figures in the angles repre-

sent Man escaping from the evils of the serpent Error. The other, Superstition, veiling herself.

The fresco is executed on a gold background, which must have increased the difficulties; but has been done probably to diversify the artist's contributions: the attempt has been to produce the severe architectural design on the models of the Florentine school.

#### LONDON AS IT WAS IN 1800, AS IT IS IN 1844.

(Continued from p. 392.)

THE onward march of intellect during the last half century is truly admirable, the manners of the present day afford a most encouraging contrast to those of our forefathers; and although it is to be lamented that old English hospitality should have been superseded by a cold calculating spirit, that the social thread which formerly bound all classes together should have been violently broken by the worldliness and votaries of mammon, yet the change has not been without its advantages. Hadji Mahommed, a very elegant and witty writer, informs us that drunkenness was very prevalent in his days, the common people having a proverb, "that their labour could not

be too small, nor their liquor too strong." "These," he says, "celebrate the sabbath and all their festivals with drinking and riotous living, esteeming it a very great crime (and that no blessing will attend them) should they do otherwise, and live soberly at those seasons." He relates an anecdote that a poor shoemaker being on his death bed, the parson of the parish was sent for to console and prepare him: the man declared the utmost unwillingness to die, saying "that he had been guilty of one of the most enormous sins of omission that could lie upon a man's conscience, and seemed to be in a state of deepest despair about it. The clergyman, at length, with many arguments, prevailed on him to unburthen himself, and declare what it was: the wretch, with grievous and heavy sighs, then owned, that he had not so much as wetted his whistle with a draught of strong beer, or a dram

of Geneva, during the whole course of Easter holidays." It was a melancholy sight to observe most of the villages adjacent to London crowded with drunkards, perishing with dropsies and consumptions, brought on them by their violent excesses.

Again, "in the country," he observes, "one can scarce go into a mixed company of men and women, among the middling gentry, without having barbarous indignities put upon modesty and good breeding. Their songs, their jests, and their stories have all chiefly a torn towards smutiness. At christenings and marriages their libertinism reigns without control: and one's conversation is rendered insipid and improper unless it is seasoned with lewd mirth. He is a happy companion who can make the ladies simper over plates, or screw up their mouths to suppress a laugh, and improve the hint by a circular sneer and whisper behind their fans; a reverend piece of smutiness given with all due gravity taking the lead." This writer also condemns the females for



their masculine habits of dress and tobacco-smoking.

These were the days of bull and bear baits, cocking, and boxing, of Fleet and Mint marriage by disgraced clergymen, of imprisonment for debt without hope, and sometimes without redemption of the body after death, of robbery, and of judicial wholesale murder.

What wonderful changes have taken place within the memory of man! The middling classes are now distinguished for their sobriety, industry, and intelligence; they form a current rolling onwards and strengthening as it proceeds, checking pride, ambition, and arbitrary power on the one hand, bigotry, intolerance, and the countless vices arising from ignorance on the other. We find them intent on intellectual pleasures and intellectual acquirements; and when the present furor for the poisonous trash of literature shall have abated, when thieves and cut-throats shall no longer be exalted as demi-gods, and pointed out as objects of ambition; the fruits of their intelligence will, of necessity, follow in the blessing of universal peace and continually increasing happiness. Even the lower classes have prodigiously improved; it is true that drunkenness, and its attendant vices, is still prevalent and most particularly exemplified on those days, when the working classes are let loose from labour, but it is satisfactory to see the thousands and tens of thousands, banding themselves together to resist this insidious enemy, or seeking, through the blessings of steam, the higher intellectual pleasures, far away from the site of their daily toil, and still surrounded by their families and friends. Woe to the bigot who would stand between them and rational enjoyments! Who would coop them up by Acts of Parliament, oppress them by exaction, and with true pharisaical spirit devour their substance, and for a pretence make long prayers.

The love of the fine arts and of the more abstruse branches of science, including mechanics, chemistry, and mathematics, is continually increasing with the increase of our population; and even many of the common problems of metaphysics are shrewdly commented on with a strength of thought and richness of conception, not unworthy the learned men of olden times. The days of sterling tragedy and comedy have, it is true, gone by; for men are now more prone to look to the realities of life; and their once concentrated taste for theatricals has of necessity given way to the numerous means and opportunities of more extended intellectual and social enjoyment.

Still we cannot say that in the vast augmentation of buildings, now environing London, that a corresponding improvement has taken place in architecture. With the exception of some few streets and squares, some few churches and public edifices, to be noticed hereafter, we have most decidedly retrograded at the West end of the town since 1800. The new squares and streets will not compete with those built within the thirty years previous, either in architectural beauty or family convenience. The churches, even to the present day, are specimens of what is too expected, and a sad exhibition of the effects of concealed competition, favouritism, and building by tender; all defects of execution being hidden for a time beneath the mask of plaster; and even where there is a display of taste, stability is wanting, in order to ensure future fame to the architect. The streets present either a dull uniformity, or, as is exhibited by Regent and Oxford-streets, a total absence of all regularity and design. The architect has, in fact, seldom power to follow out the dictates of his taste, the interest or obstinacy of individuals governing his movements. This is speaking critically; for the common observer sees much to admire, although the architect has little before him worthy imitation. The older churches of St. George's, Hanover-square, and St. Martin's, admit of no competition by any modern one in that portion of London, of which I am speaking; and yet architects of those days had no such excitement to tax their genius: for most of the beautiful works even of Sir Christopher Wren, were then hidden by huge unsightly masses of wood or brick. St. George's church was built in 1725; the ground, on which it stands, being the gift of the Rt. Hon. General W. Stuart, one of the churchwardens of the parish.

The large stone house, on the south side of Berkeley-square, was built by the Earl of Bute, circa 1765, and sold incomplete to the Earl of Shelburne, afterwards Marquis of Lansdowne, for 22,000*l.*; the square is said to contain three acres of ground. Grosvenor-square owes its origin to Sir Richard Grosvenor, Bart., who in 1695 named all the streets between New Bond-streets and Hyde Park. The centre house on the east side was raffled for in 1739, and won by two persons named Hunt and Braithwaite, who subsequently sold it to the Duke of Norfolk for 7,000*l.* The Weekly Journal of June 1, 1717, observes—"The new buildings between Bond-street and Marylebone go on with all possible diligence; and the houses even let and sell before they are built. In 1800 Bond-street, as a fashionable street, was without rivalry, and almost impassable for vehicles in fine weather. May-fair was held annually for fourteen days; in 1727 it was marked out to be built upon.

In the Evening Post, March 16, 1715-16, we read—"On Wednesday last four gentlemen were robbed and stripped in the fields between London and Mary-le-bon." In the year 1707 the maps of London represent King-street near Golden-square as perfect to Oxford-street; between which and Berwick-street were fields. In 1742, the little church of St. Mary was detached from London, with two zigzag ways leading to it; one near Vere-street, which was the then western boundary of the new buildings, and the second from Tottenham-court-road, somewhere about Charles-street. Rows of houses, with their backs to the fields, extended from St. Giles's to Oxford-market; a small cluster on the west side, and Spring-water House, constituting the whole of Tottenham-court-road. I have already noticed the extension of this quarter of the town in 1800.

Paddington parish extended over 1,197 acres, 3 roads, and 30 perches; of which 84 were arable or garden-ground, the remainder pastures. The manor of Paddington was granted to Westminster Abbey by king Edgar; and when the see of Westminster was abolished, it was given to Ridley, Bishop of London and his successors. In 1661 it was sold by the Parliamentary commissioners to Thomas Browne, Esq.; in 1741 it was purchased by Sir John Frederick, Bart.; and in 1800 was vested in Sir John Morshead, Bart. and Robert Thistlethwaite, Esq., in right of their wives.

The chief buildings at this period were Paddington-house, then a handsome brick edifice on the east of the green, built by Mr. Dennis Chirne, jeweller to Queen Anne, and then occupied by John Symmons, Esq.; Westbourne-place, granted by Henry VIII. in 1540 to Robert White, and some years afterwards the property of Isaac Ware, the architect (editor of Palladio's works and other professional productions), who erected the mansion with materials brought from Lord Chesterfield's house in May-fair; this was afterwards sold to Sir William York, Bart., Chief Justice of the Common Pleas in Ireland; and in 1800 was the property of Mrs. Coulson; Little Shaftesbury-house, the seat of Ambrose Godfrey, Esq.; the Queen's Lying-in Hospital, at Bayswater, where Mrs. Kennedy, the celebrated singer, closed her days in 1793, at the apartments of her husband, who was physician to the hospital; the church, rebuilt 1791 at an expense of 6,000*l.*; the stipend was formerly so small that it was difficult to find a person who would supply the cure; in 1626 it was only 10*l.*; it was afterwards 28*l.* Bishop Sheldon in granting the lease of the manor to his nephews in 1661 raised it to 80*l.*, at which rate it continued some time after the beginning of the present century. The number of houses was about 340, the greater portion of which, disposed a little to the north of Tybourn turnpike, were small wooden cottages, inhabited principally by journeymen artificers.

A celebrated eccentric statuary named John Bushnell was buried at Paddington in 1701; among other whims he undertook to demonstrate the possibility of the Trojan Horse, and began to make one upon the same principles, of wood covered with stucco; the head was capable of holding twelve men, the eyes were to serve as windows. Before it was half completed a storm of wind overset and destroyed the unwieldy machine. Bushnell was much admired as an artist.

PANORAS.—This place took its name from

the saint, to whom the church is dedicated. It was called St. Pancras in the Domesday book. Its extent in 1800 was 2,700 acres, being rated at 1,400*l.* per annum land tax. Kentish Town was formerly written Kentesstowne, being the property of Reginald de Kentewode; from whom also Caen-wood or Ken-wood, Earl Mansfield's seat, derives its name.

The old church is of Gothic architecture, built of stones and flints, and supposed to have been built in the 14th century. "Pancras Church," says Norden, "standeth all alone, as utterly forsaken, old, and weather-beaten, which, for the antiquity thereof, it is thought not to yield to Paul's in London. About the church have been many buildings now decayed, leaving poor Pancras without company or comfort, yet it is now and then visited with Kentishtowne and Highgate, which are members thereof; but they seldom come there, for they have chapels of ease within themselves; but when there is a corpse to be interred they are forced to leave the same within this forsaken church or churchyard, where it resteth as secure against the day of resurrection, as if it lay in stately Paul's." It was long noted as the burial place of such Roman Catholics as die in London and its vicinity, and many are buried there at the present day. It was plastered and repaired about 25 years ago, and now bids fair to outlast many of our modern churches. The Small-pox Hospital was built in 1675; the Foundling-house was instituted 1739; the Veterinary College in 1791.

Hampstead, formerly Hamestead, the ancient way of spelling *homestead*, contained in 1800 2,169 acres of land, of which 273 were waste; the land-tax was 855*l.* 17*s.* 4*d.*, which was at the rate of 10*d.* in the pound rack-rent. Its fine, healthy, and commanding situation for a panoramic view of London and the surrounding country have always drawn together a number of occasional visitants, for whose accommodation several places of public amusement had been established. The Spaniard and the Flask taverns, and a tea-drinking house called New Georgia, where the company were diverted with various water-works, were the most remarkable places. The latter is now inclosed with Lord Mansfield's premises. The Hampstead Wells were once in great request by rank and fashion. The present church was consecrated in 1747. When Hampstead was granted to Westminster Abbey by King Ethelred in 986, it contained only five cottages.

Kensington, in Domesday book called Chenisiton, in other ancient records Kenesitune and Kensintune, was a village lying on the Great Western road, about 1½ miles from Hyde Park Corner, embracing 1,910 acres of land, about 500 of which were devoted to raising garden produce, and 100 acres to horticulture.

Holland-house, one of the most ancient mansions in this parish, is the manor-house of Abbot's Kensington, and takes its name from Henry Rich, Earl of Holland. It was built by his father-in-law, Sir Walter Cope, in 1607, and affords a very good specimen of the architecture of that period. The stone piers at the entrance of the court (over which are the arms of Rich, quartering Bouldry, and impaling Cope) were designed by Inigo Jones, and executed by Nicholas Stone. The internal decorations were by Francis Cleyn. The Earl of Holland was a conspicuous character during the whole of the reign of Charles the First he was made a prisoner in his own house, and was finally beheaded by the Parliamentarians in 1649. General Lambert fixed his headquarters at Holland-house. On its restoration to the conates, and when the theatres were shut up by the Puritans, plays were very often acted there, collections being made for the actors. The celebrated Addison became possessed of it in 1716, by his intermarriage with Charlotte, Countess Dowager of Warwick and Holland.

Campden-house, in 1800, the property of Stephen Pitt, Esq., and occupied by Mrs. Denham, another celebrated house, was built by Sir Baptist Hicks in 1612, a zealous royalist and great sufferer during the civil war. Charles the Second supped with him there about a fortnight after the restoration. Montagu Bertia, the brave and loyal Earl of Lindsey, immortalized by his filial piety, died at this house. In 1691 it was hired of the Noel family by Queen Anne, then Princess of



Denmark. At Earl's-court was the villa of the celebrated surgeon, John Hunter.

Kensington Palace was the seat of Sir Heneage Finch, afterwards Earl of Nottingham and Lord Chancellor of England; his son sold it to King William soon after the accession of that monarch to the throne. Kensington Gardens were originally only 26 acres, Queen Anne added 30 acres, 300 acres were afterwards taken from Hyde Park and added thereto. It is a very irregular building.

(To be continued.)

#### TIMBER—ITS TREATMENT AND USES.

BY JAMES WILSON.

(Continued from p. 394.)

50. CHESNUT.—The sweet or Spanish chestnut is a hard and compact wood, so similar to the oak in colour and general appearance, that it is sometimes mistaken for it; it is, however, to be distinguished by the absence of the larger transverse septa; besides which, it will be observed in old wood, that the sap-wood is somewhat whiter, and the heart-wood a little browner, than in oak; also, the pores of its sap-wood are scarcely visible, while in oak they are large, thickly set, and distinctly apparent. It also differs from the oak in another respect referred to in article 29; and it is more easy to work than those of native growth. The annual rings are very distinct, one side being porous, and the other compact.

51. It is a native of many parts of Europe, and flourishes in the dry, congenial soil of the southern, and the warmer of the mountainous parts; the largest being found on Mount Etna, in Sicily: in the south it is chiefly regarded as a fruit-tree. It is of rapid growth, and long-lived, particularly if grown in a rich, dry, and sandy loam; if sprung from a moist soil, it is less firm in texture, and more liable to split, shrink, and swell with the variations of the weather; although, under no circumstances is it so subject to these disadvantages as other woods generally. When favourably situated, the tree may attain the age of 1,000 years.

52. With the oak, to which as a tree it is a formidable rival, although inferior in girth, it is pre-eminent as to hardness and durability; and, indeed, the young wood, which is tough and flexible, even excels the other in these respects, the proportion of sap-wood being also very small. It is applicable to the same uses as the oak, though in strength somewhat inferior to it. But from a brittleness which is in its nature when of mature growth, along with shakes to which it is somewhat subject, the wood of old trees is unsafe for beams and other bearing purposes as have to sustain a great or undefined load, being often decayed and rotten within when it has a very fair appearance without; it is then liable to break without affording any warning. It is also said to be very liable to decay if deprived of the salutary influence of ventilation; on which account, the ends of beams, when let into walls, should rest upon stone templates, in arched openings prepared for them, a free circulation of air being thus admitted all round.\* The above circumstances being all considered, it appears that the young is more valuable than the old wood.

53. It is much to be desired that this handsome forest-tree, so advantageous for beauty and usefulness, were even more cultivated in England than it now is; in early times it was very plentiful; and, from the evidence that is afforded by roofs and other parts of many of our old buildings, we are led to suppose that it was the principal timber adopted; although, it must be confessed that instances are not rare wherein such as have been long considered as constructed of it, have, on closer examination, proved to be really of oak. In the south of England it thrives, we may say, to perfection, attaining in fifty or sixty years as many or more feet in height. Even at this age, however, the quality of the wood is on the decline, getting ring-shaken, and otherwise less firm; at an age so early as forty years it is in perfection, notwithstanding it grows for centuries after. It is raised from the nut, which should be

\* [Care must be taken not to lay wood upon moist stone, which is sure to cause its decay; we generally take the precaution of interposing plates of lead or iron between stone and bearing-timbers, and carefully exclude timber bond from stone walling.—Ed.]

sown in February, dibbled in in-rows, and kept free from bottom shoots whilst in the nursery. Its foliage depends in splendid masses, its leaves long, lanceolate, and deeply serrated. The trunk is characterized by the deep and wide clefts with which it is marked. Its bark is sometimes used for tanning, but for that purpose it is inferior to oak bark.

54. Young coppice trees are, for straightness and durability, much esteemed for hop-poles, spars, pailings, rails, posts, and gates, and other purposes, where large wood is not; the timber of a more advanced growth is advantageous. It is also well adapted for the formation of casks, water-pipes, and other receptacles of liquids; the Italians use it for wine-tuns.

55. The American is said to be in all its properties and qualities very similar to the European chestnut; the young wood being tough and flexible, much esteemed for fence-work; the old wood brittle and shaky.

(To be continued.)

#### THE NATURE OF DESIGN.

A Paper read at the meetings of the Decorative Art Society, March 13th and 27th.

BY MR. CRABB, V.P., MEMBER OF THE INSTITUTE OF FINE ARTS.

(Continued from p. 399.)

ROME acquired her art through conquest; she imitated the buildings of countries subjected by her arms, and transported statues, pictures, and works of gold and silver, to adorn her capital. The produce of Athens, Delphi, and Elis, filled Rome with the rarest productions of the fine arts. The increasing power, when Julius Cæsar and Augustus held supreme sway, was auspicious to the general interests of the Fine Art; the emperors made great efforts to increase the splendour and magnificence of Rome, and their policy extended a similar course throughout the empire, considering that it tended to fix authority, give general security, and contribute to the happiness of the people. This example was universally followed by their subjects, who had spirit to conceive and wealth to accomplish the noblest undertakings. The opulent senators of Rome and the provinces esteemed it an honour, and almost an obligation, to adorn the splendour of their age and country; the influence of fashion very frequently supplying the want of taste or generosity. It was within a period of 300 years that the luxurious adornment of Rome took place. The sculptors were universally Greeks, and though wealth and honour drew men of talent to Rome, and somewhat revived Grecian excellence, the creative spirit, the spark of vitality, infusing life and soul, originality and thought into their productions, could not be recalled. In the best age of Roman art the demand was chiefly for statues of personal representation, in which a vitiated taste often required the embellishment of colour, by the admixture of coloured marbles or bronze. The same departure from simplicity pervaded their architecture. The most extensive and magnificent structures were erected, but in heavier proportions than the elegant Greek. Every member in the cornice of temple or public edifice became encumbered with a profusion of ornament, and an imposing heaviness of enrichment was the result. The interior of their buildings was decorated by sculpture and painting, and manufacturing design entered freely into their general domestic service. You have Sir W. Gell's fine work on Pompeii, and Sir H. Englefield's Etruscan Vases; several villa-façades, the magnificent decorations of Titus' baths, and some fine specimens of colouring and modern adaptation before you.

The splendid and colossal edifices which adorned their cities; temples, palaces, and baths, were crowded with works of art. Trajan's Basilica was most magnificent; its forum, temple, and approaches, crowded 12 acres; the hall, 540 by 168 feet, would have contained our St. Paul's; and its column was enriched by sculpture descriptive of the Roman victories over the Dacians. The theatre of Marcellus was arranged in three tiers of columns, the lower of marble, the next of vitrified glass, and the upper of gilded wood: it contained 3,000 statues in bronze. The palace of Diocletian at Spato was very celebrated; his baths accommodated 18,000 persons at one time. Those of Caracalla covered 13 acres. These baths were a sort of vast club, in which every

exercise of body or mind might be taken, every delight of the senses indulged, and the whole people met there. Gardens were raised about 30 feet above the general level, adorned with pavilions, and a great central building having an immense hall, obelisks and fountains, fragrant shrubs, flowers, and the finest statues. During the first 300 years of the Christian era seven of these baths were erected, well calculated to indulge that love of luxury which rapidly corrupted the Roman manners under the emperors, gratifying the constant love of excitement in novelty and splendour, which then gave popularity to the Government. The number and beauty of their villas were amazing; built on the model of the Persian palaces, their interior decorations were full of choice design, chiefly executed in fresco, and by artists of eminence. The luxurious description given of the furnishing of these villas, their richly wrought plate, &c. &c., convey certain intimations of the encouragement given to manufacturing design. Hadrian's villa, at Tivoli, inclosed by a wall ten miles in circuit, contained the most magnificent embellishments. Pliny's villa and that of Lucullus were very celebrated; each had gardens of great splendour.

We must not overlook Palmyra built by Dionysius, whose magnificent ruins, replete with elegant design, attract the traveller's attention. Balbec, not less celebrated, boasts of the well-known Temple of the Sun—

"Whose lonely columns stand sublime,  
Flinging their shadows from on high,—  
Like dials which the wizard Time  
Had raised to count his ages by."

Everything appertaining to this enterprising nation of conquerors was upon a mighty scale. They lived constantly in public, assuming an excess of vast magnificence in their habits, public exhibitions, and triumphal processions; and I may also add, in their arts and manufactures. They held tribute all the civilized world, and have left monuments of their greatness at the uttermost confines of their empire.

Byzantine art arose through the impatience of Constantine, and the inefficiency of his architects employed to erect the first Christian city; it presents a rich admixture of the plunder from other styles; several parts of Europe adopted it:—Moscow and the south of Russia, and also the regions along the Mediterranean coast.

The Arabian, or Moresque, took its rise among a people whose extraordinary conquests and quick perception of the beautiful enabled them to graft new combinations upon ancient Eastern architecture. At the time when other nations were again sinking into barbarism, they became a medium for preserving that knowledge which has descended to us. Their ornament was elaborate and geometrical, and distinguished by delicacy of execution; and the principle of their colouring gorgeous, as that of the eastern nations. I need only mention Mr. Owen Jones's magnificent publication upon the Alhambra Palace, in illustration.

The dismemberment of the Roman empire obscured the arts; and in the thirteenth and fourteenth centuries we find the church its only patron. During the middle ages Gothic architecture was extensively adopted; its singular and beautiful ornaments are exceedingly interesting, and frequently display very considerable talent in the principles of design. The Jesuits studied the arts, especially architecture, and have produced some of the finest perspective effects in the world; their noviciate, extending to thirty years, gave ample time and leisure for deep research, and they are considered to have produced greater benefits and greater evils than any other ecclesiastical body.

Early in the fifteenth century, immense efforts were made to restore classical architecture and ornamental embellishments, and consequently all the extensive ramifications of manufacturing design. Art quickly became the idol of the people, and there appeared some of the greatest names that ever graced the annals of art; powerful princes were patrons, and the utmost encouragement was afforded by the illustrious merchant family of Medici, the Pope's Leo X., Julius II. and Clement VII. Architecture, painting, and general decorative art, pressed forward with amazing success; all the minor discoveries had been gradually developed, and art reached its most distinguished eminence before the close of the fifteenth century. The splendid talents of Lionardo da Vinci distanced all former excellence; naturally possessing the



very highest attributes of genius, and favoured by education and circumstances, he became as great in sculpture as in painting. The musician, poet, and man of science, his genius kept unceasingly creating, but his perseverance failed before completion. The Battle of the Standard, a cartoon for decorating the great council chamber at Florence, is one of the noblest inventions of art, full of felicity and picturesque energy; it displays each attitude of body, and active passion of mind, with profound skill; the horses are treated with surpassing vigour; and it stood alone in art, until Rubens imagined from this text, his magnificent equestrian groups of the Battles of the Amazons. Contemporaneous was Michael Angelo, the prince of art; one of those mighty geniuses, who but at distant intervals are found upon the earth. He sublimely conceived, attempted, and succeeded in uniting magnificence of plan with wonderful execution and endless variety; his style was broad, his line uniformly grand; whatever he touched received the impress of his genius, and he rendered character and beauty subservient to the highest attributes of design. He shewed to what sublime purpose decorative painting could be applied, by his adornment of the Sistine Chapel; there depicting sacred history with all the wonders of art. In the "Last Judgment," every attitude, and the master trait of every passion which sways the human heart, was called to his assistance. The depth of thought and power of meditation he expressed in the prophets and sibyls of the chapel of Sixtus. His sculpture appears to have a vitality about it, and his powers as an architect were exhibited in the skilful adjustment of the vast number of jarring parts in St. Peter's, and combining them in one magnificent whole.

Raffaello was the mild and delightful painter of nature; his works in the Vatican, &c., prove him to have entertained the same thoughts as M. Angelo, upon applying the highest quality of art to decorative purposes: their ornamental portions, arabesques, borders, and numerous addenda, will be found, however beautiful in themselves, to be subservient to the great principles of design,—harmony and repose being essential to the ultimate effect of the whole work. To these eminent characters, who practised decorative painting in its highest walk, others, second only to such mighty names, lent their best assistance to adorn the palaces and villas of Italy, where they produced works of infinite beauty; galleries and apartments in which the richest architectural arrangements were embellished with skilful dispositions of colouring, beautiful arabesques and gilding; fine distinctive effects were produced through different combinations and proportions, harmony and rich solidity of magnificence, only to be obtained by a thorough knowledge and skilful adaptation of the sound unerring rules of art. In the magnificent folio work, just published by Mr. Gruner, upon the Fresco Arabesques and Painted Decorations of the Churches and Palaces of Italy, we shall have opportunities for enjoying and studying the brightest gems of decorative art. The examples of this extraordinary work of labour, forty-six in number, are coloured by hand, with a value and effect unprecedented. It expresses the mode of using the enrichments of painting and gilding, in unity with the architecture and with the sculpture; causing the entire to be viewed as one, neither perfect without the other. This work is exactly what we most required, reflecting the highest honour upon Mr. Gruner; and is likely to create a complete revolution in British decorative design.

Design, resulting from the full appreciation of fine art, was lavishly used during the fifteenth and sixteenth centuries, upon every kind of manufacture. The terra cotta of Faenza, of exquisite design and great variety. The Limoges enamels upon copper, forming cups, plates, tazzas, and various ornaments, were often painted by artists like Parmegiano. Richly coloured marbles were freely used in unity with beautiful mosaics, for interior embellishment. The dress of the period was rich in the extreme, in fashion, colours and material. The missals and psalters of the church were illuminated;—medallings carefully practised; engraving on steel, crystal, and precious stones, in intaglio and relief, and inlaying with gold and silver, upon the sumptuous designs for armour and offensive weapons, cups, vases, chalices, and sculptured plate, were

eagerly sought. The superb setting of jewels, intermixed with enamelling, became a passion; and the liberality and demand for large and small goldsmith's works, produced a great body of the finest manufacturing artists, medaliers, and engravers, celebrated in an age rich in every species of excellence depending upon the arts. Benvenuto Cellini was of most distinguished eminence, of elegant person, great vivacity; bold and full of intelligence, he lived amongst the most noble princes and dignified ecclesiastics of that turbulent age; sometimes soldier, musician, engraver, sculptor, or medallist; he produced coins for the mint, both at Rome and Florence, so fine as to be preserved as medals; he was ennobled, and dying at Florence, in 1570, was buried with great funeral pomp. He had lived in intimacy with M. Angelo, Titian, and all the great painters, sculptors, and architects of Italy; counted and esteemed by princes; these illustrious men were supported in great splendour, and held in the highest estimation.

Such being the treatment of artists by a Charles V. or Francis I., the celebrated ecclesiastics of the period, and the minor States of Italy, can we wonder at the success of art under encouragement so flattering, or be surprised that our Henry VIII. was unable to prevail upon these great artists to visit him?

(To be continued.)

#### CHURCH-BUILDING INTELLIGENCE, &c.

*Restoration of Holy Trinity Church.*—We regret to find that a new obstacle has arisen to carrying forward the restoration of this sacred edifice, so venerable from its antiquity, and so ornamental to the town from its architectural beauty. It is certainly most desirable that a work involving so many considerations affecting the honour and credit of the town, both with the present and future generations, should be under the control of those who are not only qualified to judge of its propriety, but disposed, from their attachment to the church itself, to accomplish it in a consistent and becoming manner. The churchwardens have commenced the re-edification of the south transept and porch, without, we believe, having consulted any properly qualified architect; and incongruities are in consequence being committed, which have obliged the archdeacon to issue a citation forbidding them or any other persons from proceeding with the work. This interposition on the part of the archdeacon is only in accordance with the declaration he made upon the subject in his late charge. "The attempts at reparation," he therein observes, "which have left things worse than they found them, fully justify the law, which I hope the rural deans of this archdeaconry will invariably assist me in enforcing, that no works shall be commenced without a specific permission. I must not omit to mention that an architect at Hull, Mr. Lockwood, has consented to give gratuitous assistance by inspecting any plans for partial improvements which may be submitted to him. On this head caution is the more needed, because architecture unhappily is one of those sciences on which the popular mind still remains to be educated." What will be the result of this interference it is at present difficult to conjecture; but it is certainly to be regretted, that the more respectable portion of the town should so long have been indifferent as to the parties to whose charge was committed the preservation of a structure, which the piety of their forefathers so munificently reared, and which it is our duty to hand down, in all its primitive splendour, to the latest posterity.—*Hull Packet.*

*New Church, Halstead, Essex.*—On Wednesday week the foundation-stone of this church was laid by Mrs. Gee, at Greenstead Green, bearing an appropriate inscription. There were present nearly 1,500 persons at the ceremony, who appeared to be dissatisfied with the sight, and exclaimed against the omission of a treat being given to the workmen, as is usual upon such occasions.—*Correspondent.*

*Nottingham.*—A Romish "cathedral," on a larger and more magnificent scale than any built in England since the Reformation, has been recently erected in this town, and will be "opened" on Wednesday, the 28th instant. The architect is Mr. Pugin.

*East Ardsley Church.*—This old church is about to be taken down, and a new church, when sufficient funds can be obtained, is to be built on the same site. Lord Cardigan has contributed 100*l.* towards this object.

*New Church at Chitoe, North Wilt.*—The foundation-stone of this church was laid on Monday week by Mrs. Starkey, of Spy Park. The erection of the sacred edifice has been entrusted to Messrs. Daniel and Charles Jones, of Bradford.—*Salisbury Journal.*

*St. Mary's Church, Dover.*—The restoration of this church is now rapidly drawing towards completion.—*Dover Chronicle.*

A monument is about to be erected in Staindrop Church, Durham, to the memory of the late Duke of Cleveland.

#### W. G. GOVER'S PATENT REMOVABLE WINDOW-SASH.

Those who are aware of the many painful, and too often, fatal accidents, which are so constantly occurring for want of a safe and easy method of cleaning the outsides of windows, will look upon this invention as a great public benefit.

Most servants, particularly respectable female-servants, are unwilling to undertake the cleaning of windows, as they are at present usually constructed, because a part of this work involves the necessity of sitting or standing in situations repugnant to their feelings, and fraught with extreme danger to all; and where such unwillingness does not exist on part of the servant, humanity dictates that persons unaccustomed to such precarious situations, should not be exposed to them at the imminent peril of their lives.

The consequence is, that a periodical extra expense is usually incurred by the majority of respectable householders, who employ glaziers and others to clean their windows. But though a painter or glazier, from habit, may be less liable to accident than a domestic, when engaged in this perilous work; still the cause of humanity would be best served, if the outsides as well as the insides of windows could be cleaned without, in any degree, endangering the life of a fellow creature.

To effect so desirable an object, the inventor of the patent removable window-sash, has devoted his particular study and attention; and as it was necessary for the accomplishment of his purpose, to contrive some method easily applicable to windows now in use, as well as to those which shall in future be constructed, Mr. Gover has taken care to adopt the simplest and least expensive method he could devise, for rendering the common sash removable, in the hope that householders generally will find it to their advantage, in point of economy, as well as convenience, to submit to the alteration.

Mr. Gover's patent removable window-sash is so contrived, that in less than two minutes, the whole window may be removed and taken into the room by the most unskilful servant; so that those who possess windows on this improved principle, may have them cleaned by their domestics, &c., without endangering the life of any human-being.

Much inconvenience found to accrue from the introduction of strange workmen will thus be avoided; while additional light and comfort may be obtained through the opportunity afforded of frequent cleaning with convenience and economy.

It will be found by those who inspect Mr. Gover's models of the removable window-sash, or the windows which have been fitted up on this principle, that it possesses several advantages over the common sash, viz. :—

The firmness given to it by means of the metal stops, when the sash is closed.

The silence and ease with which the metal and wood work together when the sash is raised or lowered; and

The opportunity it affords of substituting a ventilator upon a large scale. For clubs, hotels, hospitals, and offices, a duplicate sash fitted with wire gauze (so as to yield all the luxury of ventilation) might, when the weather permits, be fixed in the frame by means of the patent stops; the same stops being in like manner applicable to the glazed-sash; and no workman being required to substitute the one for the other.



## W. G. GOVER'S PATENT REMOVABLE WINDOW-SASHES.

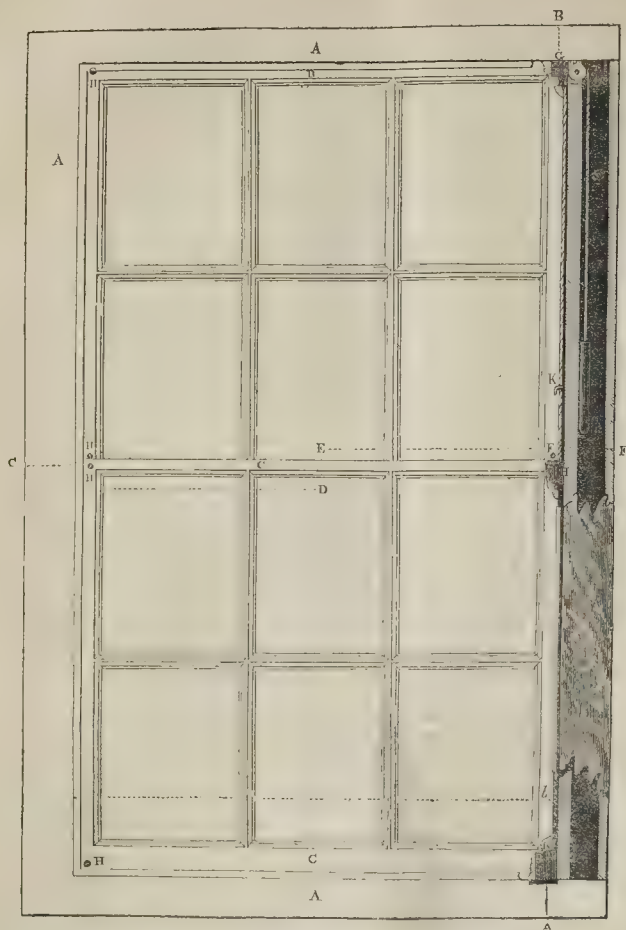


Fig. 1.

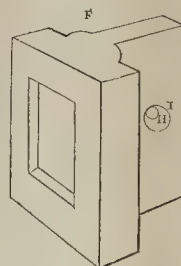


Fig. 6.

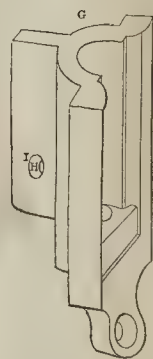


Fig. 7.

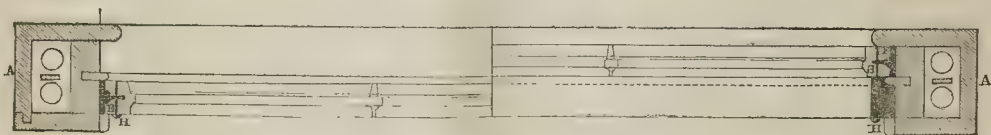


Fig. 3.

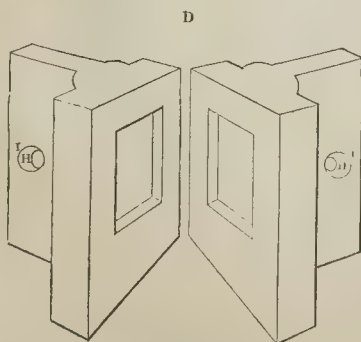


Fig. 4.

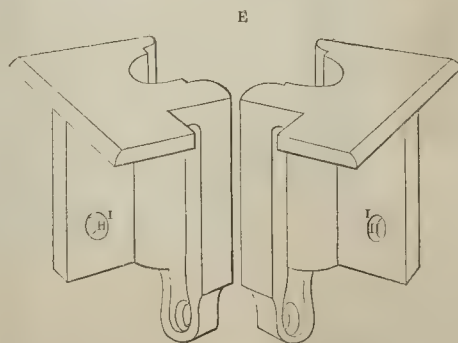


Fig. 5.



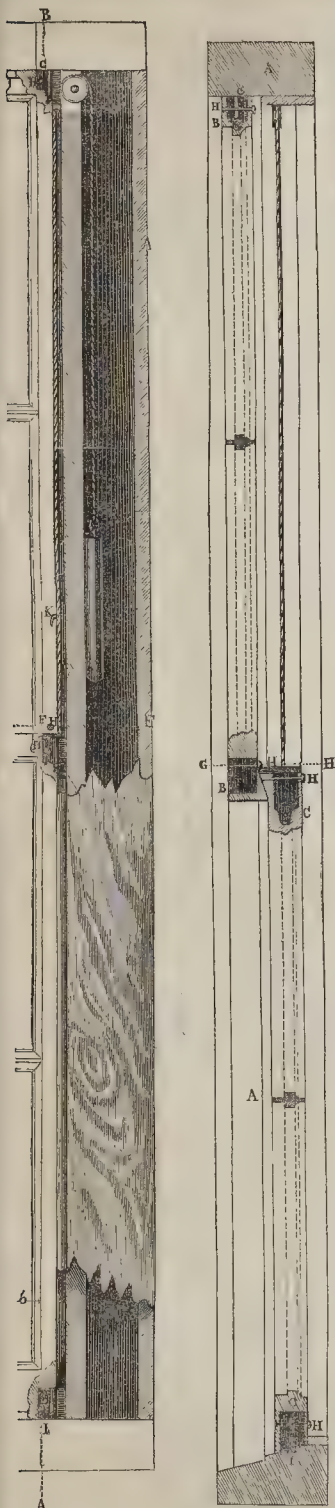


Fig. 2.

THE novelty of the design sought to be protected and represented by the drawing (which is of a scale of 3 inches to a foot,) consists in the shape or configuration of certain parts connected with the sashes of windows, whereby the sashes can be readily detached

from the window frame, without removing the beads, as hitherto commonly practised with windows of the ordinary construction; and thus the exposure of persons to the outsides of windows, for the purpose of cleaning or repairing them, becomes to a great extent unnecessary. Fig. 1. of the drawings represents an elevation of a window, the sashes having the parts above-mentioned attached thereto. Fig. 2 a vertical section through the line A B in fig. 1. Fig. 3, a horizontal section taken through the lines C D, E F, G H, in figs. 1 and 2. Figs. 4, 5, 6, 7, several perspective views of stops, hereafter mentioned; similar letters are placed upon and represent corresponding parts in all the figures. In the fig. 1, A A represents a rectangular window-frame; B, the top, and C, the lower sash; the extreme width of which is somewhat less than the width of the frame between the pulley-styles *ab*; the difference between the width of the sashes and the frame being made up by inserting pieces or stops, D, E, F, G, into grooves, formed in the top and bottom rail of each sash; and the said stops are connected to the sash-line by passing it through a hole\* formed therein, and to the sashes by passing pins or screws H through holes H, formed in the window-rails and stops, as shewn; the bottom stops of the lower sash have projections I at their under sides, which fit into holes formed in the window-sill, to prevent the sash shaking; it will appear evident that the sashes will now slide freely in the frame, and be perfectly secure therein; and may be readily removed from the frames, by withdrawing the pins or screws H, the weight attached to the sash-line being prevented from falling by passing the stop, which has a hole through it over a hook K, fixed to the bead of the window-frame, as shewn.

## RAILWAY INTELLIGENCE.

**Lincoln, Swinton, and York Railway.**—George Hudson, Esq., the chairman of the Midland, the York and North Midland, the Newcastle and Darlington, the North British, and the Leeds and Bradford Railways, accompanied by Messrs. George and Robert Stephenson, the engineers, arrived at Doncaster, on Wednesday last, from York, en route for Gainsborough, Lincoln, Boston, March, Cambridge, and London, when they proceeded to survey the western side of the town, accompanied by Sir Isaac Morley, the town clerk, and Mr. Alexander, for the purpose of determining the approaches, and of fixing upon the site for the Doncaster station, which, it is expected, will be between Union-street and Shakespear's Head. From this station the lines will radiate west to Swinton, north to York, and south to Lincoln and London. The line to Swinton is intended to pursue the course of the Dun valley, as before proposed. The south line bears directly towards Bawtry, passing the Carr Grange, and over the low grounds to Littleworth, in Rossington, crossing the London road in the valley near King's Wood, and forward to near Bawtry, thence at the foot of Scaiforth Hills, over Gringley Carr, and between Walkeringham and Beckingham to Gainsborough, where it will cross the river Trent a little above Gainsborough Bridge, and forward to Lincoln. The north line is to pass between the town of Doncaster and the union workhouse, across Crimpsall and the great north road, in a direct line for Askern, by Stubbs Walden and east of Womersley, crossing the river Aire between between Beal and Knottingly, and joining the York and North Midland Railway at the Burton salmon station; thus completing a continuous line of railway from London to York, considerably shorter than the existing route, and a communication between the manufacturing districts and Lincoln, Cambridge, and Norfolk. A short branch is also to be made from the main line for the accommodation of the river trade at Docken Hill; and active operations are to be commenced for preparing the necessary Parliamentary sections and surveys, in compliance with the standing orders of Parliament.

**Progress of the Atmospheric System.**—A new line from Newcastle to Berwick, a distance of 60 miles, is about to be brought forward. Mr. Brunel is the engineer, and it is to be worked entirely on the atmospheric principle. Lord Howick and other influential noblemen and gentlemen will support it.

**Railway Meeting at Workington.**—On Friday week a numerous meeting of the inhabitants of both Workington and Cockermouth and the neighbourhood was held at the Green Dragon Inn, in the former town, in order to take into consideration the report of George Stephenson, Esq., on the proposed line of railway between Workington and Cockermouth. On the motion of J. W. Fletcher, Esq., seconded by M. Falcon, Esq., Joseph Thompson, Esq., was called to the chair. The chairman having read Mr. Stephenson's report of the projected undertaking, the following committee was formed for the purpose of carrying the railway into effect—namely, the Right Hon. the Earl of Lonsdale, Gen. Wyndham, Joseph Harris, Michael Falcon, J. W. Fletcher, J. Harris (Lorton), Charles Brown, L. Bouch, T. Mawson, T. Westray, Jonathan Wood, W. Fisher, G. Cape, J. Thompson, sen., J. Guy, W. Thornburn, J. Steel, Wm. Wood, Henry Grayson, Isaac Thompson, W. Cook, T. Wilson (Cockermouth). Shares to the amount of 29,500*l.* at 20*l.* each, were subscribed for in the room during the meeting, and at present shares to the amount of 42,000*l.* have been taken up. The subscription list is now closed, until information be received from the Earl of Lonsdale, who will doubtless patronise the measure himself, as to the number of shares to be reserved, and in order to afford the noble earl time to take Mr. Stephenson's report into consideration. The projectors of this undertaking are very sanguine that the traffic in coal and lime will amply pay the interest on the full capital, which is fixed at 70,000*l.*, though Mr. Stephenson in his report only estimates the cost at 7,000*l.* per mile. The company, we understand, have decided upon reserving 500 shares, and the remaining 300 may be said to be actually taken up or be spoken. This railroad when constructed will be of the utmost advantage to the two towns which it will connect, as well as to the district through which it passes, and will likewise form a most important branch to the Whitehaven Junction Railway.—*Carlisle Patriot.*

**West Riding Railways.**—An important meeting has been held at Leeds, at which various gentlemen from Leeds and Bradford attended, besides a portion of the Leeds and Manchester board of directors, including the chairman, to urge upon the meeting the consideration of several projected lines of railway, and eventually it was determined to perfect the surveys and plans which have been for some time under consideration, so as to supply with railways, in the best and most effective manner, the towns of Leeds, Bradford, Huddersfield, Dewsbury, Batley, Birstal, Heckmondwike, Pudsey, Cleckheaton, and the intermediate populous district, in order that the scheme might be brought under the consideration of Parliament the next year. A strong and unanimous feeling in favour of the plan was manifested by the gentlemen assembled at the meeting, and instructions were given to the official gentlemen to take the necessary preparatory steps without delay.

**York and Scarborough Railway.**—On Thursday week Mr. Alderman Hudson attended at Malton, and had an interview with several of the gentry of the town and neighbourhood, at which it was agreed that the station should be in the bone-mill and brick-yard field, in the occupation of Jonathan Booth and Co., and belonging to Robert Bower, Esq., of Welham, with a bridge over the Derwent, and a communication thence into Yorkersgate, the centre of the town of Malton. A great number of workmen are now busily engaged in the formation of the line in the neighbourhood of Scarborough.

**London and York Railway.**—The route of this elastic line is destined, says the *Leeds Mercury*, to undergo yet another alteration, so as to make its northern terminus at Leeds instead of York. A meeting was held at Peterborough, on Thursday, Earl Fitzwilliam in the chair, when resolutions in favour of the London and York scheme were adopted by the Hon. M. Fitzwilliam, M. P., Mr. C. Chaplin, Mr. R. Hodgson, M. P., Mr. E. B. Denison, M. P., &c., and unanimously carried.

The directors of the North British Railway have issued notices for contracts for executing about twenty miles of the line from Berwick towards Edinburgh.



**Edinburgh, Leith, and Granton Railway.**—This line, which was formerly called the Edinburgh, Leith, and Newhaven Railway, has changed its name since the Bills have been passed, authorizing the extension branches to Leith and Granton. The contract for the Granton branch has been contracted for at a sum far below the estimated cost, and the contract for the Leith branch is also advertised for.

#### OPENING OF A TUMULUS.

A TUMULUS or barrow called East-low, and more generally by the rustics Easly-hill, in the parish of Ringham, near Bury St. Edmund's, was excavated and explored on the 4th ult., under the direction of the Rev. Professor Henslow. The hillock at its base is about 90 or 100 feet in diameter, and its height 13 or 14 feet, covered on all sides with thorn-bushes, except its summit, which has the appearance of a spacious harbour, accessible by several winding paths through the dense thorn bushes. The tumulus is situate at the south-eastern angle of the four crossways of a road, having to the southward three other tumuli of smaller dimensions, which had been opened at a former period. The excavation was entered on the south side, the entrance being protected by two upright pieces of timber supporting a cross beam, to prevent the earth from falling; the same precaution was taken within the subterranean passage as the work of excavation proceeded. At several yards' distance from the entrance was found the tomb or chamber, built of flint and mortar, with rows of tiles at intervals, about 12 feet long and 4½ wide. Around this chamber was cut a complete passage, wider on the side entered than on the other sides; and at the north-eastern corner of the excavation was cut a passage for egress, by which means the visitors could pass round with more convenience, or make their exit. The tomb or chamber, which appeared exceedingly fresh and solid, was broken open on the west side nearest the entrance, and on the north side, and the chamber was found to contain a leaden coffin, deposited as in a brick grave at the present day. A complete arch was found a little above the coffin, formed of Roman tiles intermixed with much mortar, and then regularly covered with Roman tiles, like the roof of a house. The leaden coffin was 6 feet 9 inches long, and 1 foot 5 inches broad, and 1 foot 4 inches deep. It was formed out of a sheet of lead, by turning up the sides and ends, as in making a box or tray with a card. The edges were soldered on the inside; the lid was a loose sheet, also turned in at the edges, but without soldering. When the lid was removed, there appeared a skeleton, the skull-bone and some teeth in good preservation. In the mouth, according to ancient custom, was an obolus, or piece of money, too much corroded, properly, to ascertain its date. This was intended to pay Charon, the grim ferryman of the Styx. At the head, or north side of the grave or chamber, and adjoining it, was a small chamber, perhaps about 2 feet square, which had contained lachrymatories or small glass phials, supposed by some to be intended for holding the tears of the mourners, but considered by Professor Henslow as vessels for balms and balsams. The glass was gone to dust, which appeared like so much salt lying at the bottom of the chamber. Altogether the discovery is one of much interest to antiquarians; and Professor Henslow appears disposed to consider that the skeleton is that of the last owner of the Roman villa discovered last year near the spot, and that the tomb was erected at a late period of the Roman occupation of Britain, when it had ceased to be the practice to burn the dead.

—*Hud. Packer.*

**SALE OF ESTATES.**—During the last two or three months there has been a sale of landed property in Fife which is quite unprecedented. In that time there have been sold the lands of Pittessie, for 19,750*l.*, to the Dowager Lady Glasgow; Newbigging, to Mr. Johnstone, for, we believe, about 19,500*l.*; Teuchats, to the College of St. Andrews, for 4,000*l.*; Myreside, 4,000*l.*, to Mr. Currie, Leven; Pitmedden, for about 5,000*l.*; Kinglassie, for nearly the same sum. Within a short period back, also, the estates of Balgarvie, Radernie, and Smydgreen, in this county, have been purchased.

#### Miscellaneous.

**BURNS' FESTIVAL.**—DIMENSIONS OF THE PAVILION.—We took a stroll to the ground yesterday (August 2), and were much gratified by the appearance of the pavilion; it seems admirably adapted for the purpose intended, whether in point of external effect or internal accommodation. Mr. McNab and Mr. Dickie, the contractors, are doing every justice to the workmanship. As with our changeable climate, fine weather, however desirable, is not to be calculated upon, it is essential that the erection be water-tight; and this the contractors are insuring, by first roofing it with wood and afterwards overlaying it with felt that is impervious to rain. In the interior, the pavilion is 120 feet long, by 110 feet wide, yielding ample accommodation for 2,000 persons, with an architrave on each side, 6 feet indented, by 36 feet long, and elevated 11 feet—the one for reporters for the press, the other for the Glasgow quadrille band. At the one end is the chairman's seat, and fronting it the croupier's, both elevated; and at one side Mr. Blewitt, the eminent composer, who has charge of the music, will preside at the pianoforte, near which it is expected will be Mr. Templeton and Mr. Wilson, and an effective band of glee singers, trained for the occasion.—*Paisley Paper.*

**THE STATUE OF WILLIAM IV.**—A number of workmen, under the superintendence of Mr. Painter, one of the surveyors of pavements for the city of London, have commenced digging the open space between King William-street and Gracechurch-street, for the foundation of the statue of his late Majesty William IV., which will be erected in the course of the ensuing month. The statue is 18 feet high, and the design is by Mr. Richard Kelsey, the surveyor to the Commissioners of Sewers; the task of sculpturing the figure having been entrusted to Mr. S. Nixon. The statue and pedestal, which will be 40 feet high, will from its position be seen from the Surrey side of the water, and will occupy the spot where formerly stood the Old Boar's Head Tavern, immortalized by Shakespeare. The figure of his late Majesty is chiselled out of two immense blocks of granite, the largest weighing 30 tons, and the smallest 15 tons. The king is represented dressed in an admiral's uniform, over which is the robe of state.

**THE VALUE OF GROUND NEAR GLASGOW.**—On Thursday week the lands of Stobcross, to the west of Finnieston, and extending from the Clyde northward to near the Dumbarton-road, were sold by public roup at the price of 3*s.* per square yard, imperial measure. These lands extend to about 60 Scotch, or about 80 imperial acres, which, being about 387,000 square yards, make the price amount to somewhere about 58,000*l.*; but as the purchaser pays the auction-duty, which will be about 1,770*l.*; as well as the half of the conveyance stamp, the price will actually amount to upwards of 60,000*l.* These lands were purchased by the late Mr. Philips (by whose trustees they have been sold) in the year 1786, for about 3,700*l.*, making a rise in value of upwards of 56,000*l.*—*Scotch Paper.*

#### Tenders.

**TENDERS** delivered for repairs and alterations at St. James's Church, Duke's-place.—Mr. Meredith, Architect.

Turner and Sons	£1,295
J. Matthews	1,219
Ketley	1,139
Little and Son	1,075
W. Trego	1,071
W. Lawrence and Sons	1,032
W. Elston	993
Brodger and Ashley	989
J. Gerry	946
— Grimsdale	945
Rd. Ashley	940
Dd. King	933

**TENDERS** delivered for General Repairs of St. Peter's, upon Cornhill.

Lock and Neshaw	£1,276
Cooke and Son	1,245
Piper	1,198
Cole	1,196
Battam and Craske	833
Pritchard	829

The lowest tender accepted.

**TENDERS** delivered for alterations and improvements intended to be made to Aldridge's Repository, St. Martin's-lane, for M. C. Allen, Esq.—Charles Hatchard, Surveyor, 50, Lower Belgrave-place. August 13.

Messrs. Bennett and Hunt	£3,685
Mr. Symmons	3,644
Messrs. Parry and Son	3,638
Mr. Stearman	3,358
Mr. Todd	3,275
Mr. Mason	3,200
Mr. Cooper	2,988

**TENDERS** delivered for Additions and Alterations of Trinity (Baptist) Chapel, Trinity-street, South-wark.—R. Suter, Esq., Architect.

Wadey	£386
Crowhurst	385
Friend	358

**TENDERS** delivered for erecting a new first-rate house in Red Lion-street, Whitechapel, for Mr. White. August 7.

Woolcott and Son	£1,648
Fanson	1,595
Rivett	1,645

#### NOTICES OF CONTRACTS.

For sundry Alterations and Additions to the Bath Penitentiary.—Drawings, &c., G. P. Manners, Esq., Architect, Oxford-row, Bath. 19th August.

For the several Artificers' Works in the Erection of both or either of the New Churches—one at Morton, and the other at East Stockwith, near Gainsburgh.—Drawings, &c., Messrs. Hurst and Moffatt, Architects, Doncaster. 31st August.

\* For the supply of 2,000 yards run of Flat Caroline Hose Granite Curbing, parish of St. John, at Hackney.—C. H. Pulley, Clerk to Board for Repair of Highways. 21st August.

For the Repairs of Crypt School and House, and for Erecting a Covering to the Vegetable Market in the Southgate-street, Gloucester.—Mr. Jackman, the Chamberlain, Half-street, Gloucester. August 20.

For the Construction of a Sea Sluice, Bridges, and Tunnels, and for Excavating a Drain from a point near Gaywood-bridge to Fisher's Fleet, in King's Lynn.—Mr. E. Durrant, King's Lynn. August 20.

For 57,000 Larch or Memel Sleepers for the Leeds and Bradford Railway.—Company's Offices, Leeds. August 26.

For 3,300 Tons of Wrought Iron Rails for the Leeds and Bradford Railway, each rail to be 15 feet long, and to weigh 65 lbs. per lineal yard.—Company's Offices, Leeds. August 26.

For 1,100 of Cast Iron Chairs, for the Leeds and Bradford Railway.—Company's Offices, Leeds. August 26.

For 500 Tons of best Railway Bars of the parallel double T form, weight about 75 lbs. per yard, for the Liverpool and Manchester Railway.—To the Treasurer of the Liverpool and Manchester Railways, Liverpool. August 21.

For the Erection of a Dwelling-House for the Superintendent of the Steam Drainage Engine, and for the Walls and other necessary works to enclose a Coal-yard and Premises, and for Building a Bridge.—Mr. W. H. Young, Surveyor, Mildenhall.

For Erecting a Cast-Iron Fence, and Wrought-Iron Gates and Lamp Irons, on Yorkshire stone coping, next the high road at the Cavalry Barracks, Maidstone.—Ordnance Office, Pall Mall. August 22.

For supplying 2,250 Loads of African Timber, and delivering at H. M.'s several Dockyards during the year 1845.—Secretary of the Admiralty. 3rd September.

For supplying and delivering at H. M.'s several Dockyards during the year 1845, 1,500 loads of Honduras Mahogany.—Secretary of the Admiralty. 3rd September.

#### COMPETITIONS.

A PREMIUM of 100 guineas will be given by the commissioners appointed to erect a lunatic asylum in the vicinity of the city of Kingston, Jamaica, to the person who shall produce the best plan, accompanied by a specification, of an asylum for the reception of the insane. The institution must accommodate 200 patients of both sexes, with the requisite number of officers and servants, and due attention must be paid in the plan to the proper classification of the patients, and the climate in which the asylum is to be erected. The plan must also show how an addition may be made for the accommodation of 100 patients more, in the event of such being required. The plans must also set forth the probable cost of the building in stone, brick, and iron. The principal portion of the building is to be allotted to paupers, but the commissioners are de-



# The Builder.

NO. LXXXI.

SATURDAY, AUGUST 24, 1844.

## DESIGNING

to go through a review of the works of the Cambridge Camden Society, we this week begin, as with a text, according to our promise, with the translation by "Two of its Founders," of "*The Symbolism of Churches and Church Ornaments: from the Rationale Divinarum Officiorum*," written by William Durandus, sometime Bishop of Mende. Leeds, 1843."

We have said we begin with this work as a text, because the bias of mind towards trifling and unsoundness, exhibited by that society, is as much to be seen from this one little work, and the reading of it will give the student as correct an idea of what reliance ought to be placed upon such authority, as if he were to waste his time by perusing a thousand folios from the same source.

For the mere information of the reader, who is unacquainted with the scanty memoirs, which are extant relative to Durandus, we copy from the preface the following particulars:—

"William Durandus was born at Puy-moisson, in Provence, about the year 1220. A legend of his native country is told in the present work. He became the pupil of Henry de Luz, afterwards Cardinal of Ostia, and taught canon law at Modena. On this subject he composed a most learned work, the *Speculum Juris*; from which he obtained the title of *Speculator*: as also another treatise called *Repertorium Juris*: and a *Breviarium Glossarum in Textum Juris Canonici*. His high attainments marked him out for the office of Chaplain to Pope Clement IV. He was afterwards Auditor of the Sacred Palace; and Legate to Pope Gregory X. at the Council of Lyons. He was then made Captain of the Papal forces; in which post he assisted at the reduction of several rebellious cities, and behaved with great courage. He finally became Bishop of Mende in 1286. While in this post and resident at Rome (for he did not personally visit his diocese till 1291, the administration of the diocese being perhaps left to a nephew of the same name who succeeded him), he finished the work, of the first book of which a translation is presented to the reader. But it probably was commenced before: for we find from a passage in its latter half, that so far had been written during the course of this same year 1286. And there is no difficulty in the title, *Episcopus Mimatensis*, which he gives himself in the proem, as this could easily have been added afterwards. But it was certainly published, as Martene observes, before 1295; because Durandus speaks of the Feasts of the Holy Apostles as *semi-doubles*, whereas in that year by a constitution of Pope Urban they were commanded to be observed as *doubles*. The time at which the treatise was written more especially demands our attention; because, did we imagine it only a few years later than it really was, we might well be astonished at finding no reference to the Symbolism of the Decorated Style. The interruptions amidst which the *Rationale* was written are feelingly alluded to by its author in the Epilogue. He also wrote a treatise *De Modo Concilii Generalis habendi*, probably either suggested by, or preparatory to, that of Lyons. He afterwards went on an embassy

from the Pope to the Sultan; and is by some said to have ended this life at Nicosia in Cyprus. But the fact is not so: for having governed his Diocese ten years, and having refused the proffered Archbishopric of Ravenna, he departed at Rome on the Feast of All Saints, 1296, being buried in the Church of Sancta Maria super Minervam, where his monument is yet to be seen."

It is not our intention to deny that there is, always was, and we believe always will be, a symbolism in certain things connected with church architecture; thus, for instance, all our own ideas about the formation and subdivision of church architecture have been trinitarian; thence we would never have two windows where there ought to be three; nor if we had our will strictly complied with, would we have any window divided into two, but rather into three compartments, such windows being undoubtedly more tasteful, and admitting of more elegant tracery: though by a very special exertion of bad taste and ignorance the Cam. Camdenists have attempted to deform the fronts of Early English churches by the placing of two windows prominently, instead of the symbolical one, or the trinitarian three, or the tri-une three united in one, or one composed of three; but as we cannot stop at present to go into the weak reasons given for such a violation of taste and propriety, we shall defer the subject till we come to that depraved part of the Cam. Camdenists' works, in which an attempt has been made to give sanctity to one of the grossest besetting sins into which those ignorant of the truth of architectural composition naturally fall, and for assisting to the promulgation of which barbarous error the Cam. Camdenists can no more be excused than Ovid can for enduring the world with his celebrated "*Art of Love*;" the error is a childish one, and in the hands of weak and tasteless men has already ruined the fronts of several churches.

It seems the Cam. Cam. members who have put forth this translation, not satisfied with their Iehmaelitic proceedings, lifting their hands against every man, and inciting every man's hand against them; not satisfied with that savage ferocity which has caused bishops, professors, and diocesan societies to cut adrift from them; because the Oxford Gothic Society has conducted itself with a persevering good temper, falling into none of the vagaries and heretical impertinences of the Cambridge Society, must needs, give it a rating for such conduct—but which society is to be preferred, the one for quiet power, or the other for indiscreet agitation, will be seen hereafter.

It seems these translators consider Mr. Lewis's droll performance upon the same matter deserved ridicule; for although on a right subject he was on a wrong scent. We quote their words:—

"Mr. Lewis, in his illustrations of Kilpeck Church (in an appendix to which he has printed a translation of some part of the *Rationale* of our Author), has given a treatise on symbolism generally, and has applied his principles to the explanation of the plan and details of that particular church. His book excited some attention at the time of publication, and was met by considerable ridicule in many quarters. To this we think it was fairly open, since the author did not seem to have grasped the true view of the subject."

Nevertheless to make up for this failure in a professed votary of symbolism, zealously and conscientiously going to work—it further seems that the inspiration of symbolism comes upon sinners who are thinking nothing of the matter; for again, observe the translators:—

"It is very remarkable, as has been already

observed, that the buildings of those who most strongly object to the Principle of Symbolism do in effect contain as striking an exemplification of it as it would be possible to find."

But to the work of Durandus itself. We shall abstain from any observation upon the peculiar tenets of the Roman Catholic Episcopal author, and only touch upon those which it is to be supposed the Anglican church translators have reproduced for the edification of their brethren of the same religion.

We are afraid that Mr. Wylson, who has just given us a treatise upon mortars and cements, has sadly failed of giving us the symbolical meaning of the articles upon which he has so industriously written; for thus says Durandus:—

"10. The cement, without which there can be no stability of the walls, is made of lime, sand, and water. The lime is fervent charity, which joineth to itself the sand, that is, undertakings for the temporal welfare of our brethren: because true charity taketh care of the widow and the aged, and the infant and the infirm: and they who have it study to work with their hands that they may possess wherewith to benefit them. Now the lime and the sand are bound together in the wall by an admixture of water. But water is an emblem of the SPIRIT. And as without cement the stones cannot cohere, so neither can men be built up in the heavenly Jerusalem without charity, which the HOLY GHOST worketh in them."

But admitting the truth of this, what a fell swoop does it give to the Iehmaelitic handy-work of the Cam. Camdenites—who ever talk of church-union while they present the glaive to all around.

Then let the dishonest, weak, intemperate, imprudent, who dare to lay a hand to the mural work of churches, learn from the bishop that,

"17. The four side walls are the four cardinal virtues, justice, fortitude, temperance, prudence,"

and admire the deduction:—

"Hence the Apocalypse saith, THE CITY LIETH FOUR SQUARE."

And how virtuous ought glaziers to become while attending to their calling, for—

"The windows are hospitality with cheerfulness, and tenderness with charity."

Further on we have the following:—

"24. The glass windows in a church are Holy Scriptures, which expel the wind and the rain, that is, all things hurtful, but transmit the light of the True Sun, that is, God, into the hearts of the Faithful."

And then, too, how gross, it would seem, have been the vulgar ideas upon the use of window-splays, for again our old author says—

"These are wider within than without, because the mystical sense is the more ample, and precedeth the literal meaning."

And again—

"Also, by the windows the senses of the body are signified: which ought to be shut to the vanities of this world, and open to receive with all freedom spiritual gifts."

Then let us have an orthodox knowledge concerning the iron-work or the small subdivisions of windows, for—

"25. By the lattice work of the windows, we understand the prophets or other obscure teachers of the Church Militant."

But after this we have, amid the symbolical reasoning, a testimony to the subdivision of windows into three, and not into two; for thus Durandus:—

"In which windows there are often two shafts, signifying the two precepts of charity, or because the Apostles were sent out to preach two and two."

Then, concerning towers, spires, and their appendages, we have—

"21. The towers are the preachers and



Prelates of the Church, which are Her bulwark and defence. Whence the Bridegroom in the Canticles saith to the Bride, THY NECK IS LIKE THE TOWER OF DAVID BUILT FOR AN ARMOURY. The pinnacles of the towers signify the life or the mind of a Prelate which aspireth heavenwards.

"22. The cock at the summit of the church is a type of preachers. For the cock, ever watchful even in the depth of night, giveth notice how the hours pass, waketh the sleepers, predicteth the approach of day, but first exciteth himself to crow by striking his sides with his wings. There is a mystery conveyed in each of these particulars. The night is this world: the sleepers are the children of this world who are asleep in their sins. The cock is the preacher, who preacheth boldly, and exciteth the sleepers to cast away the works of darkness, exclaiming, WOE TO THEM THAT SLEEP! AWAKE THOU THAT SLEEPEST! And these forth the approach of day when they speak of the Day of Judgment, and the glory that shall be revealed: and like prudent messengers, before they teach others, arouse themselves from the sleep of sin by mortifying their bodies. Whence the Apostle, I KEEP UNDER MY BODY. And as the weathercock faceth the wind, they turn themselves boldly to meet the rebellious by threats and arguments: lest they should be guilty, WHEN THE WOLF COMETH, OF LEAVING THE SHEEP AND FLEEING. The iron rod, whereon the cock sitteth, representeth the discourse of the preacher, that he speaketh not of man but of God: according to that saying, IF ANY MAN SPEAK, LET HIM SPEAK AS THE ORACLES OF GOD. But in that the iron rod is placed above the Cross, on the summit of the church, it signifieth that Holy Scripture is now consummated and confirmed. Whence saith our LORD in His Passion, IT IS FINISHED: and that title is written indelibly over Him.

"23. The cone, that is the summit of the church, of great height, and of round shape, signifieth how perfectly and inviolably the Catholic Faith must be held: which Faith except a man do keep whole and undefiled without doubt he shall perish everlastingly."

Then read what Durandus says concerning bells and their gear.

"4. Again bells do signify preachers, who ought after the likeness of a bell to exhort the faithful unto faith: the which was typified in that the LORD commanded Moses to make a vestment for the High Priest, having seventy-two bells, to sound when the High Priest entered into the Holy of Holies. Also the cavity of the bell denoteth the mouth of the preacher, according to the saying of the Apostle, I AM BECOME AS SOUNDING BRASS OR A TINKLING CYMBAL.

"5. The hardness of the metal signifieth fortitude in the mind of the preacher: whence saith the LORD, BEHOLD I HAVE MADE THY FACE STRONG AGAINST THEIR FACES. The clapper, or iron which by striking on either side maketh the sound, doth denote the tongue of the teacher, the which with the adornment of learning doth cause both Testaments to resound.

"6. Wherefore a Prelate which hath not the skill of preaching will be like unto a bell without a clapper: according to that saying of Gregory, 'A Priest, if he knoweth not how to preach nor what voice of exhortation he can deliver, is a dumb preacher, and also as a dumb dog which cannot bark.' The striking the bell denoteth that a preacher ought first of all to strike at the vices in himself for correction, and then advance to blame those of others: lest indeed, contrary to the teaching of the Apostle WHEN HE HATH PREACHED TO OTHERS, HE HIMSELF SHOULD BE A CAST-AWAY. Which also the Psalm doth testify; BUT UNTO THE UNGODLY, SAITH GOD: WHY DOST THOU PREACH MY LAWS, AND TAKEST MY COVENANT IN THY MOUTH? Because truly by the example of his own suffering he often gaineth access to those whom by the learning of his discourse he cannot move. The link by which the clapper is joined or bound unto the bell is moderation: by which, namely, by the authority of Scripture, the tongue of the preacher who wisheth to draw men's hearts is ruled.

"7. The wood of the frame upon which the bell hangeth doth signify the wood of our

LORD'S CROSS: which is on this account suspended on high, because the Cross is preached by the ancient Fathers. The pegs by which the wooden frame is joined together or fastened are the Oracles of the Prophets. The iron cramps by which the bell is joined with the frame denote charity, ty which the Preacher being joined indissolubly unto the Cross, doth boast and say GOD FORBID THAT I SHOULD GLORY SAVE IN THE CROSS OF OUR LORD JESUS CHRIST. The hammer affixed to the frame by which the bell is struck signifieth the right mind of the Preacher, by which he himself holding fast to the Divine commands doth by frequent striking inculcate the same on the ears of the faithful.

"8. The rope hanging from this, by which the bell is struck, is humility, or the life of the Preacher: the same rope also sheweth the measure of our own life. Besides these, since the rope hath its beginning from the wood, upon which the bell hangeth, by which is understood our LORD'S CROSS, it doth thus rightly typify Holy Scripture which doth flow down from the wood of the Holy Cross. As also the rope is composed of three strands, so doth the Scripture consist of a Trinity; namely of history, allegory, and morality. Whence the rope coming down from the wooden frame into the hand of the Priest is Scripture descending from the mystery of the Cross into the mouth of the Preacher. Again, the rope reacheth unto the hands by which it is grasped, because Scripture ought to proceed unto good works. Also the raising and lowering of the rope in ringing doth denote that Holy Scripture speaketh sometimes of high matters, sometimes of low: or that the Preacher speaketh sometimes lofty things for the sake of some, and sometimes condescendeth for the sake of others: according to that saying of the Apostle: WHETHER WE EXALT OURSELVES IT IS FOR GOD, OR WHETHER WE HUMBLE OURSELVES IT IS FOR YOU. Again, the Priest draweth the rope downwards, when he descendeth from contemplation unto active life: but is himself drawn upwards when under the teaching of Scripture he is raised in contemplation. Also he draweth it downwards when he understandeth the Scripture according to the LETTER WHICH KILLETH: he is drawn upwards when he expoundeth the same according to the Spirit. Again, according to Gregory, he is drawn downwards and upwards when he measureth himself in Scripture, namely, how much he is still lieth in the depths and how much he advanceth in doing good."

But how often have bell-hangers driven staples and fixed rings without knowing that—

"The ring (or pully) in the length of the rope, through which in many places the rope is drawn, is the crown of reward, or perseverance unto the end, or else is Holy Scripture itself."

Then, concerning the piers of a church, we have—

"27. The Piers of the church are Bishops and Doctors: who specially sustain the Church of God by their doctrine. These, from the majesty and clearness of their Divine message, are called silver, according to that in the Song of Songs, HE MADE SILVER COLUMNS. Whence also Moses, at the entering in of the Tabernacle, placed five columns, and four before the Oracle, that is, the Holy of Holies."

And how ingeniously, where the absolute numbers run at cross-purposes, is the case disposed of, for—

"Although the Piers are more in number than seven, yet they are called seven, according to that saying, WISDOM HATH BUILT HER HOUSE, SHE HATH HEWN OUT HER SEVEN PILLARS: because Bishops ought to be filled with the sevenfold influences of the Holy Ghost: and SS. James and John, as the Apostle testifieth, SEEMED TO BE PILLARS."

What advantages ought to spring from our knowing that,

"The bases of the columns are the Apostolic Bishops, who support the frame of the whole Church. The capitals of the Piers are the opinions of the Bishops and Doctors. For as the members are directed and moved by the head, so are our words and works governed by their mind. The ornaments of the capitals are the words of Sacred Scripture, to the

meditation and observance of which we are bound."

Then, how symbolical of honour and dishonour is the same thing made to be, for it seems that—

"28. The pavement of the church is the foundation of our faith. But in the spiritual Church the pavement is the poor of CHRIST: the poor in spirit, who humble themselves in all things: wherefore on account of their humility they are likened to the pavement. Again, the pavement, which is trodden under foot, representeth the multitude, by whose labours the Church is sustained."

But, even according to Durandus, how sinful must it be to dispense with beams across churches, for—

"29. The beams which join together the church are the princes of this world, or the preachers who defend the unity of the Church, the one by deed, the other by argument."

And again—

"31. The beams in the church are preachers, who spiritually sustain it."

And—

"The vaulting also or ceiling, representeth preachers, who adorn and strengthen it, concerning whom, seeing that they are not corruptible through vice, the Bridegroom glorieth in the same Canticles, saying, THE BEAMS OF OUR HOUSE ARE CEDAR, AND ITS CEILING, FIR. For God hath built His Church of living stones, and imperishable wood, according to that saying, SOLOMON MADE HIMSELF A LITTER OF CEDAR WOOD; that is, CHRIST, of His Saints who wear the white robe of chastity."

We have then—

"The Chancel, that is, the head of the church, being lower than its body, signifieth how great humility there should be in the clergy or in Prelates, according to that saying, AND THE MORE THOU ART EXALTED, HUMBLE THYSELF IN ALL THINGS."

But how does this agree with the shutting up of chancels about which the Camdenists are so anxious—after they have raised money from the people for building them.

We have, indeed, in Durandus, only

"The rail, by which the Altar is divided from the Choir, teacheth the separation of things celestial from things terrestrial."

But, following the exclusive system, we have at this time repeated twice every Sunday at the Temple Church, London, a most pitiful and disgusting scene, in which a line drawn across the entrance to the chancel, which forms the only part of the fabric in which the congregation can hear any except the musical services—excludes, while the choir is only half full, the multitude, who have to wait gazing about in the round part of the church, which seems indeed like a mere galilee—the admission to the choir going on slowly and in proportion to the outward appearance of those waiting—a woman dressed in silk at seven shillings per yard, gaining admittance in about twenty minutes, one in silk at half-a-crown, not under forty minutes; while those in stuffs and other inferior attire are wholly excluded, and, like sinful women of old, remain in the galilee; the porters of the church in the meanwhile, though the chancel is but half full, taking as much trouble to keep the congregation out, as at other churches is taken to invite them within.

After this Durandus then says—

"30. The stalls in the church signify the contemplative, in whom God dwelleth without hindrance, who, from their high dignity and the glory of eternal life, are compared to gold. Whence he saith in the Canticles, HE MADE A GOLDEN SEAT."

But what do the Camdenists, who have made war upon all kinds of "convenience" or "comfort" in churches, say of the following by Durandus:—

"32. The seats in the Choir admonish us



that the body must sometimes be refreshed: because that which hath not alternate rest wanteth durability."

The following spiritualising of refectories, wine-cellars, &c., has already excited smiles in many quarters—

"43. In this cloister the diversity of office-chambers is the diversity of virtues. The chapter-house is the secret of the heart: concerning this, however, we shall speak differently hereafter. The Refectory is the love of Holy Meditation. The Cellar, Holy Scripture. The Dormitory, a clean conscience. The oratory, a spotless life. The garden of trees and herbs, the collection of virtues. The well, the dew of God's Heavenly Gifts: which in this world mitigateth our thirst, and hereafter will quench it."

In conclusion, we would ask, is our church likely to gain respect, or, rather, is occasion given to the enemies of God to blaspheme, by its ministers republishing the following passages of Durandus—

"28. The snuffers or scissors for trimming the lamps are the Divine words by which men amputate the legal titles of the Law, and reveal the shining spirit, according to that saying, YE SHALL EAT OLD STORE, AND BRING FORTH THE OLD BECAUSE OF THE NEW. The vessels in which the wicks, when snuffed, are extinguished, are the hearts of the Faithful, which admit the legal observance to the letter."

"29. Again, the tongs, by the double tooth of which the fire is arranged, are preachers; who instruct us by the accordant pages of both Testaments, and by their behaviour setting us right, inflame us to the practice of charity."

#### THE GOVERNMENT RAILWAYS BILL.

THE main features of the arrangement between the Government and the railway deputations in reference to the Railways Bills are briefly as follow:—The revision of the tolls of such railways hereafter to be constructed as may return a larger interest than ten per cent. per annum is not to take place until the lapse of twenty-one years from the passing of the bills under which the respective companies may be incorporated, and not at the end of fifteen years, as originally fixed. A further period of twenty-one years must elapse before a second revision can be effected. The Act is not to apply in any way to existing companies, except in reference to third-class passengers, for whose accommodation the companies agree to run one train daily, at fares not exceeding a penny a mile, the Government binding itself wholly to exempt from taxation the receipts accruing from such cheap trains. There are other concessions of minor importance, but for these we must refer to the annexed copy of the amended Bill.

#### AMENDED RAILWAYS BILL.

*A Bill to attach certain Conditions to the Construction of future Railways, authorized or to be authorized by any Act of the present or succeeding Sessions of Parliament, and for other purposes in relation to Railways.*

Note.—The clauses marked (A) and (B) were added by the committee.

1. Whereas it is expedient that the concession of powers for the establishment of new lines of railway should be subjected to such conditions as are hereinafter contained for the benefit of the public; be it enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, that if at any time after the end of twenty-one years from and after the 1st day of January next after the passing of any Act of the present or of any future session of Parliament, for the construction of any new line of passenger railway, whether such new line be a trunk, branch, or junction line, and whether such new line be constructed by a new company incorporated for the purpose, or by any existing company, the clear annual profits divisible upon the subscribed and paid-up capital stock of the said railway, upon the average of the three then last preceding years, shall equal or exceed the rate of 10% for every

100% of such paid-up capital stock, it shall be lawful for the Lords Commissioners of her Majesty's Treasury, upon giving to the said company three calendar months' notice in writing of their intention so to do, to revise the scale of tolls, fares, and charges limited by the Act or Acts relating to the said railway, and to fix such new scale of tolls, fares, and charges, applicable to such different classes and kinds of passengers, goods, and other traffic on such railway, as in the judgment of the said lords commissioners, assuming the same quantities and kinds of traffic to continue, shall be likely to reduce the said divisible profits to the said rate of 10% in the 100%, and so from time to time at the expiration of each succeeding period of twenty-one years; provided always, that no such revised scale shall take effect, unless accompanied by a guarantee, to subsist as long as any such revised scale of tolls, fares, and charges shall be in force, that the said divisible profits, in case of any deficiency therein, shall be made good to the said rate of 10% for every 100% of such capital stock; provided also, that such revised scale shall not be again revised or such guarantee withdrawn, otherwise than with the consent of the company, for the further period of twenty-one years.

2. That whatever may be the rate of divisible profits in any such railway, it shall be lawful for the said lords commissioners, if they shall think fit, at any time after the expiration of the said term of twenty-one years, to purchase any such railway, with all its hereditaments, stock, and appurtenances, in the name and on behalf of her Majesty, upon giving to the said company three calendar months' notice in writing of their intention, and upon payment of a sum equal to twenty-five years' purchase of the said annual divisible profits, estimated on the average of the three then next preceding years: provided always, that if the average rate of profit for the said three years shall exceed the rate of 10% in the 100%, it shall be taken at only 10% in the 100% for the purpose of calculating thereon the amount of such purchase-money: provided also, that if the average rate of profits for the said three years shall be less than the rate of 10% in the 100%, it shall be lawful for the company, if they shall be of opinion that the said rate of twenty-five years' purchase of the said average profits is an inadequate rate of purchase of such railway, reference being had to the prospects thereof, to require that the rate of purchase, instead of being calculated upon such average rate of profit, shall be taken at a valuation, to be determined, in case of difference, by arbitration.

3. (A.) That nothing herein contained shall be construed to subject to the said option of revision or purchase any railway made or authorized to be made by any act previous to the present session; and that no branch or extension of less than five miles in length of any existing line of railway shall be taken to be a new railway within the provisions of this act; and that the said option of purchase shall not be exercised as to any branch or extension of any existing railway, without including in the purchase the existing railway; also in case the company of proprietors of the same shall require that the same be so included.

4. (B.) And whereas it is expedient that the policy of calling into exercise the powers of revision or purchase hereby reserved, or either of them, should in no manner be prejudged by the provisions of this Act, and should remain for the future consideration of the legislature, upon grounds of general and national policy; and whereas it is not the intention of this Act, that under the said powers of revision or purchase, if called into use, the public resources should be employed to sustain an undue competition against any independent company or companies; be it enacted, that no such notice as hereinbefore mentioned, whether of revision or purchase, shall be given, until provision shall have been made by parliament, by an Act or Acts to be passed in that behalf, for authorizing the guarantee or the levy of the purchase-money hereinbefore mentioned, as the case may be, and for determining, subject to the conditions hereinbefore mentioned, the manner in which the said options or either of them shall be exercised: provided always, that before any application is made to parliament for the powers to exercise the said

options or either of them, three months' notice shall be given by the said lords commissioners to the company or companies to be affected thereby, of the intention so to apply.

5. That from and after the commencement of the period of three years preceding the period at which the option of ransom or purchase becomes available, full and true accounts shall be kept of all sums of money received and paid on account of any railway within the provisions hereinbefore contained (distinguishing if the said railway shall be a branch railway, or one worked in common with other railways, the receipts, and giving an estimate of the expenses, on account of the said railway from those on account of the trunk line, or other railways) by the directors of the company to whom such railway belongs or by whom the same may be worked, and of the purposes and things for which such sums of money shall have been received and paid; and every such railway company shall once in every half-year cause a half-yearly account in abstract to be prepared, shewing the total receipt and expenditure on account of the said railway, for the half-year, ending the 30th day of June and the 31st day of December respectively, or such other convenient days as shall in each case be directed by the lords of the said committee, under distinct heads of receipt and expenditure, according to such form as may be required by the lords of the said committee, with a statement of the balance of such account duly audited and certified under the hands of two or more directors of the said railway company; and shall send a copy of the said account to the lords of the said committee on or before the last days of August and February respectively, or such other days as shall in each case be directed by the lords of the said committee in each year; and it shall be lawful for the lords of the said committee, if and when they shall think fit, to appoint any proper person or persons to inspect the accounts and books of the said company; and it shall be lawful for any person so authorized, at all reasonable times, upon producing his authority, to examine the books, accounts, vouchers, and other documents of the company, at the principal office, or place of business, of the company, and to take copies or extracts therefrom.

6. Companies to provide one cheap train, each way, daily. [This clause remains virtually unchanged, see clause 25 of former Bill.] And with respect to all railway companies subject to these obligations, which shall be open on or before the 1st day of November next, these obligations shall come into force on the said 1st day of November; and with respect to all other railways subject to this obligation, it shall come into force on the day of opening of the railway, or the day after the last day of the session in which the Act shall be passed, by reason of which the company will become subject thereunto, which shall first happen.

7. That if any railway company shall refuse, or wilfully neglect, to comply with the provisions of this Act as to the said cheap trains, within a reasonable time, or shall attempt to evade the operation of such order, such company shall forfeit to her Majesty a sum not exceeding 20% for every day during which such refusal, neglect, or evasion shall continue.

8. Board of Trade to have a discretionary power of allowing alternative arrangements. [This clause is the same as the former clause 27.]

9. That no tax shall be levied upon the receipts of any railway company from the conveyance of passengers at fares not exceeding 1d. for each mile, by any such cheap train, as aforesaid.

10. Certain companies to convey military and police forces at certain charges, 5 and 6 Vict. c. 55. [This is the same as the former clause 29.]

11. Railway companies to afford additional facilities for the transmission of the mails, 1 and 2 Vict., c. 98. [This is the same as former clause 30.]

12. And whereas electrical telegraphs have been established on certain railways, and may be more extensively established hereafter, and it is expedient to provide for their due regulation; be it enacted, that every railway company, on being required so to do by the lords of the said committee, shall be bound to allow any



person or persons authorized by the lords of the said committee, with servants and workmen, at all reasonable times to enter into or upon their lands, and to establish and lay down upon such lands adjoining the line of such railway, a line of electrical telegraph for her Majesty's service, and to give to him and them every reasonable facility for laying down the same, and for using the same, for the purpose of receiving and sending messages on her Majesty's service, subject to such reasonable remuneration to the company as may be agreed upon between the company and the lords of the said committee, or in case of disagreement, as may be settled by arbitration: provided always, that, subject to a prior right of use thereof for the purposes of her Majesty, such telegraph may be used by the company, for the purposes of the railway, upon such terms as may be agreed upon between the parties, or, in the event of difference, may be settled by arbitration.

13. That where a line of electrical telegraphs shall have been established upon any railway by the company to whom such railway belongs, or by any company, partnership, person or persons, otherwise than exclusively for her Majesty's service, or exclusively for the purposes of the railway, the use of such electrical telegraph, for the purpose of receiving and sending messages, shall, subject to the prior right of use thereof for the service of her Majesty and for the purposes of the company, and subject also to such equal charges, and to such reasonable regulations, as may be from time to time made by the said railway company, be open for the sending and receiving of messages by all persons alike, without favour or preference.

14. And whereas by an Act passed in the 4th year of the reign of her Majesty, intitled "An Act to regulate Railways," power is given to the lords of the said committee to appoint any proper person or persons to inspect any railway, and the stations, works, and buildings, and the engines and carriages belonging thereto; and in order to carry the provisions of this Act into execution, it is expedient that the said power be extended; be it enacted, that the said power given to the lords of the said committee of appointing proper persons to inspect railways shall extend to authorize the appointment by the lords of the said committee of any proper person or persons, for such purposes of inspection, as are by the said Act authorized, and also for the purpose of enabling the lords of the said committee to carry the provisions of this and of the said Act, and of any general Act relating to railways, into execution; and that so much of the last-recited Act as provides that no person shall be eligible to the appointment as inspector who shall, within one year of his appointment, have been a director, or have held any office of trust or profit under any railway company, shall be repealed: provided always, that no such person shall exercise any powers of interference in the affairs of the company.

15. Repealing provision of 3 and 4 Vict., c. 97. [Same as former clause 35.]

16. Board of Trade may direct prosecutions to prevent railway companies from contravening or exceeding the provisions of their Acts. [Same as former clause 36.]

17. Notice to be given to the company. Prosecutions to be under the sanction of the Board of Trade, and within one year after the offence. [Same as former clause 37.]

18. And whereas many railway companies have borrowed money in a manner unauthorized by their Acts of Incorporation or other Acts of Parliament relating to the said companies, upon the security of loan notes or other instruments purporting to give a security for the repayment of the principal sums borrowed at certain dates, and for the payment of interest thereon in the mean time; and whereas such loan notes or other securities issued otherwise than under the provision of some Act or Acts of Parliament have no legal validity, and it is expedient that the issue of such illegal securities should be stopped; but such loan notes or other securities having been issued and received in good faith as between the borrower and lender, and for the most part for the lawful purposes of the undertaking and in ignorance of their legal invalidity, it is expedient to confirm such as have been already issued be it enacted, that from and after the

passing of this Act, any railway company issuing any loan note or other negotiable or assignable instrument, purporting to bind the company as a legal security for money advanced to the said railway company otherwise than under the provisions of some Act or Acts of Parliament authorizing the said railway company to raise such money and to issue such security, shall for every such offence forfeit to her Majesty a sum equal to the sum for which such loan note or other instrument purports to be such security: provided always, that any company may renew any such loan note or other instrument issued by them prior to the passing to this Act, for any period or periods not exceeding five years from the passing of this Act.

19. That where any railway company, before the 12th day of July, 1844, shall have issued or contracted to issue any such loan notes, or other unauthorized instruments, the company may and shall pay off such loan notes or other instruments, as the same may fall due, subject as hereinbefore provided; and until the same shall be so paid off, the said loan notes or other instruments shall entitle the holders thereof to the payment, by the company, of the principal sum and interest thereby agreed to be paid.

20. That a register of all such loan notes or other instruments shall be kept by the secretary, and such register shall be open, without fee or reward, at all reasonable times, to the inspection of any shareholder or auditor of the undertaking, and of every person interested in any such loan note or other instrument desirous of inspecting the same.

21. Remedy for recovery of tithe-rent charged on railway land. [Same as former clause 43.]

22. Communications to and from Board of Trade, service of notices, &c. [Same as former clause 44.]

23. Penalties. [Same as former clause 45.]  
24. That where the word "railway" is used in this Act it shall be construed to extend to all railways constructed under the powers of any Act of Parliament; and when the words "passenger railway" are used in this Act, they shall be construed to extend to all railways constructed under the powers of any Act of Parliament upon which one-third or more of the gross annual revenue is derived from the conveyance of passengers by steam or other mechanical power; and whenever the word "company" is used in this Act it shall be construed to extend to include the proprietors for the time being of any such railway; and that where a different sense is not expressly declared, or does not appear by the context, every word importing the singular number or the masculine gender shall be taken to include females as well as males, and several persons and things as well as one person or thing.

25. That this Act may be amended or repealed by any Act to be passed in this Session of Parliament.

#### TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLSON.

(Continued from p. 410.)

56. ACACIA.—Of this tree the most beautiful varieties are, the weeping acacia, which is thornless, with large leaves, and the upright-growing acacia. The former, called the common, bastard, or *false acacia*, is a native of Virginia, where it is known as the *locust tree*: it is an elegant and highly ornamental tree, of rapid growth (for the first few years especially), and is of considerable size; having generally, for a few days in June a bloom of white flowers, sweetly perfumed, pendulous like the yellow ones of the laburnum, and hanging from long drooping branches. It has a luxuriant foliage of finely pointed leaves, of a brilliant green, and to grass its shade is less injurious than usual. The only drawback to its being extensively introduced in ornamental grounds in this country is the fragile nature of its lateral branches, or rather of their hold upon the stem for the first five or six years; for its shoots are large and plentiful; and, though proof against the biting severity of winter, liable to be broken off in tempestuous or blustering winds: on this account it requires much attention during the earlier growth, until it attains an altitude of ten or twelve feet; and to have the shoots nipped off short, to prevent their being strewn about;

otherwise it should be planted in a sheltered situation: indeed it has been recommended for a coppice plant on account of its quick growth and spread, as well as for the durability of the young poles for a variety of purposes—in the hop-garden for example. Once arrived at maturity, it merits regard as one of our finest ornamental trees; it seems to grow well in any kind of soil, but to greatest perfection in that which is of a light and sandy description.

57. Cobbett in later times drew the public attention to this tree, which, although it had been, on account of its beautiful appearance, cultivated in England two hundred years before, was, from his calling it by the American name, supposed to be a new tree, and as such with avidity sought after and extensively planted in England and Scotland. Its timber is highly esteemed for its durability in all situations, being almost incorruptible. In its unseasoned state it is little inferior to dry oak in the three qualities of strength, toughness, and stiffness; and when seasoned it has all of them in a very ample degree, and the first-mentioned to an undefined extent, which renders it admirably subservient to all those purposes for which oak is commonly selected. It is not yet known in England commensurately with its importance; but in America it is very much prized, and is extensively employed, as well in cabinet-making as in the more trying purposes about buildings, as fencing, &c. For the former it is valued there beyond all other woods. It is highly prized by millwrights for cogs, &c., and is generally used by shipwrights for trenails, for which it is excellently adapted; it is also reckoned well calculated for the axle-trees of wheeled vehicles. The wood makes excellent fuel, and the leaves afford wholesome fodder for cattle—horses and hogs seeming alike to relish it.

58. The wood is of a yellow colour, inclining to green, with a reddish tinge in its pores, or rather with brown veins; when green and unseasoned it is soft, but when dry it is very hard, requiring in working a degree of labour somewhat similar to ash or oak; it possesses the valuable property—rare amongst trees of quick growth—of its pith-wood turning, after the third year, into heartwood; thus enabling it to afford a body of solid timber in a much shorter period than the oak, chesnut, and many others, wherein that phenomenon does not take place before ten or fifteen years. When of an advanced age, its bark is of a thick and deeply-cleft character. The annual rings are distinct, one part being compact and the other porous; there are no larger transverse septa, and consequently no flowers; when dry it is tasteless and inodorous.

59. SYCAMORE, or great maple.—This tree is indigenous to Germany, and is a large, handsome, and hardy tree, of quick growth—more so than most other hard woods—especially in a sandy soil and exposed situation. It is also common, and thrives very well, in England, towards the north, and in Scotland, especially near the coast, where indeed it is said to flourish closer to the sea than any other tree, the salt spray appearing very slightly to injure it.

60. There are two maples, the small or common variety being a tree of but second-rate pretensions, and almost confined to the underwood or thicket; but the great maple is a tree of noble appearance, second to few even of the first rank in magnitude; yet the British is said to be somewhat inferior to the German grown. The leaves are palmate, with five lobes, unequally serrated; the foliage is thick, affording a shade almost impenetrable; it blooms early in profuse bunches; its tints in spring being tender, fresh, and glowing; while in summer it has a deep-green hue, in finest harmony with the massive and majestic form of the tree. The autumnal brown and reddish tints of its fading leaves produce a beautiful effect, which is said to characterize, to fullest perfection, an American landscape in that picturesque season; and which is enhanced by the diversified appearance of the trunk and main branches, from which the ashy bark peels off, giving them a patchy but pleasing character.

61. The colour of the wood is generally a dusky white, in some specimens inclining to brown, in others to yellow, but generally very fair and silky in young wood; the texture is



uniform and compact; the annual rings just visible; the larger transverse septa fine, close, and distinct, producing minute flowers, and presenting that dapple on the finished surface so much admired, and which is sometimes enhanced by a curling in the grain. It is softer than beechwood, not liable to warp, easy to work, susceptible of a fine polish, and durable—that is, if kept dry, and by some bitter impregnation protected from worms, to which it is rather subject. It is (supposing the worms to be effectually prevented) too flexible for timbers which have to bear any cross strain; but, being in toughness superior to the oak, it might be adopted for ties and similar purposes; it might also have advantage be introduced in joinery; in floor-boarding its appearance is very pleasing. The purposes to which it is generally applied, however, and for which it is valuable, are furniture and cabinet-work; the beautiful variegation of its knots admirably adapting it for inlaying. For articles of superior description, that which is whitest and much figured is highly esteemed; for many purposes of the turner, domestic utensils indeed especially, it is preferred to beech—musical instruments are sometimes made from it. The wood of the most mature trees is not the best, as it is not so fresh or fine in colour; its strength and toughness being also impaired, brittle, and thus deceptive.

62. **POPLAR.**—There are five species of this tree common in this country, namely the *Lombardy*, the *black*, and the *common white poplar*, the *Abele*, and the *aspen*. The first three are the most esteemed, but there is not very much difference in the whole. The poplar flourishes in low, fertile, and marshy grounds, the margins of streams, &c.; it is well calculated for suburban vistas, as also, from its compactness of form and foliage, for concealing unsightly offices or subordinate buildings; owing to the litter, however, which its leaves make in autumn, it is not very suitable for principal avenues, lawns, or the more ornamental grounds, where trimness is essential. The wood is well adapted for wainscoting and other joinery as well as for stairs, flooring, &c. (where there is not much wear—in bed-rooms for example), on account of its not being much liable to shrink, its very superior appearance, and small degree of inflammability; but it is not suitable for principal carpentry: it is durable when kept dry, but, with the exception of the aspen, which while soft is tough throughout, it rots when exposed to the weather: but to treat them separately:

63. The Lombardy variety is of the most rapid growth; in thirty years it attains upwards of sixty feet; but by its eightieth it is dead or in the progress of decay; to the last it has a slender and graceful cypress-like form, possessing a beauty almost peculiarly its own, that of bending to the breeze, and maintaining through its tall and spire-like figure a graceful and pleasing undulation, which has been compared to the wavings of a feather. Its precise appearance is considered to harmonize well with buildings, for which too the fact of smoke not being detrimental to its growth must serve further to recommend it. It has been stated that its shade, unlike that of many other trees, is very beneficial to vegetation; and the circumstance of that which is immediately under its droppings being soonest eaten by cattle gives fair evidence of the correctness of that assertion. It is recommended to use both this and the Abele for avenues or walks in low and moist situations. The trunk of this species is more furrowed than any of the others, and frequently has a spiral rope-like figure, as if it consisted of several stems twining together. The wood of the Lombardy and Abele sorts has been recommended for shelving and other fittings about cheese-rooms and farm-offices generally, for the reason that mice and mites do not attack them; but how far this is authentic is matter for inquiry.

64. The Black or Italian Poplar is common in Lancashire and Cheshire, generally possessing a fine stem and ample head; it is, when planted in an appropriate situation, often very ornamental; and it attains to a large size in a comparatively short space of time; owing to the circumstance, however, of its roots not striking very deep into the ground, it is often to be found leaning from the perpendicular; being, moreover, liable to be torn up altogether, when assailed by violent winds. It is

late in coming into foliage, its full development being rarely before the latter end of May; the leaves are of a pretty pale green, trowel-shaped, smooth, shining, and possessing fully that characteristic of fluttering with the gentle breeze, they glance and sparkle pleasantly in the sunbeams. The wood is of a pale yellowish colour, and being soft and easily worked, is fabricated into domestic utensils by the turner. The bark, being light, is employed for floats to fishermen's nets; it is also used for tanning; and, in Russia, in the manufacture of Russia leather.

65. The Common White or Grey Poplar and the Abele very much resemble each other; but may be distinguished from the circumstance of the leaves of the former being smaller, rounder, less acutely lobed, and having much less down on their under surface than those of the latter; also that its branches grow more upright and compact; it is supposed to be indigenous to Britain, which is countenanced by the fact of its being very commonly found in a wild state, whence, no doubt, arises the circumstance of its being sometimes called the *wild Abele*; but when we consider the light capillary pappas, with which its numerous seeds are furnished, serving like wings to bear them wherever they may be wafted by the wind, we have grounds for withholding our unqualified acquiescence. In a loose and moist soil, such as the bank of a river or lake, it attains a great height, even to 80 or 90 feet; and, from its narrow, spiring form, becomes a conspicuous and stately object, very ornamental to the landscape, whether placed in the hedge-row, or interspersed amongst the trees of the park or pleasure-ground; for undrainable localities, which it is desirable to decorate, it is amongst the first to be chosen; and it fortunately happens that the leaves of the poplar, generally, are eminently distinguished for their beneficial effect in compost soils, enriching the earth on which they grow. The wood is very white, tough when dry, and not liable to split; it is frequently adopted for packing-cases.

66. The Abele, or Great White Poplar (also known by the name of Dutch Beech), is of very quick growth; aspiring and light, yet fine, and of very uniform grain: its leaves are larger than those borne by the others generally, and are sinuated into from three to five lobes, dark on the upper, and clothed with a cottony down on their under side; the bark of the trunk and older branches is grey, that of the younger, purple—the down overspreading the young shoots and footstalks. Its bark is recommended for the cure of intermittent fevers. It was originally from Holland,\* where it is still a favourite;† on account of its lightness and toughness it is employed for a variety of purposes—wheeled vehicles, pumps, domestic utensils, butchers' trays, bellows, turnery, toys, carvings, Dutch shoes, packing-cases, &c.; it is also very suitable for the purposes of the cabinet-maker; and to render it an excellent imitation of mahogany, it is only necessary to use the ordinary means to which cabinet-makers resort for lightening the colour of woods; for the sapwood, where more colour is required, the stain of aquafortis will bring it up; this renders the Abele equal to the best mahogany in colour, variety, and transparency of surface, and in these respects decidedly superior to the commoner sorts of that wood; it requires very little oil and rubbing to bring upon it that admired soft, rich gloss, which it takes years to produce on mahogany furniture. For durability, it is said to be in dry and well-ventilated situations equal to the pine.

(To be continued.)

#### NEW BUILDINGS BILL.

A MEETING of the MASTER CARPENTERS' SOCIETY will take place at the Freemasons' Tavern, on Wednesday next, when a report upon the above Bill will be brought up by the committee appointed by the society to superintend the measure in its progress through Parliament. A copy of this report we shall lay before our subscribers on the first opportunity.

\* It is said that 10,000 were exported from Flanders in 1659, and transplanted in various countries.

† The Dutch regard it as a liberal provision for a daughter's marriage dowry, to set a plantation of the Abele at her birth; it is of such rapid growth and is so highly prized.

#### THE NEW ROYAL EXCHANGE.

THE works of this great edifice are drawing to a rapid conclusion, and we are informed that every possible effort is being made for their early completion. On the outside the sculpture on the pediment has been finished, and is considered on the whole to be a work of considerable merit. On the stone base supporting the statue of Commerce, which forms the centre and principal figure of the group, is the very appropriate inscription from the Psalms—"The earth is the Lord's, and the fulness thereof." We understand that the suggestion of such an inscription was first given to the sculptor, Mr. Westmacott, by a very noble personage, who took much interest in the whole composition. On the frieze of the portico a Latin inscription is partly cut, recording the very curious fact of the founding of the Exchange in the reign of one queen, viz. Elizabeth, and its rebuilding in the reign of another, her present most gracious Majesty Queen Victoria. The cleaning down of the work is proceeding with great expedition, and as the architecture becomes more developed by the removal of the scaffolding and the finishing of the carvings of the various parts, the general impression, as to the elegance and characteristic design of the structure, which has been always favourable, seems to increase vastly. In the centre of the south front, over the three openings, the arms of Sir Thomas Gresham, of the Mercers' Company, and of the city of London, are introduced on the key-stones, and, with the architectural accompaniments of festoons and other decorations, give great beauty to this most important entrance. The domes at the north and south entrances are painted in fresco, and form a becoming introduction to the merchants' area within. The ceiling of the covered walk surrounding the open area is nearly finished. It is, as has been already stated, painted in encaustic on the surface of the architecture, and is considered to produce a very beautiful effect. In the centre of each panel are painted the arms of the great nations of the earth. In the four corners are the arms of Edward the confessor, Edward the Third, Queen Elizabeth, and Charles the Second, each of the two latter being so placed as to be in connection with the statues of the respective sovereigns. The statue of Charles is the old statue in marble which stood in the centre of the old Exchange, and is now being renovated by Mr. Watson, who is also carving a statue of Queen Elizabeth, to be placed in the corresponding niche. The covered walk is paved with enormous flag stones of a light colour, divided into bands by lines composed of a hard black stone, called Castle-hill stone, with squares of polished red granite at the intersections. Great pains appear to have been taken to keep the vaults dry under the open area, and to secure a beautiful, even, and dry surface for the pavement of this essential part of the Royal Exchange. To secure this object, in the first place, we are informed there is a solid layer of concrete upon the arches. Upon that concrete is a coating of the asphalt of Seyssel, laid to a proper slope, and terminating in iron gutters, which communicate with pipes, and carry the water into drains below. Over this asphalt will be laid another bed of concrete, to receive the tessellated pavement which will form the finish. The asphalt is already partly laid, and it is said that it will be completed in a week. The tessellated pavement will form a border and bands of varied patterns, and is contracted for by Messrs. Singer, of Vauxhall. This pavement is a revival of what was considered a lost art, but it is now about to be restored with exquisite beauty, and, from the perfect vitrification of the tesserae, it must be extremely durable and non-absorbent. The various offices and shops are in a remarkable state of forwardness, particularly the great rooms on the one pair floor, intended for Lloyd's establishment. In these rooms the scaffoldings have been removed, and they are to be the finest apartments in the city. One of them is 100 feet in length. Over the great western entrance is alto relievo, the royal arms, with supporters in alto relievo, and carved in a style of amazing boldness and effect, by Mr. Carew. The fixing of it will be completed in the course of the ensuing week. Mr. Carew is finishing a splendid statue of Whittington for one of the principal niches of the edifice.—Observer.



INTERIOR VIEW (TOWARDS THE ALTAR) OF ST. OLAVE'S CHURCH, SOUTHWARK.



## ST. OLAVE'S CHURCH, SOUTHWARK.

WE have just visited this church; and finding that its restoration approaches completion, we this week give insertion to a print, copied from a beautiful drawing belonging to George Corner, Esq., F. S. A., vestry-clerk of the parish, which he had, with an exterior view of the same church, made by Mr. George Hawkins, jun. This print shews the interior of the church, exactly as it was before the fire, and gives an excellent idea of the finish which this work, of the kind very "decently" denominated "PAGAN" by Welby Pugin, and the Cam. Cam., who have the taste for admiring in preference mere rude barns.

The ceilings and galleries are now wholly restored, the new painted altar-window is nearly complete, the oaken pewing is more than half reinstated, and the stone upper dome of the tower has been surmounted by a small stone octagonal lantern, the crowning staff and vase of which are now depending, ready to be hoisted to their final situation.

As we intend to give some few details of the carved work of this church, we shall reserve for the present all further observation upon it,

and subjoin the following interesting article relating to the former church.

INVENTORY OF THE CHURCH GOODS OF ST.  
OLAVE'S, SOUTHWARK, 1558.  
(Extracted from the Gentleman's Magazine of  
May 1837.)

Thys inventory, made by John Thomas, Wyll'm Wylsone, Wyll'm Jonys, Richard Weste-traye, and Harry Muskyne, latte beyng chyrche wardyns of the parrysche of Sentt Tollos<sup>1</sup> in Sothewarke, of all the platte, goods, and ornametts belongynge to the sayed chyrche and parrysche, and delывard the xvj daye of Octobar, in the yere of owre Lored, 1558, untto Ollyfe Bure,<sup>2</sup> Randle Smythe, Rogare Hyppy, Charlyss Pratte, and Rutte Langgar, beyng newe chyrche wardens alle thes p'sells [parcels] followyng.

## Platte.

Inp'm's a Crosse of sylvar w<sup>t</sup> Mary and John, weyging <sup>xx</sup> <sub>iiij</sub> and vj oz.<sup>3</sup>

It' ij Comunyone Koppes of sylvar, gyltte bothe w<sup>t</sup> in and wythe owt, weyying <sup>xx</sup> <sub>iiij</sub> oz.

It' a Massar<sup>4</sup> garnyssecheyd w<sup>t</sup> a bande of sylvar and gyltte w<sup>ch</sup> weyed by estymacyon v oz.

It' a Challys<sup>5</sup> weyying ix ox. iij qts.

Koppes.<sup>6</sup>

It' a Cope of tyssue rased<sup>7</sup> w<sup>t</sup> blew welfatt.

It' a Coppe of clothe of goled w<sup>t</sup> rede welfatt.

It' a Cope of blew welfatte w<sup>t</sup> Sent Tolly<sup>1</sup>.

It' a Cope of tawny welfatt, w<sup>t</sup> flowres de luices and tongs.<sup>8</sup>

It' a Cope gyvyne by Mr. John Rychards,oure p'sone, of clothe of goled wrought w<sup>t</sup> grene welfatt, with Sent George apone the bake.

Westements.<sup>9</sup>

It' a Sutte of Westements of blew tesseus & golde, w<sup>t</sup> alby.<sup>10</sup>

It' a westementis and a tynacolle<sup>11</sup> of blew clothe of tyssue w<sup>t</sup> grene crossys w<sup>t</sup> all the apparrelle.

It' ij westementis of grene badekyne<sup>12</sup> w<sup>t</sup> rede crossys of sattyne, w<sup>t</sup> alby.

It' a sutte of westementis w<sup>ch</sup> warre Mr. Lek's, of rede welfatt wrought w<sup>t</sup> ayngylls and spiede egyls.<sup>13</sup>

It' a westement gyvyne by Syr Antony Sellynger, Knyghte,<sup>14</sup> of clothe goled, wrought w<sup>t</sup> rede wellefatte w<sup>t</sup> the gartiar and hys armys apone the bake, w<sup>t</sup> all the apparrelle thereunto belongynge.

It' a westemente of whytte badekyne w<sup>t</sup> a rede crosse and gartars.

Altar Clothys.<sup>15</sup>

It' ij altar clothys of rede clothe of goled,



the one for the owar p'tte of the alttar, and the other for the nether p'tte.

It' ij alttare clothys of blewse tyssewe.  
It' ij alttarre clothys of rede and grene w<sup>t</sup> ankars.

It' ij alttar clothys of whytte damaske wrought w<sup>t</sup> flours.

It' ij alttar clothys of grene badekyne.  
It' a oled alttar clothe of blewse welfate wrought w<sup>t</sup> starys.

It' vj alttar clothys peynttyed w<sup>t</sup> ymagery or pcytores.

It' vj alttar clothys of dyapare, goode and bade.

It' iijij playne alttar clothys.  
It' more vj pessys of olede peynttyed clothys.

It' a' playne awitar clothe gyvene by Mastrys Awefeled.

It' ij awitar clothe of blewse and yelowse peynttyed, the owar clothe w<sup>t</sup> a crussyfyxe, and the nether w<sup>t</sup> Sent Clemente<sup>16</sup> and Ankars.

#### Corttyens.<sup>17</sup>

It' ij corttyens of whytte sylke.  
It' ij corttyens of tawny sylke.

It' vijj peyars corttyens peynttyed of lynyne clothe of yellow and rede bokeram.

It' ij long corttyens of yellowe.  
It' iijij corttyens of rede and grene saye, gyvene by Mr. Bonyvante.

#### Bokkes.

It' iijij antyfonars<sup>18</sup> prentied.  
It' a grette antyfyndar of parchementt.

It' iijij grayllys<sup>19</sup> of parchementt.  
It' iijij leygons<sup>20</sup> of p'chementt.

It' iijij masse bokks.<sup>21</sup>  
It' iijij hymnalles.<sup>22</sup>

It' vj pressessynars.<sup>23</sup>  
It' ij manuellis.<sup>24</sup>

It' ij saltars<sup>25</sup> lytlylle.  
It' a ordynary buke called a pye.<sup>26</sup>

It' iijij prykesyonge bokys<sup>27</sup> coveryd w<sup>t</sup> parchement.

It' a grette prykesong boke of parchementt.

#### Dyvars othar Ornamente.

It' a canopy clothe,<sup>28</sup> gyvene by Mr. John Rycharde, owre p'sone, panyed<sup>29</sup> wythe crymesyne welfate, pryched<sup>30</sup> w<sup>t</sup> golede and blake tynsouce.<sup>31</sup>

It' a polpytte clothe, gyvene by the sayed Mr. Rycharde, panyed as aforesayed w<sup>t</sup> crymesyne welfat and blake tessoe.

It' a covar<sup>32</sup> for the Sakarmentt, gyvene by the sayed Mr. Rycharde.

It' a clothe for the Sakarmentte, gyvene by the sayed Mr. Rycharde, wrought w<sup>t</sup> sylke and goled w<sup>t</sup> iijij grette tasselles of goled hanging thereatte.

It' more ij sakarmentte clothys.  
It' vij diapar twelles.<sup>33</sup>

It' xvij allys, sum paryllyed and some one paryllyed.<sup>34</sup>

It' x amysys.<sup>35</sup>  
It' ix lytlylle hande twelles of diapare.

It' a twelle wrought w<sup>t</sup> sylke, gyvene by Mrs. Maryatte.

It' xvij surplysys, goode and bade.  
It' a herse clothe<sup>36</sup> of clothe of goled of sondry pessys, rased w<sup>t</sup> rede welfatte.

It' ij herse clothys, one for mene, and another for cheledarne, sometyme Sente Clement<sup>37</sup>.

It' a crosse of coppar.<sup>38</sup>  
It' xij lattine kansyys.<sup>39</sup>

It' a peyar of grette standards<sup>40</sup> of lattine.  
It' v sakaryng bellis.<sup>41</sup>

It' ij barrys of yarne for the sepulkar.<sup>42</sup>  
It' a lytlylle crowe<sup>43</sup> of yarne.

It' ij bassyns<sup>44</sup> of tyne, gyvene by Rob'te Johnson.

It' ij sensars<sup>45</sup> of lattine.  
It' a schepe<sup>46</sup> of lattine.

It' a lampe of lattine.  
It' a fyar showlle.<sup>47</sup>

It' a crysematory<sup>48</sup> of tyne.  
It' a rowllare of wode.

It' ij formys.  
It' a laddare.

It' ij corporys cassys.<sup>49</sup>  
It' a rede stolle<sup>50</sup> of sylke and goled.

It' a hally wattare stok<sup>51</sup> of lattine.  
It' a lantarne.

It' ij hally brede basckatts.  
It' a valle for the awitare.<sup>52</sup>

It' a clothe for the rode.<sup>53</sup>  
It' iijij staves<sup>54</sup> for the canopy.

It' iijij staves w<sup>t</sup> castelles<sup>55</sup> for to carry lyght abowght the sakarmentt.

It' a cheste in the vestry wt barrys of yarne, and a bolte of yarne w<sup>t</sup> ij grette hangyng lokes.

It' iijij other chests belonging to the chyrche.

It' the lesse of Horseydowne,<sup>56</sup> w<sup>t</sup> dyvars othar wrytyngs lyying in the aforesayed chests.

It' a banar clothe of grene sylke for the crosse wt the trenyte<sup>57</sup> upon ytte.

It' ij flags of sylke w<sup>t</sup> the Queenys armys in them.<sup>58</sup>

It' vj banners of sylke.  
It' a banerare of cokkerame w<sup>t</sup> Sent George apone yt.<sup>59</sup>

It' ix banar polys.  
It' a crussyfyxe of whyte sylke, gyvnye by Mastrs Blanke,<sup>60</sup> and sette apone the best awttar clothe.

It' ij grette kusschynes kov'ed and stuft w<sup>t</sup> fethars.<sup>61</sup>

#### NOTES.

<sup>1</sup> Saint Olave's.—In like manner St. Olave's street became corrupted to Tooley-street.

<sup>2</sup> Oliff Burr was returned to Parliament as Member for Southwark, in the 5th, and again in the 14th of Elizabeth.

<sup>3</sup> See the 19th chapter of St. John, v. 27 and 28. This must have been a handsome and weighty cross, 86 oz.; the weight of the Communion Cups was 74 oz.

<sup>4</sup> A Mazer, a maple cup.—See Ducange.

<sup>5</sup> Then lo, Perigot the pledge which I plight, A mazar wrought of the maple ware, Wherein is enchased many a fair sight Of bears and tigers, that make fierce war."

SPENSER.

<sup>6</sup> In the Inventory for 1556, is the following:

"It' a challys gyvnye by Sente Tanya (St. Anne's) systars, thene beyng Elizabeth Eglyfered, Ione Whytte, — Maryatt, Jone Vestrame, and M<sup>r</sup>'tte Rutte, w<sup>ch</sup> challys weythe xi onzys qtr. and d: qtr." One of the four aisles of St. Olave's Church (which fell down in 1736) was called St. Anne's aisle, and in it was a chapel and altar dedicated to St. Anne.

<sup>7</sup> The cope, cappa, called also pluviale, used for the choir service and ceremonials. It resembles in its shape a large and flowing cloak, open in the front, and fastens on the breast by clasps. The copes were of various colours and materials, and differently ornamented, as is shewn by this inventory.

<sup>8</sup> Raised, ornamented with blue velvet sewed on.

<sup>9</sup> Qu. Tongues? This was probably a cope to be worn on Whit-Sunday, when "there appeared to them cloven tongues, like as of fire, and it sat upon each of them."—Acts, ii. 3.

<sup>10</sup> The garment particularly called the vestment, is the chasuble, casula, or planeta, an outer vestment pulled over the head and cut open at the sides to the shoulder, which the priest wears at mass. It derives its origin from the Roman garment, called *penula*.

<sup>11</sup> The alb is a white linen garment worn by the priests, deacons, and sub-deacons, reaching down to the feet, and tied round the neck and at the wrists, and gathered by a girdle round the waist.

<sup>12</sup> Tynacoll, tunicalle, the sub-deacon's garment.

<sup>13</sup> Baadkin, or bodkin, a rich kind of stuff made of gold and silk.

<sup>14</sup> Angels and spread-eagles. Mr. Leke was an opulent brewer, in this parish, of German origin, who died in 1559, and by a bequest in his will, was the cause of the foundation of the excellent and now well-endowed grammar-school of St. Olave's.—See Gentleman's Magazine, N. S., vol. V., p. 15.

<sup>15</sup> Sir Anthony St. Leger, Knight of the Garter, Deputy in Ireland to King Henry VIII., and ancestor of the Viscounts Doneraile. He was actively employed in the dissolution of the monasteries, and received a grant of the inn in St. Olave's parish, belonging to the Abbot of Augustine's, at Canterbury. His arms were Azure, fretty Argent, a chief Or.

<sup>16</sup> The altar cloth is often called in English MS. "frontell" (antependium).

<sup>17</sup> St. Clement and Anchors. The anchor was the emblem of St. Clement, who is said to have been cast into the sea, with an anchor about his neck, and according to the legend, on the first anniversary of his death, the sea receded three miles, and discovered a superb marble temple, in which was a monument containing the remains of the saint. There was in St. Olave's church, a fraternity of St. Clement, and one of the four aisles was called St. Clement's aisle, in which were his chapel and altar. He was probably a favourite saint of the mariners, to whom St. Olave's Church, being situated at the river side, was very convenient.

<sup>18</sup> Anciently, curtains were used against the altar-screen, but that custom was in disuse at the time of making this inventory. The curtains here mentioned were to cover the tabernacle.

<sup>19</sup> Antiphonar. A book for the service of the choir. It contains the responses or antiphons, hymns, verses, and singing of the canonical hours.

<sup>20</sup> Graduals. The gradual takes its name from the prayer chanted gradatim, after the epistle. It is the choir-book used for singing mass.

<sup>20</sup> The legend. It contains the lessons to be read in the Matin Office, taken from the Old or New Testament, or the Homilies, Sermons, and Saints' Lives.

<sup>21</sup> Missals, containing every thing belonging to the mass.

<sup>22</sup> Hymn books.

<sup>23</sup> Books of the order and service for the ecclesiastical processions.

<sup>24</sup> Manual, the ritual containing all things belonging to the sacraments, sacramentals, and benedictions.

<sup>25</sup> Psalters, containing the Psalms of David.

<sup>26</sup> A service-book, so called, as supposed, from the different colours of the text and rubric.—Johnson.

<sup>27</sup> Music books, pricked or scored.

<sup>28</sup> The canopy cloth was borne over the Eucharist on solemn processions, as on the feast of Corpus Christi, and in visitations to the sick. John Richards was instituted to this rectory on the 6th January, 1556-7, and died in 1558.

<sup>29</sup> Covered in panes or compartments.

<sup>30</sup> Ornamented.

<sup>31</sup> Tissue.

<sup>32</sup> The cover for the Sacrament was the veil used at mass over the chalice and paten containing the sacred elements, and the cloth for the sacrament of silk and gold with four tassels was probably for the same purpose, or it might have been the scarf which the priest uses when he carries the sacrament in procession, or at benedictions. It was not the cloth called the corporal on which the Eucharist is laid at the altar; that cloth was always of fine linen, and is considered so sacred that it must not be touched by lay hands, and it is never even washed, but when old or dirty is burned.

<sup>33</sup> Towels. The altar-linen for various purposes.

<sup>34</sup> Appareled and unappareled. The priests', deacons', and sub-deacons' albs were sometimes plain and sometimes ornamented on the lower part of the garment.

<sup>35</sup> The amice is an oblong piece of fine linen, which the priest wears at mass, upon his shoulders, over the cassock and under the alb.

<sup>36</sup> It was usual, on the death of persons of any note, to erect in the church a herse or stage, decorated with palls, or herse-cloths, tapers, &c.

<sup>37</sup> Belonging to the fraternity, or priests of St. Clement.

<sup>38</sup> The copper cross was probably a processional cross.

<sup>39</sup> Candlesticks of latten, an alloy of copper and zinc.

<sup>40</sup> Standards of latten, seem to mean candelabra which stood on the floor.

<sup>41</sup> A little bell which is rung to give notice of the approach of the Host when carried in procession, and also in other offices of the Roman Catholic Church.

<sup>42</sup> Bars of iron, probably to fasten the sepulchre in which the consecrated Host was deposited on Good Friday, until Easter Day.

<sup>43</sup> A small iron crow, probably to perform the ceremony of opening the sepulchre on Easter Day.

<sup>44</sup> Basins for washing the hands of the priest at mass.

<sup>45</sup> Censers. Vessels to burn frankincense in.

<sup>46</sup> A small vessel in shape of a ship or boat to hold the frankincense.

<sup>47</sup> A fire-shovel.

<sup>48</sup> A chrismatory, or vessel for the holy oil.

<sup>49</sup> Pockets for the corporals.

<sup>50</sup> A narrow scarf or band thrown over the priest's neck, and descending to his feet.

<sup>51</sup> The holy water stock, for sprinkling holy water from the vessel called the stoup.

<sup>52</sup> Veil for the altar, used from Passion Sunday till Easter Day.

<sup>53</sup> A cloth to cover the holy rood, from Passion Sunday till Good Friday.

<sup>54</sup> Staves to support the canopy when carried over the Host in processions.

<sup>55</sup> Staves with lanterns in the form of castles, to be used in visiting the sick at night.

<sup>56</sup> Horseydown, now Horslydown, was then a large down or grazing field, containing 16 acres, belonging to the parish of St. Olave, in which the parishioners turned out their *horres* and cattle to graze.—See Gentleman's Magazine, N. S. vol. V, p. 15.

<sup>57</sup> Banners of green were used in procession, on vigils and fasts, and often had depicted on them, either the personified representation of the Trinity, or more frequently the heraldic emblem or diagram, drawn in a triangular form, and reading Pater est Deus, &c. &c.

<sup>58</sup> Processional banners.

<sup>59</sup> This is the second time we meet with Saint George in this inventory, but I do not find that he had any particular connection with the church.

<sup>60</sup> Thomas Blanke was sheriff of London in 1574, and Lord Mayor, as Sir Thomas, in 1582.

<sup>61</sup> Cushions for the priest to kneel upon at the altar.

G. R. C.



## RETROSPECTIVE ARCHITECTURAL LITERATURE.

## THE ELEMENTS OF ARCHITECTURE.

COLLECTED BY SIR HENRY WOTTON, KNIGHT,  
From the best Authors and Examples.

(Continued from p. 407.)

THE *Doric* Order is the gravest that hath been received into civil use, preserving, in comparison of those that follow, a more masculine Aspect, and little trimmer than the *Tuscan* that went before, save a sober Garnishment now and then of Lions Heads in the Cornice, and of Triglyphs and Metopes always in the Frize: Sometimes likewise, but rarely, channelled, and a little slight Sculpture about the Hypotrachelion, or Neck, under the Capital. The Length seven Diameters. His Rank or Decree is the lowest by all Congruity, as being more massy than the other three, and consequently abler to support. The Intercoliumination thrice as much as his Thickness below. The Contraction aloft, one fifth of the same measure. To discern him, will be a piece rather of good *Heraldry* than of *Architecture*; for he is best known by his Place, when he is in Company, and by the peculiar Ornament of his Frize, before-mentioned, when he is alone.

The *Ionian* Order doth represent a kind of feminine Slenderness, yet, saith Vitruvius, not like a light Housewife, but in a decent Dressing hath much of the Matron. The Length eight Diameters. In Decree, as in Substantialness, next above the *Doric*, sustaining the third, and adorning the second Story. The Intercoliumination, two of his own Diameters. The Contraction, one sixth part, best known by his Trimmings; for the Body of this Column is perpetually channelled, like a thick plaited Gown. The Capital dressed on each side, not much unlike Womens Vires, in aspiral Weathing, which they call the *Ionian Voluta*. The Cornice indented. The Frize swelling like a Pillow, and therefore by Vitruvius not unelegantly term'd *Pulvinata*. These are his best Characters.

The *Corinthian* is a Column lavishly deck'd like a Courtesan, and therein much participating (as all inventions do) of the Place where they were first born, Corinth having been, without controversy, one of the wantonest Towns in the World. This Order is of nine Diameters. His Decree one Stage above the *Ionian*, and always the highest of the simple Orders. The Intercoliumination, two of his Diameters, and a fourth part more, which is of all other the comliest Distance. The Contraction one seventh Part. In the Cornice, both Dentelli and Modiglioni.\* The Frize adorned with all kinds of Figures and various Compartments at Pleasure. The Capital cut into the beautifullest Leaf that Nature doth yield, which surely next *Aconitum Parda-*  
*hanches* (rejected perchance as an ominous Plant) is the *Acanthus* or *Branca Ursini*, though Vitruvius do impute the Choice thereof unto Chance, and we must be contented to believe him: In short, as Plainness did characterize the *Tuscan*, so must Delicacy and Variety the *Corinthian* Pillar, besides the Height of his Rank.

The last is the Compound Order; his Name being a Brief of his Nature: For this Pillar is nothing in effect but a Medley, or an Amass of all the precedent Ornaments, making a new Kind by stealth; and though the most richly tricked, yet the poorest in this, that he is a Borrower of all his Beauty. His Length (that he may have somewhat of his own) shall be of ten Diameters. His Decree should, no doubt, be the highest, by Reasons before yielded: But few Palaces, ancient or modern, exceed the third of the Civil Orders. The Intercoliumination but a Diameter and an half, or always somewhat less than two. The Contraction of this Pillar must be one eighth Part less above than below. To know him, will be easy by the very mixture of his Ornaments and Clothing.

And so much touching the five Orders of Columns, which I will conclude with two or three not impertinent Cautions.

First, That where more of these Orders than one shall be set in several Stories or Contignations, there must be an exquisite care to place the Columns precisely one over another, that so the Solid may answer to the

Solid, and the Vacuities to the Vacuities, as well for beauty as Strength of the Fabrick; and by this Caution the Consequence is plain, that when we speak of the Intercoliumination or Distance which is due to each Order, we mean in a *Doric*, *Ionical*, *Corinthian* Porch or Cloyster, or the like of one Contignation, and not in Storied Buildings.

Secondly, Let the columns above be a fourth Part less than those below, saith Vitruvius, Lib. 5, Cap. 15. A strange Precept, in my Opinion, and so strange, that peradventure it were more suitable even to his own Principles, to make them rather a fourth Part greater; for Lib. 3, Cap. 2, where our Master handleth the Contraction of Pillars, we have an Optick Rule, that the higher they are, the less should be always their Diminution aloft, because the Eye itself does naturally contract all Objects, more or less, according to the Distance; which Consideration may, at first Sight, seem to have been forgotten in the Caution we have now given; but Vitruvius (the best Interpreter of himself) hath in the same Place of his fifth Book, well acquitted his Memory by these Words; *Columnæ superiores quarta parte minores, quam inferiores, sunt constituendæ propter quod, operi, ferendo quæ sunt inferiora, firmiora esse debent*; preferring, like a wise Mechanick, the natural Reason before the Mathematical, and sensible Conceits before abstracted: And yet, Lib. 4, Cap. 4, he seemeth again to affect Subtily, allowing Pillars the more they are channelled to be the more slender, because while our Eye (saith he) does as it were distinctly measure the eminent and the hollowed Parts, the total Object appeareth the bigger, and so as much as those Excavations do subtract, is supplied by a Fallacy of the Sight: But here, methinks, our Master should likewise have rather consider'd the natural Inconvenience; for though Pillars by channelling be seemingly ingrossed to our Sight, yet they are truly weakened in themselves, and therefore ought perchance in sound Reason not to be more slender, but the more corpulent, unless Appearances preponder Truths; but *Contra Magistrum, non est disputandum*.

A Third Caution shall be, that all the projecting or jutting Parts (as they are termed) be very moderate, especially the Cornices of the lower Orders; for whilst some think to give them a beautiful and royal Aspect, by their Largeness, they sometimes hinder both the Light within (whereof I shall speak more in due Place) and likewise detract much from the View of the Front without, as well appeareth in one of the principal Fabricks at Venice, namely the palace of Duke Grimani on the Canal Grande, which by this magnificent Error is somewhat disgraced. I need now say no more concerning Columns and their Adjuncts, about which Architects make such a Noise in their Books, as if the very Terms of Architraves, and Friezes, and Cornices, and the like were enough to graduate a Master of this Art; yet let me, before I pass to other Matter, prevent a familiar Objection. It will perchance be said, that all this Doctrine touching the five Orders were fitter for the Quarries of Asia, which yielded One hundred and twenty-seven Columns of sixty Foot high, to the Ephesian Temple; or for Numidia, where Marbles abound, than for the Spirits of England, who must be contented with more ignoble Materials. To which I answer, That this need not discourage us; for I have often at Venice viewed with much Pleasure, an *Atrium Græcum* (we may translate it an Anti-Porch, after the Greek manner) raised by Andrea Palladio, upon eight Columns of the Compound Order; the Bases of Stone, without Pedestals; the Shafts or Bodies of mere Brick, three Foot and an half thick in the Diameter below, and consequently thirty-five Foot high, as himself hath described them in his Second Book, than which mine Eye hath never yet beheld any Columns more stately of Stone or Marble; for the Bricks having first been formed in a circular Mould, and then cut before their burning into four Quarters or more, the Sides afterwards join so closely, and the Points concenter so exactly, that the Pillars appear one entire Piece; which short Description I could not omit, that thereby may appear how in truth we want rather Art than stuff to satisfy our greatest Fancies.

After Pillars, the next in my Distribution

are Pilasters, mentioned by Vitruvius, Lib. 5, Cap. 1, and scant any where else, under the Name of *Parastates*, as Philander conceiveth; which Grammatical Point (though perchance not very clear) I am contented to examine no farther. Always, what we mean by the thing it self, is plain enough in our own Vulgar, touching which, I will briefly collect the most considerable Notes.

Pilasters must not be too tall and slender, least they resemble Pillars; nor too dwarfish or gross, least they imitate Piles or Piers of Bridges: Smoothness doth not so naturally become them, as a rustic Superficies, for they aim more at State and Strength than Elegancy. In private Buildings they ought not to be narrower than one Third, nor broader than two Parts of the whole Vacuity between Pilaster and Pilaster; but to those that stand at the Corners, may be allowed a little more Latitude by Discretion, for Strength of the Angles. In Theatres and Amphitheatres, and such weighty Works, Palladio observeth them to have been as broad as the Half, and now and then as the whole Vacuity. He noteth likewise (and others consent with him) that their true Proportion should be an exact Square; but for lessening of Expense, and enlarging of Room, they are commonly narrower in Flank than in Front: Their principal Grace doth consist in half or whole Pillars applied unto them; in which case it is well noted by Authors, that the Columns may be allowed somewhat above their ordinary Length, because they lean unto so good Supporters. And thus much shall suffice touching Pilasters, which is a cheap and strong, and a noble Kind of Structure.

Now, because they are often, both for Beauty and Majesty, found arched than otherwise, I am here orderly led to speak of Arches, and under the same Head of Vaults, for an Arch is nothing indeed but a contracted Vault, and a Vault is but a dilated Arch; therefore to handle this Piece both compendiously and fundamentally, I will resolve the whole business into a few Theorems.

## THEOREM I.

All solid Materials free from Impediment, do descend perpendicularly downwards, because Ponderosity is a natural Inclination to the Centre of the World, and Nature performeth her Motions by the shortest Lines.

## THEOREM II.

Bricks moulded in the ordinary Rectangular Form, if they shall be laid one by another in a level Row, between any Supporters sustaining the two Ends, then all the Pieces between, will necessarily sink, even by their own natural Gravity, and much more if they suffer any depression by other Weight above them, because their Sides being parallel, they have room to descend perpendicularly, without impeachment, according to the former Theorem; therefore to make them stand, we must either change their posture or their figure, or both.

## THEOREM III.

If Bricks moulded, or Stones squared *Cuneatim* (that is, Wedge-wise, broader above than below) shall be laid in a Row level, with their Ends supported as in the precedent Theorem, pointing all to one Center; then none of the Pieces between can sink 'till the Supporters give way, because they want room in that Figuration to descend perpendicularly. But this is yet a weak Piece of Structure, because the Supporters are subject to much Impulsion, especially if the Line be long; for which Reason this Form is seldom used, but over Windows or narrow Doors. Therefore to fortify the Work, as in this Third Theorem, we have supposed the Figure of all the Materials different from those in the Second: So likewise we must now change the Posture, as will appear in the Theorem following.

## THEOREM IV.

If the Materials figured as before Wedge-wise, shall not be disposed levelly, but in form of some Arch or Proportion of a Circle, pointing all to the same Center: In this Case, neither the Pieces of the said Arch can sink downwards, through want of room to descend\* perpendicularly; nor the Supporters or Butments (as they are termed) of the said Arch can suffer so much Violence, as in the precedent flat Posture, for the Roundness will always make the incumbent Weight rather to rest upon the Supporters than to shove them.

\* Our Artizans call them Teeth and Cartouzes.

\* By the First Theorem.



Whence may be drawn an evident Corollary; that the safest of all Arches is the Semicircular, and of all Vaults the Hemispherical, though not absolutely exempted from some natural Weakness,† as Bernardino Baldi, Abbot of Guastalla, in his Commentary upon Aristotle's *Mechanics*, doth very well prove; where let me note by the way, that when any thing is mathematically demonstrated weak, it is much more mechanically weak, Errors ever occurring more easily in the management of gross Materials, than lineal Designs.

## THEOREM V.

As Semicircular Arches, or Hemispherical Vaults, being raised upon the total Diameter, be of all other the roundest and, consequently, the securest by the precedent Theorem; so those are the gracefullest, which keeping precisely the same Height, shall yet be distended one fourteenth Part longer than the said entire Diameter; which Addition of Distent will confer much to their Beauty, and detract but little from their Strength.

This Observation I find in Leon Baptista Alberti; but the Practice how to preserve the same Height, and yet distend the Arms or Ends of the Arch, is in Alberti Durer's Geometry, who taught the Italians many an excellent Line, of great use in this Art.

Upon these five Theorems all the Skill of Arching and Vaulting is grounded: As for those Arches which our Artizans call of the third and fourth Point, and the Tuscan Writers *di terzo* and *di quarto acuto*; because they always concur in an acute Angle, and do spring from Division of the Diameter, into three, four, or more Parts at pleasure; I say, such as these both from the natural Imbecility of the sharp Angle itself, and likewise for their very Uncomeliness, ought to be exiled from judicious Eyes, and left to their first inventors, the Goths or Lombards, amongst other Reliques of that barbarous Age.

Thus of my first Partition of the Parts of every Fabrick into five Heads, having gone through the two former, and been incidentally carried into this last Doctrine touching Arches and Vaults. The next now in order are the Apertures, under which Term I do comprehend Doors, Windows, Stair Cases, Chimnies, or other Conducts; in short, all Inlets or Outlets, to which belong two general Cautions.

First, That they be as few in Number, and as moderate in Dimension, as may possibly consist with other due Respects; for in a word, all Openings are Weakenings.

Secondly, That they do not approach too near the Angles of the Walls; for it were indeed a most essential Solecism to weaken that Part which must strengthen all the rest: A Precept well recorded, but ill practised by the Italians themselves, particularly at Venice, where I have observed diverse *Pergoli*, or *Meniana* (as Vitruvius seemeth to call them, which are certain ballised Outstandings to satisfy Curiosity of Sight) very dangerously set forth upon the very Point itself of the Mural Angle.

Now, albeit I make haste to the casting and comparing of the whole Work (being indeed the very definitive Sum of this Art, to distribute usefully and gracefully a well chosen Plot) yet I will first under their several Heads, collect briefly some of the choicest Notes belonging to these particular Overtures.

## OF DOORS AND WINDOWS.

These Inlets of Men and of Light I couple together, because I find their due Dimensions brought under one rule, by Leon Alberti (a learned Searcher) who from the School of Pythagoras (where it was a fundamental Maxim, That the Images of all Things are latent in Numbers) doth determine the comeliest Proportion between Breadths and Heights, reducing Symmetry to Symphony, and the Harmony of Sound, to a kind of Harmony in Sight, after this manner: The two principal Consonances that most ravish the Ear are, by consent of all nature, the *Fifth* and the *Octave*; whereof the first riseth radically, from the Proportion between two and three. The other from the double Interval, between one and two, or between two and four, &c. Now, if we shall transport these Proportions from audible to visible Objects, and apply them as they shall fall fittest (the Nature of

the Place considered), namely in some Windows and Doors, the Symmetry of two to three in their Breadth and Length, in others, the double, as aforesaid, there will indubitably result from either a graceful and harmonious Contentment to the Eye; which Speculation, though it may appear unto vulgar Artizans, perhaps, too subtle and too sublime, yet we must remember that Vitruvius himself doth determine many Things in his Profession by Musical Grounds, and much commendeth in an *Architect*, a Philosophical Spirit; that is, he would have him (as I conceive it) to be no superficial and floating Artificer, but a Diver into Causes, and into the Mysteries of Proportion. Of the Ornaments belonging both to Doors and Windows, I shall speak in another Place; but let me here add one Observation, That our Master (as appeareth by diverse Passages, and particularly, Lib. 6, Cap. 9.) seems to have been an extremum Lover of luminous Rooms: And indeed, I must confess, that a frank Light can misbecome no Edifice whatsoever, Temples only excepted, which were anciently dark, as they are likewise at this Day in some Proportion; Devotion more requiring collected than diffused Spirits.\* Yet on the other side, we must take heed to make a House (though but for civil use) all Eyes, like Argus, which in Northern Climes would be too cold, in Southern too hot: and therefore the Matter indeed importeth more than a merry Comparison. Besides, there is no part of Structure either more expenceful than Windows, or more ruinous, not only for that vulgar Reason, as being exposed to all Violence of Weather, but because consisting of so different and unsociable Pieces, as Wood, Iron, Lead, and Glass, and those small and weak, they are easily shaken. I must likewise remember one Thing (though it be but a *Grammatical Note*) touching Doors; some were *Fores*, and some were *Valvæ*; those (as the very Word may seem to import) did open outwards, these inward, and were commonly of two Leaves or Panes (as we call them) thereby requiring indeed a lesser Circuit in their unfolding, and therefore much in Use among *Italians* at this Day: But I must charge them with an Imperfection, for though they let in as well as the former, yet they keep out worse.

## OF STAIR-CASES.

To make a complete Stair-Case is a curious Piece of *Architecture*: The vulgar Cautions are these:

That it have a very liberal Light, against all Casualty of Slips and Falls.

That the Space above the Head be large and airy, which the *Italians* use to call *Un bel fogolo*, as it were good Ventilation, because a Man doth spend much Breath in mounting.

That the half Paces be well distributed, at competent Distances, for reposing on the Way.

That to avoid Encounters, and besides to gratify the Beholder, the whole Stair-Case have no niggard Latitude, that is, for the principal Ascending, at least ten Foot in Royal Buildings.

That the Breadth of every single Step or Stair, be never less than one Foot, nor more than eighteen Inches.

That they exceed by no means half a Foot in their Height or Thickness, for our Legs do labour more in Elevation than in Distention: These, I say, are familiar Remembrances; to which let me add

That the Steps be laid where they join *Con un tantino di scarpa*; we may translate it somewhat sloping, that so the Foot may in a sort both ascend and descend together, which though observed by few, is a secret and delicate Deception of the Pains in mounting.

Lastly, To reduce this Doctrine to some natural, or at least mathematical Ground, our Master (as we see, Lib. 9. Cap. 2.) borroweth those Proportions that make the Sides of a rectangular Triangle, which the ancient School did express in lowest Terms, by the Numbers of Three, Four, and Five; that is, Three for the Perpendicular, from the Stair-Head to the Ground, Four for the Ground-Line itself, or Recession from the Wall; and Five for the whole Inclination or Slopiness in the Ascent; which Proportion, saith he, will make *Temperatas graduum liberationes*. Hitherto of Stair-Cases which are direct: There are likewise Spiral, or Cockle Stairs, either circular

or oval, and sometimes running about a Pillar, sometimes vacant, wherein Palladio (a Man in this Point of singular Felicity) was wont to divide the Diameter of the first Sort into three Parts, yielding one to the Pillar, and two to the Steps: Of the second into four, whereof he gave two to the Stairs, and two to the Vacuity, which had all their Light from above; and this in exact Ovals, is a Masterpiece.

(To be continued.)

## THE NATURE OF DESIGN.

A Paper read at the meetings of the Decorative Art Society, March 13th and 27th.

BY MR. CRABB, V.P., MEMBER OF THE INSTITUTE OF FINE ARTS.  
(Continued from p. 411.)

LOUIS the XIV. was a magnificent patron of the arts, and also first instituted an academy in France, for the purpose of teaching art upon systematic principles, subdividing the instruction under the heads of drawing after the antique and after the living model, anatomy, painting, perspective, the laws of taste, colouring, and composition. The plan of education previously pursued was that of apprenticeship, where the youth gradually learned the craft, assisted his master, and set up for himself; and in this manner the noblest artists had been produced. Notwithstanding the advantages which an academy presents in providing able teachers, and collecting the great examples of art, without the study of which the strongest intellect may be deviously employed, academies have never succeeded in sustaining a period of declining art: few are taught to much purpose, unless in a great measure their own teachers; and we find that art sunk rapidly after the time of Francis I.

It continued thus depreciated for nearly two centuries; and although many of the castle palaces of Germany were erected during that time, and commanded attention from their massive and often impressive grandeur, there is not that purity of style which will stand the test of time. Contemporaneous in England, the Elizabethan was paramount, and in the next age, a debased use of the style of Louis XIV. was the favourite. Beauties may be found in both; each is extremely picturesque, and when chosen with due regard to fitness of purpose, may be tolerated by the lover of fine art, and most assuredly will please the painter. The Italians, naturally a refined people, and accustomed to fine sculpture and painting in their churches, first returned to the right path; France and Germany have followed, and England has now the opportunity.

Throughout these remarks, as previously observed, I have purposely avoided noticing any definite characteristics of particular styles of embellishment: each requires to be considered separately, with its applicable value, leading features, and distinct principles of design.

I will now take a brief view of the means by which foreigners have rendered science and fine art so popular among their own people as to cause a constantly increasing demand for the application of beautiful form and rich embellishment to their manufactures, giving them the most decided superiority over the English in taste. Speaking of the continent generally, during the last century, universal attention has been paid to the subject, and in some kingdoms, as France, Prussia, and Bavaria, most extraordinary care has been taken to teach the true principles of Design.

In each town of any importance, a hall, with a collection of casts from the antique and most beautiful specimens of modern sculpture, was opened; a museum of general and natural history,—and, wherever it was possible, a small collection of paintings. This plan was found to have the happiest effect upon the people; they came in from the market-place, or their ordinary occupations, saw the most beautiful or instructive objects of art and nature, and insensibly formed to themselves a taste for fine art.

Drawing was taught as a part of the national education, and botanical information communicated sometimes through the means of grouping and common flowers. Dr. Ure mentions this to be an usual practice among the children of the silk weavers in the South of France. With so intimate an acquaintance with nature, can we be surprised at the excellence of their after-works? Does it not pre-

† Which is the sole Prerogative of Perpendicular Lines and Right Angles.

\* Lumen est diffusum sui et alieni.



sent an extraordinary contrast to our own silk weaving families?

In chief towns or cities, principal or central institutions, upon a larger and more comprehensive scale, were opened; instruction being there given upon the application of fine art to every description of manufacture, and by *practical men*. The leading feature was varied according to the chief production of the neighbourhood. Thus, in a mining district the museum would be rich in geological specimens, and the scholars or workmen received special instruction upon science and art, connected with the metals. Calico printing, weaving, lace work, and others, received similar attention. Libraries upon art were opened to the scholars, and often also to the public. Works, containing the finest examples of outline, form, and beautiful ornament, have been published for the use of these institutions. The people, generally, enjoy immense advantages over us by the free and constant exhibition of the finest efforts of Design, of painting and sculpture in their public places, churches, &c. The leisure of the artisan, in most cities, especially in France, is passed in the palaces and gardens of the king, where they have before their eyes beautiful applications of design in architecture, painting, sculpture, and the general interior and exterior arrangements of a refined taste. Paternal and enlightened governments, and a magnificent monarch, 300 years since, provided these elegant recreations, in which the people should pass their holidays; in England the artisan was left to seek the pothouse. Louis XIV. after erecting the sumptuous palace of Versailles, directed his minister to burn the accounts, observing, that the enormous outlay was an *investment for the refinement of his people*. The truth and nobleness of that sentiment we now perceive expressed in a universal admission of the superior appreciation in France of fine art—the taste and politeness of the nation.

The wealthy man can indulge the elegancies of his taste by rendering his mansion the abode of art—but the school for the people must be the streets and squares of their cities; adorn those with statues, fountains, and opportunities for elegant recreation of mind, and the result with us will be an equal love of art with the great cities of Rome, Naples, Venice, Florence, Milan, Munich, and Paris, which are thus adorned, and thus foster art.

I will refer to the course of education as at present organized by the illustrious King of Bavaria; observing, that persons cannot be employed by the government, or in honourable works, without passing through it.

Drawing is taught in every village school, and there are in the kingdom thirty-three schools, particularly devoted to it; also, thirty secondary schools, being real schools of design for the artisan, and three chief, or polytechnic schools; design is, therefore, an integral part of national education, and is thus followed: a boy leaving his village school, and wishing to devote himself to any particular branch of art, enters one of the thirty secondary schools, where instruction is given, in applying the arts to manufactures, throughout every branch, and where he remains for three years, after which, if he determines upon any particular branch he wishes to pursue farther, he enters the Polytechnic School, where his very complete practical course of education is finished.

The scholars can mould and form designs so perfectly as not to be surpassed, except by professional sculptors, painters, &c., who have yet further opportunities for studying their profession in the academy. Scholars not only receive a scientific education, but in the secondary schools the French language, history, geography, natural philosophy, chemistry, &c., go on at the same time as the drawing. The higher classes of society, who are educated in the Gymnasiums and Universities, have an excellent knowledge of design, communicated by private lessons. Thus the entire people are prepared to appreciate beautiful art.

It is not my intention, at the present moment, to notice the numerous buildings erected to the lasting honour of this noble lover of art; but I will glance at the galleries at Munich, to shew the pervading feeling. The building is of noble architecture—the pictures and the statues are arranged in separate apartments on account of light, &c., and the histo-

rical arrangement is followed in placing the sculpture. The first hall contains the Egyptian, because Greek art came from the Egyptian; second, Greek, and early Greek; third, marbles of Egina; fourth, school and time of Phidias, and two rooms for the finest period of Greek art. Then interpose three rooms without sculpture, but richly painted in fresco, descriptive of the history of ancient gods and heroes. You observe these are skilfully introduced to refresh the eye with a sight of colours, after contemplating the statuary. Then succeed a second gallery of sculpture, and two very large halls for Roman art, and one for modern. The gallery of paintings on the ground-floor contains original drawings of the great masters, ancient terra cottas, engravings, enamels, glass paintings, and mosaics. The pictures are on the first floor; a gallery runs the whole length of the building, giving access to any room without passing through others—large pictures are in large rooms, lighted from above, and cabinet works in small rooms, side-lighted from the north. The antechamber is very large, richly ornamented in white and gold, having six great portraits of the founders of the gallery. The decorations of this palace of art present no plain white-washed ceilings, or dirty grey walls, but the staircase and the ceilings are richly wrought in beautiful design, painted, and profusely gilded; the walls of deep rich colours, giving freshness to the statues, and its floors inlaid.

In Switzerland very careful attention is paid to educating for design. In the School of Industrial Art, at Geneva, there are eight professors—the course lasting three years. They have a distinctly separate school for watch-making, and particular instruction is given in the superior manufacture of metals and jewellery. Berne, Geneva, and the Jura mountains, at this moment form the seat of a most extensive production of delicate mechanical works; their export trade supporting an immense manufacture of watches and musical boxes. Calico printing is also considerably extending.

The expense of their School of Design is trifling; one franc for the first year of the course, and two francs for each of the succeeding years: so that a most excellent training, under a sound and comprehensive system, is offered to the entire community.

In Milan exists a superior school for studying interior decoration; there carried to a great extent among the palaces and residences of the Milanese gentry. In Belgium, attention is paid to educated design; at Bruges, with a population of about 20,000, there may be about 600 scholars. In our Norwich, the seat and the centre of a great manufacture, with 80,000, there is not any institution of the kind worth naming. At Amsterdam they have a fine school, with a department for music and philosophical instruments; and similar institutions exist in all the chief towns: even Russia is making exertions promising to be worthy her resources.

As in Bavaria, so in Prussia, Design forms an integral part of the national education. In the lowest or most inferior popular schools instruction in drawing is given. Thus, by exercising and improving the eye, tending to produce taste among the people, and forming a most important assistance and advantage in propagating and generally diffusing art, its consequence is an eager desire to possess themselves of works of art, according to their circumstances. The instruction is gratuitous, and under the direction of the government—the government pay the masters and bear every sort of expense; and this extends throughout all the minor schools of the kingdom. There are five great institutions, called Polytechnic; the chief at Berlin—in which has been formed an immense collection of models of every description, embodying the newest discoveries of Europe, particularly England; a very complete collection of casts of the finest ornaments and designs of the Greeks and Romans of the middle ages, &c., in plaster of Paris, and some of the most distinguished works of naked sculpture, especially the pure Grecian.

The pupils are instructed in drawing, modelling, mathematics, and perspective; and after the general course has been attended, they each choose their own department of manufacture. Founding and casting of metals,

and every other species of manufacturing operation, is taught in its highest perfection, and chemistry, as applicable to the arts. Some instruction is given in natural history and physiology, and they have electrical and other machines for experimental purposes. Pupils are received from any of the provinces. The number in this establishment is limited—they receive instruction free, but must support themselves, and are not admitted after sixteen years of age. They remain three years, during which the business of the institution occupies the whole day, and is very laborious. All pupils must attend the drawing school, and all must learn elementary mathematics. The common courses communicated to the whole body occupies the first year; and afterwards, in the second and third year, they pursue the particular department of manufactures chosen by themselves. It is a duty of the directors of the institution to collect and preserve patterns of every various manufacture from different countries, i. e., the most remarkable specimens. There is an extensive collection of models, always increasing; and attached, is a library of general literature, but particularly of all works relating to the objects of the institution. The students have access to, and may obtain specimens from, the botanical garden of the University—one of the largest in the world. There is drawing, from casts, after the most famous antiques, and any one so desirous may go to the academy and draw from life. They may also attend the anatomical lectures without expense.

The public lectures in this Institution, and in the Academy of Arts, are open to every person gratis.

Instruction in architecture is given, and they possess models of all the most celebrated buildings, and choice specimens of ornament. They receive peculiar instruction with a view to the designing of furniture (household) in its widest extent, and of the ornaments connected with it. They have models of the various forms of chairs, tables, tripods, and every other domestic article, collected from all countries; small models in bronze, which represent the most beautiful forms of antiquity for household furniture and ornamental service.

The pupil is not particularly recommended, upon leaving the school, but naturally going to that part of the country where the manufacture for which he has studied is carried on, meets with ready employment. The directors are, however, always in communication with the manufacturers, so that the prevailing taste suitable for trade is perpetually known to the directors.

Most careful and important instruction is given upon the theory, nature, and property, the composition, manufacture, and application of colours.

The greater and better part of patterns for their calico printing are original designs made at Berlin; and the cotton manufacture has of late considerably increased. Works of a higher and superior character are produced through the improved influence of Design, and an increasing demand exists for pupils who excel in different departments. The director Beuth has published a work at the government expense, with engravings of the most beautiful models of antiquity and the middle ages. It is intended for the scholars, and divided into three parts. The first contains thirty-nine plates, illustrative of external and internal architecture, as a guide for decorations. The second, forty-one plates of vases, tripods, pedestals, cups, &c. The third, ten plates for interior decorations of rooms, floors, walls, and ceilings.

They are the choicest examples of ancient and modern art in their respective classes, not omitting Oriental and Moresque.

A complete and perfect education is thus given in the practical application of art to trade, nothing within the reach of profound care being omitted, and expense being disregarded.

(To be continued.)

DUBUFFE'S ADAM AND EVE.—The interest in these splendid paintings has increased rather than diminished, the exhibition-room being often crowded with visitors, all of whom express themselves highly delighted with these truly chaste and glowing productions of the artist's pencil.—*Hull Packet*.



## METROPOLIS IMPROVEMENTS.

The Commissioners of Her Majesty's Woods and Forests, under the powers vested in them by the Act of the 4 Victoria, c. 12, have issued their plans for the new street leading from Leicester-square to Long-acre, which will be called "Cranbourne-street," and will be of a width from house to house of between 53 and 54 feet. In a few days the commissioners will lease the ground for building the houses, which will be let out in plots, each having a frontage varying from 19 feet to 112 feet, leases for which will be granted from September 29, 1844, for a period of 80 or 42 years, "at a rent of one peppercorn for the first year, and at such rent for the remainder of the term as shall be agreed upon." The houses are to be erected according to such plans, sections, elevations, and specifications, as shall be approved by the commissioners, subject to the inspection of the architect. The whole of the buildings are to be completely finished and rendered fit for habitation before Christmas, 1845, under penalty in each case of forfeiture of the lease. The lessee is to reimburse the commissioners for the expenses incurred for building the vaults and sewers, and paving the street, at the rate of 130*l.* at once, or of 6*l.* 10*s.* rent per annum for a frontage of 45 feet 4 inches. The ground excavated for the basement stories and foundations of the several houses is to be carted away at the cost of the lessee, and, if required by the commissioners, to be deposited to fill up the low ground in the Green Park, for the intended widening of Piccadilly. The lessee is not to carry on the business of tripe-boiler, tripe-seller, slaughterman, soap-boiler, tallow-melter, blacksmith, farrier, chimney-sweeper, or other offensive trade, without consent of the commissioners.

## THE FOUNTAINS IN TRAFALGAR-SQUARE.

The operations for the fountains are in a state of forwardness, and the top of the engine-house in Hemming's-row has been surmounted by an iron tank capable of holding about 30,000 gallons of water. With this building there is connected a tower, at the top of which also another iron reservoir will be erected. The borings for water have made great progress, having been carried down to a depth of about 200 feet, and a plentiful supply of water is now obtained to about 80 feet below the surface. These have penetrated below the London clay through an interesting series of shells, down to the maiden or plastic clay. Another series of borings are made in Trafalgar-square, adjacent to the National Gallery, communicating with the former by a tunnel, which is intended to convey the water. The water obtained from these wells is intended not only for the supply of the fountains, but for the Houses of Parliament, and the various Government offices in the vicinity. This is in accordance with new arrangements which will be applicable in the case of fire occurring at these places. Iron pipes have been laid down from the engine-house to the whole of these places, and operations are expected to be completed in about six weeks. The engine-house, when completed, will have a very peculiar appearance, but is partly of the Grecian Doric order of architecture. In order that the neighbourhood shall not be affected with smoke, the three engines are to be worked with Maide's and Tarling's furnaces, two of which are erected in the building.

## CHURCH-BUILDING INTELLIGENCE, &amp;c.

*Parish Church of Penrith.*—During the last fortnight the parish church of Penrith has been undergoing a thorough repair, and on Wednesday week a vestry meeting was held for the purpose of receiving tenders for renovating the paintings around the altar table in the east window. Mr. Jacob Thompson, of Lowther, was the successful candidate, whose estimate was one hundred guineas. It was decided that the amount should be raised by voluntary subscription, the Lord Bishop of the diocese heading the list with a donation of 30*l.* Amongst the individuals present at the meeting upwards of 20*l.* more was subscribed, and for the remainder it is understood the churchwardens will collect through the town.

*Kensall-green Church.*—On the 8th inst. the ceremony of consecrating the church of St. John, Kensall-green, was performed by the Lord Bishop of London, in the presence of the principal clergy and laity of the district. The church in question, which is to supply the wants of the extreme ends of five parishes, viz., St. Luke, Chelsea (in which parish it is situated); St. Mary Abbott's, Kensington; St. Mary's, Paddington; St. Paul's, Hammersmith; and St. Mary's, Willesden, is situated on the north side of the Harrow-road, almost immediately opposite the principal entrance of the General Cemetery at Kensall-green. It has been erected upon a quarter of an acre of ground, the gift of the authorities of All Souls College, Oxford, and is of the old Norman structure, after designs by Mr. H. E. Kendall, jun., architect, of Brunswick-square; the builders being Messrs. Cooper and Davies, of Castle-street, Southwark. The church is in length from 80 to 90 feet, and width from 44 to 45 feet, composed of yellow brick with flint; the windows of stained glass, with a marygold window over the altar-piece. At the west end are two towers, each about 80 feet high, each tower being surmounted by five terminals of a cross. The west entrance consists also of a porch, forming an arch in the Norman style, with dentils and dogs' toothings. The church, in which there is an organ at the west end, is capable of containing about 500 persons. It is 44 feet 2 inches wide, and 82 feet long, and has a stained roof, with open tracing. The cost is estimated at about 3000*l.*, of which sum 500*l.* has been furnished by the Church Building Society, and upwards of 600*l.* is still deficient.

*Restoration of Holy Trinity Church.*—We understand that a communication has been received from the archdeacon, withdrawing the citation he had felt it to be his duty to enter against the work of rebuilding the south entrance being proceeded with, upon the plan that had been adopted. The archdeacon, with the vicar, the churchwardens, and Mr. Lockwood, the architect, inspected the works on Friday last, which has led to the amicable arrangement now entered into. The principal objection taken, it appears, was to the use of stone, instead of retaining, in its original integrity, that splendid specimen of brick building which the chancel and south transept of the church present; and which is considered the most ancient existing in this country, if not the first instance in which brick-building was employed after the restoration of the art of brick-making, early in the fourteenth century. The archdeacon, unwilling to cause any delay and litigation, has waived many of his objections, and consented to the prosecution of the work in stone, of which material a considerable portion of it was already done; though he would still prefer that brick should be substituted in a buttress partly rebuilt, and the entire restoration take place in that the original material. The work will now, we believe, be immediately resumed.—*Hull Packet.*

*New Church at Whitstable.*—The foundation stone of Seassar new church, in the town of Whitstable, will be laid by Sir Brook Bridges, Bart., on Monday next.

## RAILWAY INTELLIGENCE.

*The Keighley Railways.*—On Tuesday evening last, a meeting of the gentlemen and tradesmen favourable to the extension railway from Keighley into Lancashire, by way of Haworth, took place at the latter town, when the surveyor appointed to take the levels delivered in his report, by which it appears that the gradients would be one in eighty. The idea of proceeding with it therefore was given up at once. The meeting, however, did not separate before coming to a determination to have a branch rail up the valley for about four miles for their own accommodation, and at their own expense, the cost of which was estimated at about 10,000*l.*, and a deputation was appointed to wait upon the directors of the Leeds and Bradford Company to make arrangements respecting it.

*Proposed Railway from Selby to Goole.*—It is now announced that the York and North Midland Railway Company are about to propose the scheme for a line of railway from Selby to Goole.

*Railway to Bridlington.*—It is said that the grounds from Bridlington, northwards, have been inspected very recently by some eminently qualified gentlemen, for a branch line from the town to meet the York and Scarbro' Railway at Seamer, near Scarbro', the distance being some fifteen or sixteen miles. If such be the case it is expected to prove of great benefit to this part of the country, by giving new facilities to the imports and trade of this port; and more particularly so, as the building of the new south pier, and enlargement of the harbour to twice its present size, are now in operation.

*Rochester and Gravesend Railway.*—The railway from Rochester to Gravesend, on the line of the Thames and Medway Canal, is in a state of great forwardness, and is expected to be opened at the end of the present month. On Saturday last the safety of the tunnel was tested by firing a loaded cannon in it several times, but no fall was occasioned by the concussion.

*North British Railway.*—Tenders for the formation of twenty miles by this line of railway, commencing at Berwick, were on Wednesday last received by the directors, at their office in Edinburgh. They were very numerous, and the successful competitor is a gentleman from Yorkshire, who was the contractor of the line between Gateshead and Darlington.

*Cost of Railway Construction.*—The gradation is this—it being remembered that the amount is per mile:—Dundee and Arbroath, 8,600*l.*; Ulster, 13,800*l.*; Newcastle and Carlisle, 17,500*l.*; Grand Junction, 23,200*l.*; London and South Western, 27,800*l.*; North Midland, 45,800*l.*; Liverpool and Manchester, 51,000*l.*; London and Birmingham, 53,100*l.*; Great Western, 56,300*l.*; London and Brighton, 57,300*l.*; Manchester and Leeds, 59,800*l.*—*Railway Record.*

*Branding Junction Railway.*—Arrangements have been entered into for the sale of this railway to the Newcastle and Darlington Company, at the rate of 55*l.* for each share of 50*l.*; the purchasers taking the concern as it is, with all its properties, engagements, and liabilities.

*Sheffield, Ashton-under-Lyne, and Manchester Railway.*—This line of railway is now open to Woodhead, two stations on the Sheffield side of Glossop. The distance from Barnsley to Manchester is thus reduced to about four hours' travelling.

## Miscellanea.

*VICTORIA PARK.*—The adjudication in the Sheriff's Court last week, in which 3,985*l.* was awarded to the trustees of Sir George Duckett's estate for 21 acres of land, has removed the chief obstacle which has for some time impeded the commencement of operations for the formation of the new park. There is another litigant holding out for a greater sum than has been offered by the Commissioners, but it is expected this claim will be settled without going into court. The property alluded to joins what is called Sir George Duckett's Canal, a very unfortunate speculation, being a short cut connecting the Regent's Canal with the river Lea navigation. It was expected by the trustees that this would have been purchased by the commissioners as an ornamental water for the park, instead of merely constituting one of its boundaries. "Bonner's Hall," which was the subject of much litigation and delay from its proprietors, the trustees of St. Thomas's Hospital, will be vacated at Michaelmas, when it will be immediately demolished. Some interesting discoveries are expected, as it was here where the notorious bishop imprisoned and tortured the first Protestant martyrs. Although no operations have yet been commenced, all the surveys for laying out plantations have been made, and as soon as these obstacles are removed, and the purchased land is restored by the tenants, who have been allowed to resume occupation until October, active operations will at once commence.—*Times.*

*STATUE OF HIS ROYAL HIGHNESS PRINCE ALBERT.*—A marble statue of his Royal Highness Prince Albert, executed by the celebrated sculptor Wolff, was landed at the St. Katherine's Dock, from Leghorn, on the 7th instant,



**THE IRON MANUFACTURE.**—The attention of the iron-masters has been attracted to a process of considerable importance lately introduced into their manufacture. The application of electricity, to supersede several of the expensive processes, has, it is stated, been tried in the Welch and Derbyshire furnaces with satisfactory results. It appears that the costly fuel and labour required for the purification of the ore from sulphur, phosphorus, and such subtle elements, create its high market value; and these being all electronegative, have induced the new process, whereby the impure stream of metal after flowing from the blast is in its moment of consolidation subjected to a powerful voltaic battery, which so disengages the impure components that in the process of puddling they are readily extracted. The London blacksmiths, it is stated, have tested this iron after a single reheating, and pronounce it equal to the best metal in the market. By the same process an experiment was tried by Dr. Ure, by whom a soft rod of iron was held in contact with a moderate red heat, and that gentleman is understood to have stated that in a few hours the metal was converted into steel. Should these facts prove what they seem, they are calculated to affect most seriously this important branch of our trade.

**NOVEL USE OF ICE IN VENTILATION.**—A course of experiments has been going on at the Hanover-square Rooms, with a view to their more complete ventilation. The process selected as the most complete is that of Mr. Day, who calls in to his aid the Archimedean screw, by which fresh air is forced into an apartment of any size without causing the slightest perceptible draught. On the last occasion of her Majesty's visit to these rooms, during the performance of the Ancient Concerts, and when attended by the King of Saxony, the Duke of Wellington, and other distinguished persons, this scientific process was tried, and although the atmosphere, externally, was 69 to 70 degrees during the whole of the evening, that of the *salon* scarcely exceeded 70 degrees, although it was densely crowded, and highly illuminated with gas. This novelty in the history of ventilation was effected by the air being passed through trays of ice. The comfort arising from so agreeable a temperature has determined the proprietors to resort to the same means on all similar occasions in future.

The next meeting of the British Association for the Advancement of Science, is to be held at York on the 26th of September, which is six weeks later than the time appointed for last year's meeting at Cork. York was the first city in which the association assembled, and the event of revisiting the scene of initiation is expected to be commemorated by a full attendance of men of science from all parts of the kingdom.

We understand that Mr. Johns, the architect of the recently published English Church on Mount Zion, and sometime pro-Consul in Palestine, is about to publish a volume from his notes of travel in Syria, &c., and many months' residence in the Holy City, with highly finished illustrations, tending to throw great light upon numerous topics connected with the past and present state of these intensely interesting relics of the most ancient nations of the world.

**MORTALITY IN THE METROPOLIS.**—The number of deaths in the metropolis during the week ending Saturday, the 10th instant, amounted to 934; the weekly average of the last five summers having been 900, and of the last five years 946. The number of males that died during the last week was 473, and of females 461. Under 15 years of age, 535 died; under 15 and under 60 years, 310; and from 60 upwards, 151.

Sir John Guest, Bart., M.P., has lately received an order from Russia, for 50,000 tons of iron, for the purpose of being employed in the construction of railways.

A bronze figure of Shakspeare has been erected in the bard's birth-place. He is represented leaning on the mulberry tree, the background being a part of Dover cliff.

Upwards of 54,000,000 francs have been expended in Paris since 1834, in establishing sewers, water-pipes, fountains, and paving the streets of that capital.

**ARCHITECTURAL SOCIETY.**—On Tuesday, a meeting of gentlemen residing in Wakefield and the neighbourhood, was held in the vestry of the parish church in that town, for the purpose of establishing an architectural society in that district, in connection with the Yorkshire Society. The Rev. J. Sharpe, of Horbury was called to the chair, and the meeting was addressed by several of the gentlemen present. A committee was formed; Mr. W. H. Dykes, jun., was chosen secretary, and E. B. Wheatley, Esq., of Hopton, near Dewsbury, treasurer. The society has a wide field for its operations, and we hope soon to have the pleasure of recording some of the benefits resulting from its establishment.

**MONUMENT TO THOMAS CAMPBELL.**—It is contemplated to erect a monument in Glasgow to Thomas Campbell, author of the "Pleasures of Hope."

The expense of paving, lighting, and cleansing London is 400,000*l.* annually. The supply of water costs 344,238*l.*

### Current Prices of Wood and Metals.

August 20, 1844.

	£. s. d.	£. s. d.
Box, Turkey, per ton ...	2 0 0	6 0 0
CEDAR, Pencil, per foot ..	0 0 3	0 0 4
Cuba .....	0 0 3	0 0 4
N. S. Wales .....	0 0 3	0 0 4½
Green, per ton ...	5 5 0	9 0 0
EBONY, Ceylon, large ...	6 0 0	8 10 0
small ...	5 0 0	5 15 0
Madagascar, small	5 0 0	6 0 0
Dyes, &c.		
LIGNUM VITE, Jamaica ...	3 0 0	5 0 0
St. Domingo ...	8 0 0	12 0 0
MAHOGANY, Cuba, per foot	0 0 7	0 1 4
St. Domingo ...	0 0 7	0 1 6
Honduras .....	0 0 4½	0 0 10
Jamaica .....	0 0 0	0 0 0
TIMBER:—		
Teake, African, per load ..	6 10 0	10 10 0
Oak, Quebec .....	3 15 0	4 10 0
Fir, Riga .....	3 17 6	4 0 0
Dantzic and Memel ..	3 10 0	4 5 0
Swedish .....	0 0 0	3 12 6
Pine, Quebec, red, per load	0 0 0	3 15 0
yellow ...	0 0 0	3 0 0
N. Brunswick ...	0 0 0	0 0 0
Miramichi & St. Johns	2 15 0	4 10 0
Wainscot Logs, 18 ft. each	4 10 0	5 5 0
Lathwood, Memel, &c. fm.	0 0 0	12 0 0
B. America ...	0 0 0	0 0 0
Deals, Gefle, 14ft. 3in. by 9	29 0 0	31 0 0
Stockholm .....	25 10 0	26 0 0
Gottenburg, 12ft. 3in. by 9	0 0 0	0 0 0
Christians, 1st & 2nd	27 0 0	29 0 0
St. Petersburg, Memel,		
Dantzic, 12ft. 1½ in.	16 0 0	18 0 0
Quebec yellow Pine,		
first quality .....	17 0 0	18 0 0
second ditto .....	10 0 0	11 0 0
White Spruce, 120..	16 0 0	17 10 0
Dantzic Deck, each..	0 18 0	1 6 0
Plank, Dantzic Oak, load..	9 0 0	10 0 0
STAVES, Baltic, per 1200..	160 0 0	0 0 0
Quebec Pipe, 1200 50	0 0 0	52 10 0
COPPER—Brit. Cake, p. ton	83 0 0	84 0 0
Tile .....	82 0 0	83 0 0
Sheet, p. lb. ...	0 0 0	0 9½
Bottoms ..	0 0 0	0 0 0
Old .....	0 0 0	0 8½
South Amer., ton	72 0 0	73 0 0
Foreign Cake ..	0 0 0	0 0 0
Tile ..	0 0 0	0 0 0
IRON, British .....	0 0 0	0 0 0
Bars .....	0 0 0	6 0 0
Rods .....	6 15 0	7 0 0
Hoops .....	8 0 0	8 5 0
Sheets .....	8 15 0	9 0 0
Cargo in Wales, Bars	0 0 0	5 10 0

IRON, Pigs No. 1, Wales ..	3 15 0	4 0 0
No. 1, Clyde ..	0 0 0	3 0 0
Russian, COND .....	0 0 0	16 10 0
PSI .....	0 0 0	0 0 0
Archangel .....	0 0 0	0 0 0
Swedish .....	9 10 0	9 15 0
Gourieff's .....	0 0 0	0 0 0
LEAD—British, Pig, p. ton	16 10 0	17 0 0
Sheet, milled .....	0 0 0	17 15 0
Bars .....	0 0 0	0 0 0
Shot, patent .....	0 0 0	19 15 0
Red or Minium .....	0 0 0	21 10 0
White .....	0 0 0	23 10 0
Litharge .....	0 0 0	20 0 0
Pig, Spanish .....	16 0 0	16 10 0
American .....	0 0 0	16 0 0
STEEL—English .....	0 0 0	0 0 0
Swedish Keg .....	0 0 0	16 0 0
Faggot .....	0 0 0	17 0 0
TIN—In blocks, p. cwt. ...	3 12 0	3 13 0
Ingots .....	3 12 0	3 13 0
In Bars .....	0 0 0	3 13 6
Banca .....	0 0 0	3 4 0
Straits .....	0 0 0	3 3 0
Peruvian .....	0 0 0	2 17 0
Plates, p. box, 225 shts.—		
No. I. C. 13½ by 10 in. 1	7 0	1 13 0
I. X. ....	1 13 0	1 19 0
I. XX. ....	0 0 0	0 0 0
IXXX. ....	182 lb.	0 0 0
IXXXX. ....	203	0 0 0
No. II. C. 13½ by 9½ in.	105	0 0 0
II. X. ....	133	0 0 0
III. C. 12½ by 9½ in.	98	0 0 0
III. X. ....	126	0 0 0
Small { SDC } 200 shts. 167		
Double { SDX } 15 by 11 188		
{ SDXX } 209		
{ SDXXX } 230		
{ SDXXXX } 251		
{ C. 16½ by 12½ in. 98		
{ X. .... 100 sheets 126		
{ XX. .... 147		
{ XXX. .... 168		
{ XXXX. .... 189		
Jaggars, 14 by 10 in. —		
SPELTER—On the spot, ton	0 0 0	21 7 6
Delivery .....	0 0 0	21 5 0
ZINC, English Sheet .....	0 0 0	30 0 0
PLATINA ORE .....	0 0 0	0 0 0
ORSIDEV .....	0 0 0	0 3 0
QUICKSILVER .....	0 0 0	0 4 6

### Tenders.

**TENDERS** delivered for Alterations at Chelsea Workhouse.—Mr. Colman, Architect. August 7.

J. Bonner, Jun. ....	£340
Souter and Symons .....	339
Cocks .....	330
Thirsk .....	325
Edser .....	319
Cock .....	315
Scott .....	280

**TENDERS** delivered for a new House near Deptford Bridge, Greenwich.—Mr. Frederick R. Miller, Surveyor.

Ashford .....	£352 0
Hill .....	318 0
D. Bodger .....	298 0
Johnson .....	247 11

The lowest tender accepted.

**TENDERS** delivered for building six carcasses at Westbourne-terrace, Bayswater.—R. P. Browne, Esq., Architect.

Jay .....	£10,741
Nicholson .....	10,500
Scantlebury .....	10,250
Piper .....	10,230
Trego .....	10,080
Haynes and Co. ....	10,050
Winsland .....	9,987
King and Co., Islington	9,980
Grimsdale .....	9,593



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**The Builder.**  
 NO. LXXXX.

SATURDAY, AUGUST 31, 1844.

**ALTHOUGH** ex-  
 tending to twice our  
 usual number of  
 pages, being cir-  
 cumscribed this  
 week by the volu-  
 minous matter of the New  
 Metropolitan Building-Act,  
 we are obliged to be brief  
 in our address; deferring  
 for the present the continuation  
 of our critical reviews. In  
 the meanwhile, such of our  
 readers as take pleasure in  
 the study of technical legisla-  
 tion, or who, from an in-  
 dustrious working out of a  
 necessary duty, apply them-

selves to a nauseous task, may study the details  
 of the Act; and when we give our intended  
 alphabetical digest of it, drawn up by Mr. Bar-  
 tholomew, they will find the collation of the vari-  
 ous parts of their study greatly assisted, and  
 learn, in a moment, every thing in it relating to  
 any particular matter, or to any branch of its  
 contents.

We shall speculate no further at present  
 upon the Act; but shall in our next num-  
 ber give the report of the Master Carpenters'  
 Society upon it.

## TIMBER—ITS TREATMENT AND USES.

BY JAMES WYSON.

(Continued from p. 419.)

67. The aspen or trembling poplar, when favo-  
 rably grown, is a tall, slender, and elegant  
 tree, pleasing in outline, and the most interesting  
 of its tribe; possessing in the highest degree  
 that sensitiveness which is peculiar to the  
 whole, making them quiver to the gentlest  
 breath of wind; the young branches are hairy;  
 the leaves are glabrous on both sides, nearly  
 orbicular, and broadly toothed.

68. MAHOGANY. Of this tree there are  
 three species known; that which is used in  
 this country is a native of the West Indies  
 and the country about the Bay of Honduras,  
 in America. The West India sort is called  
 Spanish Mahogany, being from the islands of  
 Hispaniola, Cuba, Jamaica, &c. In the low  
 lands of the latter it was formerly plentiful,  
 but now these parts appear to be exhausted,  
 and only the trees grown amongst high hills and places  
 difficult of access remain. That from Honduras  
 Bay is called indiscriminately Honduras and  
 Bay-mahogany. The tree is one of very quick  
 growth; large, straight, lofty, handsome in  
 appearance, reaching a diameter of five feet,  
 and furnishing a great quantity of very valu-  
 able timber; the flowers are of a saffron-red  
 colour, the fruit like a turkey's egg in size.  
 It thrives in moist soils; but in those of a rocky  
 and exposed description, it is of a slower  
 growth, and produces heavier and more com-  
 pact and beautiful wood than in such as are  
 low and of a rich nature.

69. The wood of the Spanish mahogany is  
 the darker, harder, closer in the grain, and  
 more durable, likewise the more beautiful and  
 more costly of the two: both are porous, but  
 uniform. The Spanish-wood is to be distinguish-  
 ed from the Bay by the chalky-looking substance  
 that occupies (as if it had been rubbed into  
 them) its pores, which in the latter are empty,  
 and have a dark or almost black appearance: that  
 feature, however, disappears with exposure and  
 oiling, and a similar treatment of both renders  
 the distinction less observable. Mahogany  
 timber, especially the Honduras, has qualities  
 which would make it desirable for house-  
 carpentry, but its high price precludes its being  
 so employed in this country, and its ap-  
 plication is almost confined to internal joinery,  
 hand-rails, shop counter-tops, and the  
 manufacture of house furniture; for the latter  
 purpose it is very extensively used, having in a  
 great degree superseded the walnut, which,  
 before the introduction of mahogany into  
 London in 1724, was so generally used by the  
 cabinet-maker. The history given of this in-  
 troduction is, that a Mr. Wollaston made from  
 a piece of it a candle-box for Dr. Gibbons,  
 who being much pleased with its appearance,  
 afterwards caused a bureau to be made of it.  
 With respect to its applicability to the purposes  
 of the carpenter, it must be mentioned that it  
 has been frequently used in Jamaica for floors,  
 joists, rafters, shingling, &c., it has also been  
 employed for building ships, for which it is  
 rendered suitable from possessing, with its other  
 qualifications, a property similar to that which  
 has been noticed with reference to the poplar,  
 of allowing shot to bury itself in it without splin-  
 tering.

70. The colour of the wood is a deep gold,  
 or reddish brown, of various degrees of bright-  
 ness, and frequently having very fine veins and  
 figures, in different shades of the same colour;  
 the Honduras is apt to be blemished by dingy  
 grey spots, but the best is of a fine rich tint.  
 When kept dry it is exceedingly durable, and  
 free from worms; but it does not stand the  
 weather long, and is therefore not well suited  
 for sash-frames, sashes, or outer-doors. The  
 trunk furnishes wood of the largest dimensions,  
 but the wood of the branches is finer in texture  
 and more variegated in the veins, and is on  
 these accounts preferred for purposes of a  
 more delicate and ornamental nature. In  
 table-tops it is common to form the surface  
 from a piece of superior beauty, sawn up into  
 veneers (of which twenty or more can be  
 obtained from an inch in thickness), and so  
 arranged in sectors of the circle that the same  
 pattern of the variegation is repeated. In like  
 manner, the fronts of drawers are obtained all  
 alike, and are sometimes made with a joint up  
 the centre of the veneer, and the two halves of  
 the pattern reversed. Thus we perceive that  
 the mottling and featherings, which contri-



bute so much to the beauty of the wood, where they exist, do so to some depth. The Honduras mahogany holds with glue better than any other wood; the annual rings are not very distinct; there are no larger transverse septa, but the smaller are frequently rendered very visible by their compactness being set off by the porous texture of the intervening parts of the wood; the wood is tasteless and inodorous.

71. The Spanish is imported to this country in logs from 10 to 12 feet long, and sometimes 26 inches square; the Honduras 15 feet long and occasionally 5 feet square. It is seasoned by exposure to the weather during a winter, then sawn out and dried in the open air under cover; fire-drying should never be resorted to. Of all woods it warps and twists the least, and it shrinks almost as little; on this account there is a considerable consumption of it in the factories, in making machine-framing; by long steeping in cold water it loses less weight than many other woods.

72. WALNUT. This tree is a native of Persia and the north of China, and is said to have been introduced into this country by the Romans. It was formerly propagated here to a considerable extent, on account of both the timber and fruit, the former having at one time been very generally used for furniture, for which it was held in high estimation; now, however, and indeed since the introduction of mahogany, its cultivation has greatly declined, and what remains and is yet grown is so much enhanced in value by the great consumption of it in gun-stocks, handles of cutlery, &c., as to make it too costly for general purposes; it is, notwithstanding, still made available in the cabinet-maker's art, being highly prized by many, who prefer its varied and rich brown colour to that of the more uniform mahogany. Though not indigenous to this country, we may, from its growing so freely, ripening its seeds so perfectly, and being so well established, consider it as naturalized to our climate, that is to the southern part of it. A rich loamy soil is best suited for it, but it will grow well nevertheless in one of a stony description, especially if a thin limestone, or consisting partly of chalk. There are considerable plantations of it on the chalky downs of Surrey. In the midland and southern counties generally it thrives to full perfection, but so far north as Edinburgh, though it grows with vigour and to an ample size, its fruit does not reach its full degree of ripeness. It is a large and handsome-looking tree, with a lofty and generally well-balanced head, and limbs thick and spreading, forming, when aged and well-grown, an imposing and picturesque object, having a light-coloured and deeply-furrowed bark and graceful, though light and short-lived foliage. The latter comes late, goes early (in fact, it is the soonest stripped), and is never very luxuriant; the leaves are small and oval, set on the stalks in pairs, and of a bright yellowish green, contrasting advantageously with adjacent foliage of a darker shade. It is raised readily from the nut, which is, in February, sown where it is intended to remain; it may be transplanted when considerably grown, but ought not to be so if meant for timber. It is now chiefly regarded as a fruit-tree, the unripe nuts being in June, when the inner woody shell is not yet formed, converted into an excellent pickle, and those which are allowed to ripen, being probably the best fruit of the nut kind that the country produces; the inhabitants of some districts on the Continent make it fulfil an important part as an article of food; it affords an oil which, when first drawn, is little inferior to that of the olive, and the bark, leaves, and roots furnish an intense brown dye, which is permanent on woollen articles without a mordant.

73. Its wood is too limber for beams or joists; besides which, for purposes where a weight has to be sustained, it is rendered unfit by a brittleness and liability to split. It was, nevertheless, employed by the ancients for building-purposes; Pliny bears evidence to its possessing the good property of giving warning by cracking before it breaks (being thus just the opposite of the lime-tree), and it cannot be denied that it has the redeeming qualities of durability, little shrinkage, and, more than all other timbers, the cedar alone accepted, non-liability to the ravages of worms or other insects, which must point it out as advantageously adapted for joinery, *parquet* floors, &c., could the supply

be sufficient, and were the cost reasonable. It is, moreover, exempt from those chemical principles which operate on the fine polish of superior steel instruments, for which reason it is peculiarly adapted for surgical cases or the repositories of other superior cutlery. The colour of the heart-wood is a greyish brown, with dark brown pores; that of the sap-wood a greyish white; the annual rings are not very distinct, and there are no larger transverse septa; it is not flowered, but often richly veined, and interspersed with shades of lighter brown and of black; being susceptible of a high degree of polish by oiling or otherwise, it is capable of receiving a fine and brilliant finish. Trees grown on dry and rather poor soils have afforded examples of the most beautifully-veined wood; and the roots, which are even more finely and variously veined than the trunk, furnish an elegant material for superior and fancy work. Its texture is not so uniform as that of mahogany, one side of the annual ring being more porous than the other; neither is it quite so easy to work as that wood; but that disadvantage is compensated for by the superior surface which it takes; it is slightly bitter when green, and emits a perceptible odour.

74. The Hickory, or White—and the Black-Virginian Walnut, are both indigenous to North America. They are both large trees and furnish respectively very useful woods, that of the latter being considered the finest, and indeed the most valuable of its species, having very fine veins and a close grain, affording facility for a high polish; it has also the other desirable qualities in common with the ordinary walnut above described. The wood of the young hickory is tough and flexible to a high degree, and is excellently adapted for lances, fishing-rods, &c. It is not imported as an article of commerce, but is used, split into billets, for the stowage of casks in ships. Some of these American species have been introduced here, but they are not yet sufficiently naturalized to warrant any decided opinion on their merits. Walnut loses by long steeping in cold water less weight than some other woods.

(To be continued.)

#### ON THE CONDUCTING AND ABSORBING POWERS OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

It is taken for granted by chemists of the day that the duration of rocks, when applied to building purposes—is demonstrated by their conducting and absorbing powers; and that therefore the Builder, in the choice of his materials, where durability is concerned, should always regulate his choice accordingly. These notions, borne out by experiment, are, in numerous instances, perfectly correct in detail; but are much too general in their nature to be received by the plain, practical, or observing man, without some further observation. The composition, and consequently the characteristic qualities, of stone, is perpetually fluctuating, presenting itself under different aspects, even in the same quarry; so that, when we speak of Portland or Bath stone, Yorkshire flag, or Aberdeen granite, we necessarily embrace numerous varieties, some of which are wholly inapplicable to building purposes.

All rock, while it remains a natural constituent of the earth, maintains to the greatest extent consonant to its nature, an equilibrium of its forces, not otherwise disturbed than by excess of heat, or local chemical action. Its absorbents, like those of the tree while living, are unceasingly occupied by the juices abstracted from the earth; and if those juices embrace the simple elements of water alone, age upon age may pass away, and the rock will undergo no perceptible change; but if those juices embrace saline solutions, or gaseous bodies, and these are conveyed into the cellular texture of the rock, or are made to embrace the several atomic parts of the concrete mass, then, a sure and certain change, no matter how slow that change may be, must take place under any condition or climate; and the nature of the agents and the aggregate masses acted upon determine the ultimate result.

There is a much greater resemblance between the concrete and crystalline mass and the organic body than physiologists are disposed to admit; for all varieties of rock

have absorbents, inhale and exhale, and go through processes analogous to those which contribute to add strength and solidity to the organic frame. All rocks are permeable and are permeated by heat and moisture; and, according to their disposition upon, or within the surface of the earth, have a slow uniform action, the result of uniform action exercised upon them; they are all compounds of compounds, summing lesser magnitudes united to each other by some common cementing base, and not of necessity the same substances, for many rocks present phenomena very complicated and widely differing from each other. The surface portion of crystalline rock, exposed to the atmosphere, is always the hardest, and the gradual transition from crystalline structure to even the pasty state, is far from being an uncommon occurrence. Granite invariably softens as it is removed from atmospheric influences; marbles assume a higher crystalline structure, and concrete having a siliceous base become more densely consolidated in their parts; the reasons are obviously the same in all; the absorbent pores being gradually filled up with matter analogous to the crystalline or amorphous structure. The Orientals seem to have been well aware of this; for to procure those magnificent stones so common to their temples, palaces and sculptured monuments, they quarried into the bowels of the mountains, from whence they obtained the stone in a much softer state than it existed on the surface soil, and in those truly colossal dimensions which have rendered them the admiration of after-ages.

Every variety of rock has a tendency to assume the solid state, but no one of the numerous varieties ever attains solidity; they have all absorbing powers, they have all capabilities of further increase of solidity; the nature of their earths and of their compounds determining their powers of increase, and defining the limits beyond which it does not appear they can possibly pass: thus it is we have dense compounds, as porphyry, granite and marble, each of which presents phenomena peculiar to its kind, all deviations of which constitutes variety. These well-known demonstrable facts are invaluable; first, as initiating the practical man into the *modus operandi* of nature; and secondly, as removing vulgar errors, such as that crystalline rocks are fused masses, and could only be formed under intense lateral pressure.

When the stone is quarried, it becomes immediately the passive subject of new affections, no longer deriving its invigorating juices from the earth; and, exposed to influence of the atmosphere alone, the continuance of its absorbent powers depends entirely upon its own nature and mechanism, and the atmospheric influence. Bath stone, when quarried, is a soft, cohesive, ponderous mass, intimately united, but readily separable in its parts, and to a certain extent uniform in composition though of a texture much more varied than Caen stone and many other kinds. When applied to building purposes, its excess of moisture passes off by evaporation, and its spongy cellular texture exposed to atmospheric air, gradually acquires greater rigidity of parts, but still retains its great absorbent powers, and consequently its susceptibility of accelerated chemical action, which induces decay in a much more rapid manner than can take place in stone of denser structure; and although its absorbing power may not equal that of soft malm-bricks, it is far less durable than the latter, when both are exposed to equally corroding influences, as may be seen in countless existing buildings. The stone of Malta, forming the base and almost the sole composition of that island, is of a similar nature, but even more porous after exposure to the atmosphere; it is a coral formation commingled with sand, upon which the ocean-waters, by carrying into the absorbent vessels, have no other effect than to increase its solidity, until it attains the state of limestone rock.

Portland stone is exceedingly varying in its qualities, for we find it sometimes highly consolidated with silica, at other times with silica and alumine, and very often a mere concrete, and but slightly held together by some one general base; its powers of absorption are consequently extremely fluctuating and uncertain, and the extent of durability very contradictory, for while one portion of a structure built of this material has stood the test of ages, another has scarcely seen one generation pass away ere it has decayed. Magnesian lime-



stone is equally contradictory in its results; it is at all times a very great absorbent; and when exposed to heavy rains and vapours, in a moist climate like this, is the subject of rapid decay. Such will be the fate of the beautiful architectural monument of the Houses of Lords and Commons, unless averted by saturating the whole with a composition that shall destroy its absorbent powers.

Again, the nature of earth forming the chief ingredient of the rock, and the power or force of resistance possessed by the enveloping fluid, very often determine the durability of stone; the presence of lime, in any form or combination, is always inimical; it is not only a powerful absorbent, but is always greedily attacked by the oxygen of the atmosphere, and of the waters received into its pores; thus it is, the closest, the most ponderous marble, cannot contend long against out-door exposure in this country, although in hot dry countries it may endure for many ages, as is testified by the magnificent remains of ancient Greece and Rome. Even granite desquamates rapidly in an exposed situation, and rapidly so when its crystalline particles are ill assorted to each other, or are but slightly connected together.

The most durable rock, but unfortunately the most expensive, as the most difficult to sculpture, is the silico-carbonaceous. The carboniferous limestones, containing an excess of carbon and iron, are far from being abundant in this country, as applicable to building purposes, for they generally run too much into the stratified form to be quarried in huge masses; but as the argillaceous earth replaces the lime, so we find in the siderous rocks porphyry, trap, basalt, jasper, and all the hardest concrete and crystalline masses in nature, bodies whose absorbing powers are exceedingly trifling, and whose powers of resistance enable them to brave every exposure under every climate.

It is well known that of all cements made by the art of man, those which contain carbonaceous matter are by far the most durable; and in hot climates experience proves that they sometimes attain a hardness beyond that of the hardest granite, and which, like porphyry, will resist and turn the sharpest and strongest iron implement. The natives of the East Indies have a number of receipts for making their cements, using for all better works out of door the finest shell lime, which is mixed with sugared water,—2 lbs. of sugar to every gallon of water; they afterwards add *ghee* (melted butter) or cocoa-nut oil; and if for plastering the interior, they also add the whites of eggs, &c.; so that the cement shall obtain by degrees a marble hardness, previous to which it may be burnished, so as to acquire an exceeding high polish. The Persians also have a method of making black marble by triturating very highly fine shell lime, drawn from their quarries, with the black naphtha common to the country. We also read that bitumen or pitch was generally used in olden times as a cement.

I mention these things to shew that art has here followed in the step of nature; that carbon, when it gives character to rock, and as it almost invariably is accompanied with iron, is productive of that hardness which it acquires; and that, whenever it unites with lime or magnesia in the form of rock, this stone is much more valuable for all the purposes of building than any other; and though Time is very often known to bleach this stone by abstracting its carbon, yet so long as it remains, it is a sure protection against the corroding influence of the atmosphere.

The stone changes its condition after being quarried from the bed; becoming specifically lighter and more porous; it follows, that great care should be taken in all experiments made, that the material acted upon should be in its pristine state; for if exposed in the first instance to a high temperature, in order to abstract its moisture, or to ascertain its conducting powers of heat, its organical disposition must of necessity be more or less changed, and consequently the experimental results will be fluctuating, and constantly contradicting each other.

(To be continued.)

TRINITY COLLEGE, PERTSHIRE.—The building is now in full operation at Cairnies, the property of George Patton, Esq. The foundation stone was laid last Monday week.

### THE NATURE OF DESIGN.

*A Paper read at the meetings of the Decorative Art Society, March 13th and 27th.*

BY MR. CRABB, V.P., MEMBER OF THE INSTITUTE OF FINE ARTS.

(Continued from p. 424.)

In France, there are about eighty recognized Schools of Design. They are varied and adapted to the nature of the productions and requirements of the districts where they may be situated.

The French Schools are all open, public, and free; they are formed upon the conviction that the application of the principles of fine art and science to manufactures is the best means of improvement among the people, and a succession of legislative measures, some general, others local, have adapted these schools to the requirements of peculiar branches of industry. As an example, I will take the school of Lyons, which originated in a decree of Napoleon, dated from Warsaw. Its special object is improvement in the silk manufacture; and having gradually extended its usefulness, is divided at present into six principal departments,—painting, architecture, sculpture, engraving, botany, ornament, and *mise-en-cartes*, which is the art of transferring to a fabric in manufacture any model or drawing upon paper. These departments are again subdivided into classes for particular instruction. A botanical garden is attached to the institution, and the drawings are almost invariably made from living plants and flowers. A large library of engravings is attached; a cabinet of natural history, and a very large museum. A gallery also contains all the works for which prizes have been given in the institution. Careful instruction is given on the theory and combination of colours, and their usefulness in dying, printing, and application to manufactures. Attached to the school are consulting chemists, whose researches are invaluable for the invention and production of durable and fine colours. We here discover the secret which produces the extraordinary superiority and brilliancy of French colouring. The influence of this school has been incalculable, having elevated alike the character of the people and of the silk manufacture; its effects are perceived in the adaptation of classical and general embellishment upon the dwellings and familiar objects of life.

One of the most remarkable circumstances in connection with the subject is the jacquard loom, whose beautiful and simple machinery produces the most intricate and delicate patterns by the common shuttle. There are particular trades that for successful design positively require the designer to be quite familiar with the manufacture, and also to be *always upon the spot*. Weaving is one of these; and in the Lyons school, *designers* intended for the silk manufacture are carefully instructed in the transmission of patterns. A manufacturer of any eminence will employ, or rather have identified with his business, three or four artists. In England, very frequently, one ill-paid and often inefficient designer serves half-a-dozen manufacturers; but at all events they are without system.

The design having been made on paper, is then extended on another paper ruled of a larger size, which shews the pattern as magnified; each square representing a thread, perhaps twenty to an inch; this is called by the French *mise-en-cartes*, i.e. *putting on ruled paper*. The ruled paper is then read in, which transfers the pattern from the ruled paper, preparing the cards for stamping; after which, the process is mechanical, punching the holes in the card, and applying the card to the machine. The result is, that boys can weave rich figures in the loom; and even youths can weave those intricate patterns, which formerly would have required careful workmen of twenty years' experience.

The patterns are not shewn to customers *upon paper*, but are woven first and then shewn. The designer and weaver being in constant communication during its production, considerable alteration and improvement may have been made, and if it does not answer the artist's expectations, it is frequently wholly rejected. As many as two hundred patterns will thus be submitted to our great London houses for selection at one time. I have been delighted, at opening a selection of French furniture damasks, to see the decided difference of cha-

racteristic design, each superior in its class, the skilful variations of weaving used to produce variety of effect, and the rich mellow colouring, whatever its tone.

Thus is an overpowering array of educated talent among the weavers and their masters, opposed to our neglected workmen of Spitalfields; and can we for a moment feel surprised at their depressed trade, when the foreigner has such advantage? Yet incredible as it may appear, I know one large master weaver in particular, who contends for our perfect equality with the foreigner, declaring it to be prejudice of west-end tradesmen against English weaving. Perhaps the best answer to this is, a reference to the comparative exports. We export but a small proportion of our manufactured silks; France by far the greatest portion of hers. All this superiority, produced by the right teaching of Design, is not confined to weaving of silks; there is a universal admission of the superiority of their shawl manufacture, which commands a great trade, and upon which they bestow the most careful study. Extensive research was even instituted to discover the origin of the real and true cachmere pattern, which proving successful, greatly elevated the character of design. I may just remark, that the jacquard loom is applicable to all the fabrics of weaving,—ribbons, table linen, damasks, &c. &c.

In the Royal School of Design in Paris, the utmost activity and liberality prevail, it having seldom less than eight hundred scholars. The term of study is three years; the expense five francs for the first, and ten francs for each of the two succeeding years. The burden is borne between the government and the municipality; at Rouen, and other localities, it is the same.

Once in five years there takes place in the palace of the Louvre a public exhibition of manufactures from the whole of France; it is under the immediate sanction and personal inspection of the king, assisted by a minister of the interior; the king distributing the prizes. There is no limitation of objects, provided they are instrumental to the advancement of arts and manufactures. It is a general display of national industry and genius, exciting a lively interest in the progress of discovery and improvement, and affording quite a national exultation; in assembling from all quarters for public display, the most successful performances of manufacturing industry, they place their skill and success under favourable comparison with imports from foreign countries, a conviction of successful rivalry stimulating to increased efforts.

The merits of the various productions are discussed, and the victors' names enumerated with pride; while all persons enjoy the advantage of freely inspecting the successful productions, gaining valuable information, and perhaps possessing themselves of hints to be improved into important discoveries.

The expositor of every class obtains advantageous promulgation of his merits, securing a reputation for skill and proficiency in his branch of trade, and the customer learns where he can obtain the best articles, or open superior connections of business. All is emulation and excitement for improvement.

The utmost attention was paid to Design under the empire; every trinket, jewel, or piece of furniture prepared for the court, was either approved or designed by Percier or Fontaine. A similar course is still pursued, and the elevation of public taste carefully considered. The arts owe much to the zealous and generous support of Louis Philippe, who ranks only second to Louis of Bavaria, in the extent of the works of fine art he has restored, finished, or created.

These brief imperfect notices may be sufficient to draw your careful attention to the encouraging feeling for the arts and for applied design existing upon the Continent, and cause you to rebut the senseless observation, that we equal them in knowledge of its fundamental principles. It is impossible to do so without great change. We are at present bolstering up a sort of appearance, by employing foreign artists as our designers; this is unnatural, and not likely to be permanent. A German cannot think English, nor a Prussian, a Frenchman, or a Swiss; it is true, the unchangeable principles of art are alike in all countries, yet each has its distinguishing character in the great social circle of the world, and so it has in art.



France cultivated the taste of her artisans by means of schools, as far back as the time of Louis XIV., and these institutions continued to be encouraged by succeeding governments, until Napoleon's energy gave them rank and estimation; his liberal anxiety to render fine art familiar to the people was worthy of a mighty monarch. He was, in truth,

"One of earth's great spirits."

The government of Prussia, with that attention which has always been paid to the welfare of its population, founded and liberally supported schools to promote a knowledge of industrial art among her manufacturing population; and other continental nations have not neglected this important object. We, the chief of manufacturing countries, have stood alone in a contempt for cultivating taste; we have utterly neglected every means of procuring it. Our whole system has now to be changed; a great deal of that sordid feeling which pretty generally pervades all classes, must be modified or got rid of. A little more courtesy and good feeling requires to be given in the intercourse between the rich manufacturer and his designer. Abroad, the manufacturing artist ranks as professionally entitled to respect as a man of genius, is identified with one special business, and often, through an appreciation of services, is admitted to partnership. A very opposite state of things exists in England. Patterns of designs are considered as a cumbrous expense, and not as an integral portion of the requisite cost of production. The extent of a manufacturer's ambition is to produce quantity, but this ungenerous system is fast passing away: fine art, in the shape of design, must be properly and liberally advanced. It is as clear as noonday, that we shall have to enter into competition with countries which have systematically educated their entire people to the adroit and successful application of beautiful design upon each manufacture; and having so perfectly achieved this important step, they now require to extend their trade, and for some time past, no expense has been spared, no pains left untried to effect this purpose;—possessing themselves of every improvement in machinery, models of each change, and in many instances, of the machines and workmen themselves. The effect of great continental nations approaching us in manufacturing power, while their designs for the embellishment of those productions is far in advance, has already affected our export trade, and if we do not effectually change our system of design, will do so extensively. The superior products of the French loom are almost entirely exported. In England, the exports are common goods. In paper-hangings, they entirely shut us out. In artificial flowers, an exceedingly valuable employment for females, they are large exporters. Their china is excellent. Their metal castings immeasurably in advance of ours, and their bronzes are in extensive demand. In Switzerland, the exports of watches, watch-glasses, and musical boxes, amount to the entire production. The beautiful articles of Berlin, in iron, wire, and castings of various kinds, command a considerable trade, and their calico-printing works are so extending, and produce such beautiful colouring, as threaten serious annoyance.

Germany, in connection with France, is likely to engross our house decorative trade, by exporting to us their educated artisans. Similar considerations might be pursued, but we have only to compare the productions of those countries with our own, and we shall find that their staples are all connected with taste, and that our staples are those of quantity. Theirs tend to elevate the whole people in mental enjoyment, ours simply aim at an increase of wealth. Persons who are accustomed to foreign manufacturing productions of the best kind, will bear testimony to the excellence of the work, especially its correct and neat finish. They invent and spread a redundancy of elegant feeling over the most simple object.

(To be continued.)

**THE IMPROVEMENTS AT SMITHFIELD.**—Workmen are busily engaged in pulling down the old premises in West-street and the neighbourhood, which were sold on Saturday last. Some surprise was excited at the sale at the amount paid for the materials; and no less than 140*l.* was the price of the bricks of five very old and dilapidated houses in West-street.

#### CHURCH-BUILDING INTELLIGENCE, &c.

**Rebuilding of the Parish Church of St. Mary the Virgin, Dover.**—We have received a circular on this subject, of which the following is a copy:—

"The Committee, as they approach the conclusion of this work, beg leave to lay the following statement before the parishioners, and the friends of the Church in general.

"Their present assets amount to the sum of 4,850*l.*; which would have covered the cost of the works specified in the original contract. But they have been subjected to very increased liabilities, on account of the following extra works, which it was as impossible to have at first foreseen, as it was afterwards to have avoided, viz.:—The digging to an enormous depth for foundations that could be securely relied on;—the additional strength found requisite for the north wall of the Church; the taking out, and firmly reconstructing the eastern side of the tower, which had become dangerously fissured by the gradual crushing of the old tower arch;—the erection of a new organ in place of an old French one, which could not have been put together again. These chief works, together with many others, which a Church nearly undermined, and beset with difficulties, presented, have absolutely forced upon the Committee an additional liability of 750*l.*; to meet which they now venture upon making a second earnest appeal to the parishioners especially, and also to other friends and visitors in the town of Dover. The Committee are desirous, as far as possible, of leaving the facts of their case to speak for themselves. When it is considered what has been done—at what personal risk—and with what degree of success—they cannot but have every hope of meeting with such liberality and good feeling as will soon enable them to liquidate the present deficiency of 750*l.*"

Voluntary subscriptions are earnestly solicited in aid of this object; and we would recommend, when they are about it—for the public safety, as well as for the character of the place—that the inhabitants do extend these to enable the committee to complete this really handsome building by the erection of a new tower, in the room of the old one, which is now not only out of all keeping, but actually topples o'er our heads. We understand about 2,000*l.* would be amply sufficient to erect a handsome new tower; and surely the friends of the Church can have little difficulty in raising this additional sum.—*Dover Chronicle.*

**A Terra-Cotta Church.**—Near Bolton-le-Moors a church has recently been built, entirely of terra-cotta—burnt clay—inside, outside, tower, and basement, all of the same material. A correspondent of the *Herald* says, "The church is situated about a mile from Bolton, near the Haugh (called the Huff). It is built of a kind of fine clay, found near the spot, between the beds of coal, in Mrs. Fletcher's mines; it is subjected to a great pressure, and then burnt. The colour is rather good—a kind of tawny. The situation, too, is very pretty. The architecture (by Sharp, of Lancaster,) is very florid Gothic—too much so, perhaps, for the form of the arches, which cannot be of a much later date than Edward III.; but I speak doubtfully. The interior is enormously decorated—the roof of dark-stained oak; the floor is of tile, inlaid with numbers of crosses; the steps of the communion encrust tile, and all other matters to match. The seats are open, not formed into pews. The building, which, I believe, is not yet dedicated, forms a lovely object for a landscape."

#### RAILWAY INTELLIGENCE.

**Lancaster and Carlisle Railway.**—The works at Shap and Lowther Bridge are now in rapid progress; and it is expected that in the course of another week or two, the engagements for taking possession of the land at Wray will be completed, and ground will be broken there also; all the heaviest works upon the line will then have been commenced except those at the Lancaster end.

The *Railway Record* states that the terms between the Dover and Greenwich Companies for a lease of the line were on Friday arranged to the satisfaction of all parties.

**South Devon Railway.**—The works of this Company at various places along the line between Exeter and Newton, have been actively commenced. A number of men are employed in tunnelling near the Teignmouth beach towards Dawlish; and the line is staked out from Dawlish beach to Starcross. Two shafts have been sunk on the Brent side of the Marley Tunnel, to the depth of 60 feet, which is considered the level required on this side of the hill; on the other side the shafts will be considerably deeper. The progress of the works is at times impeded by a flow of water into the shaft. The strata is of slate dunstone for about 20 feet below the surface, a mixture of clay of slight thickness, and very hard slate, with veins of white spar at the level of the line.

**Railways in Germany.**—The Thuringian Railway was finally agreed upon, and the arrangement concluded, on the 4th of this month. It required the joint consent of Prussia, Saxony, Weimar-Eisenach, and Saxe-Coburg and Gotha to open this means of communication, and it is by their co-operation that it is to be completed. How remarkable are these railways as elements in moral and political history, which at once bind together nations in perpetual relations of amicable intercourse, and emancipate them from the fetters of narrow local views and provincial prejudice! Cologne to Minden.—The section of this line between Cologne and Duisburg is to be ready next year, and the remainder in 1847. If the Hanoverian line be then ready, there will be a continuous railway communication by this route from London, by Dover, and from Ostend, by Brussels, to Berlin. Where next?—*Railway Chronicle.*

**Eastern Union Railway.**—Preparations are making for the commencement of the works, and in the course of next week the excavators will begin their labour. The spot selected for the first operations is the hill occupied by the village of Brantham, overlooking the valley of the Stour. The greatest depth of cutting is 52 feet, and this is the only work of any magnitude upon the whole line. Immediate steps are taking for the extension of the railway to Norwich and Bury.

**Great North Road.**—Burntisland Branch.—The trustees have begun their operations for the improvement of this branch of the road, which, taken in connection with the low-water pier at Burntisland, will greatly facilitate the communication between the south and north sides of the Frith of Forth at this place. The steam-boats are to sail hourly during the day from each side of the passage.

**Newcastle and Darlington Railway.**—Since the opening of the Newcastle and Darlington Junction Railway, the revenue of the York and North Midland Railway has increased 500*l.* per week. The branch from York to Scarborough is to be opened in July next, and there is to be an extension to Bridlington.

The contractors on the York and Scarborough Railway are actively carrying on their operations in the neighbourhood of Seamer, and also at Malton.

The directors of the Midland Railway Company have determined to connect the town of Stamford with their line by a branch railway.

**BRISTOL DOCKS.**—Mr. Brunel had a lengthened interview with the dock directors, on Thursday week last, for the purpose of presenting plans and sections of the proposed repairs and enlargement of the lock at Cumberland Basin. Mr. Brunel stated to the board that, having conferred with several contractors, he was enabled to declare confidently that the lock could be extended to 54 feet in width, at a cost not exceeding his previous estimate. Mr. Brunel was requested to prepare some further estimates as to the cost of repairing the lock in its present form and dimensions; and it is understood that the dock proprietors will be called together to consider the subject within the next fortnight or three weeks.

**BIRKENHEAD DOCKS.**—The day for laying the foundation-stone is fixed for the 25th of September instead of the 11th, as originally named.



## Correspondence.

## ARCHITECTURAL COMPETITION.

SIR,—I am induced to offer a few remarks on the important but almost thread-bare subject of architectural competition, in consequence of seeing the late discussion in your pages about the Derby affair.

Competitions generally give rise to a scene of confusion, bickering, and ill will, either in consequence of the partial decision of the committee appointed to examine the designs, or it is to be attributed to the malice of those architects, who, disappointed in their hopes, strenuously endeavour to ridicule the committee, or ascribe to the successful competitor a line of conduct, which, in most cases, they know full well would have been followed by themselves, had they the opportunity. In proof of this, I would draw the attention of your readers to the letter of "F," at page 365 of *THE BUILDER*, where, after laudably exposing the "infamous system of sham competition" in reference to Mr. Duesbury, and lamenting that the expense to which architects are obliged to go, should be so misapplied, very unwittingly lets out the secret that he sometimes sends in designs to competitions, relying on his strong interest with the committee; very truly; "in the vain hope of standing on their merits;" certainly a most consoling reflection for those architects who may have been duped by him; and a confession which just amounts to the fact, that when he happens to have an opportunity of canvassing the committee beforehand, he is one of those who seldom neglects such an opportunity, and therefore "F" must be content to rank no higher in the matter of honour than Mr. Duesbury. I allude to this as a sample of what generally follows a competition, and to warn your readers of putting too much confidence in such angry communications.

But to return to the subject of competitions: it will be my endeavour to shew the inability of the present methods towards procuring a correct and just decision, and then to throw out a hint or two for the formation of a better system. The persons generally appointed to constitute a committee for inspecting the designs, are persons of local influence, and of a very respectable station in society, but who from their habits of life, know nothing, or at most very little, of the principles of architecture; these generally manage to get a neighbouring builder with them of some influence, who is generally connected with a local architect; the builder with the aid of a few technicalities in his conversation, and an abundant flow of high-sounding terms, makes a sensation on his fellow-committee men, who are well aware of their ignorance on the subject, and by this means finds little difficulty in persuading the committee to decide on the marked design. This is one of the present modes adopted; and though, in some cases, the detail and circumstances may differ, yet it rarely happens that there is not some hidden current at work, which by choosing the architect beforehand, becomes a source of gross injustice to the rest of the competitors. Such a method cannot be defended on any grounds; it fosters bad taste, and proves a hot-bed for the growth of angry feeling; the very idea of such a committee sitting down to give an opinion on fifty or sixty elaborate designs on a subject, with which many of them are totally unacquainted, is ludicrous, but it is a fact which stares us in the face every week in the year. It would be wasting your valuable space to dilate any further on a subject which is at once so palpably unjust and defective; I shall, therefore, proceed to notice another mode, which though far superior to the last one, fails in many instances of procuring a correct decision; it is when the committee appoint an architect to examine the designs, and give his opinion thereon. Though it is hardly possible for an architect to err so far from the mark as a committee might, yet most architects have certain prejudices in regard to styles, &c., which would operate fatally against those who happened to differ from them; at the same time a serious objection is, that it leaves room for jobbing, it being possible for an architect to have his opinion so warped, as to suit a friend's interest. Having thus expressed my hostility to the two methods most commonly adopted, I shall now describe the outline of a plan, which, I think, would effectually prevent any under-handed work,

while, at the same time, it ensures the best and most correct opinion on the designs:—it is, to make the competing architects the judges. This might easily be done by the committee appointed meeting first to examine the designs, and then by advertisement, notify to the competitors that, on a certain day, the designs would be open for their inspection; each architect would then give in his opinion in writing to the committee (of course omitting his own design); and the premium would be awarded to the design having the majority. It would rest with the committee either to approve or reject a design, with such a recommendation. This method possesses many great advantages in its favour; the numbers of the architects, and their being interested parties, would effectually preclude all attempts at making a job of it: the architects being of all persons best acquainted with the peculiarities of the proposed building, would ensure a correct decision; and the present expensive method of sending in designs with landscapes drawn by artists, and other superfluities, would be needless; as architects are not likely to give much attention to a design because the trees in the foreground are painted so naturally, or an Italian sky is staring them in the face. This last effect would do good, in purging competitions of the immense number of trashy designs usually sent in, whose sole merit is having a fine landscape, painted so as to bewilder the judgments of the committee; and therefore might induce architects to pay more attention to the design, and less to the picture.

There is one objection I would name, which, however, is soon answered; about the expense of travelling: if architects can afford to pay 10*l.* or 15*l.* to ornament designs, on the bare possibility of obtaining a premium under the present uncertain mode of committees, I certainly think they can afford to pay the same for travelling expenses; with the prospect of having a correct judgment passed on the designs. This plan will, no doubt, meet with opposition from those who are so fond of interest with committees, &c.; but it would tend to draw out genuine talent in young architects, and would raise the present low state of architecture in the country; and, if in some details it is defective, at all events it is worth a trial. Before I conclude, I would say a few words on the premiums generally offered: it is very usual to see an advertisement for a proposed building costing 1,500*l.*, and one magnificent premium of 10 guineas offered: this needs little comment, and it surprises me to see fifty or sixty designs sent in, when the premium, if obtained, will not pay necessary expenses. Architects who send in designs to such competitions deserve to be made the dupes of some favoured professional, who very comfortably takes a hint or two gratis from the other designs, when they happen to suit his purpose. This, perhaps, may solve the question so often asked, how it is that designs executed, resemble in many features designs rejected? Though this is bad enough, it is sometimes surpassed, when a committee inform the architects that fortunate competitor will only have the honour of superintending the building,—generous committee! This, perhaps, may be the reason why architects are so fond of dressing up their designs in splendid coats, that they may shew they have a due sense of the eye dazzling and brain-bewildering liberality of the committee; such conduct ought never to be defended. Most unreasonable is it to suppose that architects are to risk time and money for the charge of superintending a building perhaps 100 miles from home; and the most strange part of the business is, that so many architects send in designs with such an insult in their face. For any competition not less than two premiums should be awarded, and they should always bear a fair proportion to the cost of the building, so as to sufficiently recompense an architect for the necessary loss of time and money; also architects should always, when practicable, carry into execution their own designs: no other person can imbibe the spirit of the designer; and any faults could then be laid on the shoulders of the proper person. I will now conclude by observing, that it is in the power of architects, seconded by the efforts of *THE BUILDER* and other journals, to amend existing grievances, and that while men of talent and influence lend themselves to conduct so mean and despicable, and while the present imbecile method of judging by committee

continues, the efforts of the few must be directed to exposure and shame; then, and not till then, will architecture be calculated to raise the minds of men: at the present time the sole object seems to be, how they may soonest fill their purses. I must make the importance of the subject an apology for the length of this communication.

I remain, your obedient servant,

SCRUTATOR.

London, August 21st, 1844.

## THE NEW ROYAL EXCHANGE.

ON Saturday last workmen commenced placing the bells in the belfry of the tower of the New Royal Exchange, of which there are to be fifteen. There are seven of them on the ground, which weigh above 38 cwt. The bell which is the lightest weighs 4 cwt, and 26 lbs. This is B flat, and the chord bell to it weighs 6 cwt, and 27 lbs. The whole of the bells will weigh above 80 cwt, and will be at the Exchange in the course of the next week. The contractor for them, Mr. Mears, will superintend the placing of them. It is expected that they will be in their several positions in the course of ten days. The mechanism of the clock will then be put up. The stone masons have begun to lay down the flag-stones outside the building, under the direction of Mr. Collingshaw, the superintendent of the works. The first stone being laid down opposite the Wellington testimonial. The operation will be finished in about three weeks, by which time the external front of this structure will have been cleaned down. It is expected that about the middle of October the merchants will be able to be admitted for the transaction of business.

## Miscellanea.

**METROPOLITAN IMPROVEMENTS.**—Between Holborn and Oxford-street the line of the new street is in a state of considerable forwardness. The vaults for the houses on either side of the way are completed, and the width of the thoroughfare is now marked out; through the whole distance a sewer, about 15 feet below the surface, is being formed, and is nearly half completed. When the whole length is finished (which is now expected to be in the course of three or four weeks), there will be a direct communication between Holborn and Oxford-street for foot passengers. Many now take this course, avoiding the circuitous way by St. Giles's Church. While digging the ground for the vault on the site which was formerly the area of the Rookery, the workmen met with some curious remains. Outside the walls, where stood the hospital for lepers, was found the root of a vine, which is stated to have been celebrated for its fruit, and which was in good condition. Several pieces of marble slabs were also taken out of the ruins of the above hospital, as also a marble slab with the following inscription on it:—"Buckeridge-street, 1688." It is not generally known that this street was built shortly after the fire of London, and out of some of the materials, which were publicly sold after that disastrous calamity. A quantity of wood excavated here (some of which is oak) was discovered to be in a chured state. Several of the above articles are in the possession of the landlord of the Buckeridge Arms, which is the only house remaining of that neighbourhood.

**MEDALS OF CATHEDRALS.**—Mr. Joseph Davis, of Birmingham, is now issuing a series of very beautiful medals illustrative of the Cathedrals of this country. The medals are of a size sufficient to afford accurate and striking views of these glorious temples, and those which have been seen are executed with much taste and ability. The series is brought out under the patronage of Prince Albert and the chief dignitaries of the church.

A very interesting relic, a gold coin, in fine preservation, was found a short time since by a woman in a turnip field, close to the ruins of Caister, near Lakenham. The coin bears date during the reign of Nero, and contains a fine impression of the Roman monarch. It is about three times as thick, but not so large in circumference as a half-sovereign—weighs four penny-weights, and is composed of the purest gold. It was sold to Mr. Rossi, in the Market Place, and was the first gold coin remembered to have been found at Caister.





VIEW IN THE COURTYARD OF MONTAGUE-HOUSE  
(FORMING THE ORIGINAL BRITISH MUSEUM).

MUSEUM from the Greek *μυσείον*, was a name originally given to a palace, or vast range of buildings in Alexandria, and which, history informs us, took up one-fourth of the city. This quarter was called the Museum, on account of its being set apart for the Muses, and the study of the sciences. Here were lodged and entertained the men of learning, who were divided into many companies or colleges, according to the sciences of which they were the professors; and to each of these colleges was assigned a handsome revenue. The foundation is attributed to Ptolemy Philadelphus, who here placed his library. Sir John Tradescant, in the reign of Charles I., was the first who formed a cabinet of natural and artificial curiosities in England; he possessed large botanical gardens in Lambeth: his son assisted in making a large collection, which becoming the property of Mr. Elias Ashmole, was presented by him to the University of Oxford, and a museum was then formed, called the Ashmolean Museum. Dr. Woodward is the next collector mentioned, and the fruits of his labours came to be included in the superb and splendid one of Sir Hans Sloane, which now constitutes part of the British Museum.

Sir Hans Sloane, Bart., who died January 11th, 1753, may with propriety be accounted the founder of the British Museum; for the occasion of its being established was only in consequence of his leaving by will his noble collection of natural history, his large library and his numerous curiosities, which cost him 50,000*l.*, to the use of the public, on condition that Parliament would pay 20,000*l.* to his executors. This disposition of the property was well timed, as it necessitated Parliament to provide a place for its bestowal, and the necessary fund for the maintenance of its

officers and servants. Sir Hans appointed a number of trustees, on whose application to Parliament an Act was passed for raising 300,000*l.* by way of lottery, 200,000*l.* to be divided among the adventurers, 20,000*l.* to be paid to Sir Hans Sloane's executors, 10,000*l.* to purchase Lord Oxford's manuscripts, 30,000*l.* to be vested in the funds for supplying salaries for officers and other necessary expenses, and the residue for providing a general repository, &c. In the Act it also ordained, that Sir Hans Sloane's collections, the Cottonian Library, the Harleian Manuscripts, and Major Edwards's collection of books, should be placed together in the general repository, which was to be called the British Museum; 7,000*l.*, also left by Major Edwards, was to be appropriated for the purchase of manuscripts, books, &c.

It happened very fortunately while the trustees were at a loss where to purchase or build a proper repository, an offer was made to them of Montagu House, one of the largest and most magnificent houses at that time in London. This palace, together with its garden and appurtenances, occupying in the whole an area of 7 acres and 20 perches of land, was therefore ceded by the representatives of the Montagu family, for the moderate sum of 10,000*l.*

Montague House was built by Ralph the first Duke of Montague, who was sent ambassador extraordinary to the French King, and made his public entry into Paris on the 25th of April, 1669, in a splendid and magnificent manner, having seventy-four pages and their footmen in rich liveries; twelve led horses with their furniture; twenty-four gentlemen on horseback; with eighteen English noblemen and gentlemen of quality, in four rich

coaches, each drawn by eight horses, and two stately chariots, made as beautiful and costly as art and workmanship could contrive, each drawn by six horses. The ambassador himself was conducted to his audience in the French monarch's state coach. In France he formed his ideas of building and gardening; and his house at Boughton, in Northamptonshire, and Montague House, in some sort imitated from the royal palace at Versailles, amply indicate his taste for magnificence.

On the site of Montague House had stood a very stately mansion, and during Lord Montague's retirement in France at the latter end of the reign of Charles II., and the commencement of that of James II., for whose Bill of Exclusion his lordship had been very active, Lord Montague had left that mansion to the Earl of Devonshire, reserving some rooms for his own use; unfortunately, the whole was consumed by accidental fire, January 20th, 1685-6, by which he sustained a loss of 30,000*l.*; and to complete his misfortune, James II. bestowed his lordship's place of Master of the Great Wardrobe, on his favourite Lord Preston, though Lord Montague had purchased it of the Earl of Sandwich, and had a patent for it for life. During the remainder of that inauspicious reign, Lord Montague was indefatigable in rebuilding the mansion as it stood when purchased by the public, and it was observable that little or no alteration could be made from the original model. In Queen Anne's reign he was reinstated and raised to the highest rank of the peerage, by the titles of Marquis of Mount-hermer and Duke of Montague.

The house was designed by the architect, Peter Puget, and other French artists were sent over from Paris for the



purpose of erecting and adorning the edifice. The staircase and ceilings were painted by Rousseau and Le Fosse; the Apotheosis of Iris and the Assembly of the Gods were by the latter. His Grace's second wife was the mad Duchess of Albemarle, widow to Christopher, second Duke of that title. She married her second husband as Emperor of China, which gave occasion to a scene in Cibber's play of "*The Sick Lady Cured*." She was kept in the ground apartment during his Grace's life, and was served on the knee to the day of her death, which happened in 1734 at Newcastle House, Clerkenwell, at the age of 96. The second Duke and Duchess lived only in one of the wings till their house at Whitehall was completed.

The site of Montague House was a square, inclosed by a high brick wall, which excluded a view of the house in every direction. At each corner was a turret, and over the great arch of entrance a cupola (containing a clock), as shewn in the views already published in *THE BUILDER*. On the south side of the

court-yard is still existing, within the gate, a colonnade of the Ionic order. The Museum, as represented in the cut, consists of a building about 216 feet in length and 57 feet in height to the top of the cornice; and the ascent to the house is by three flights of stone steps, the centre of which leads to the hall. The paintings on the staircase represent Cæsar and his military retinue; in a compartment are the feasts and sacrifices of Bacchus; on the ceiling is represented the story of Phaeton. At the time the mansion was purchased it was in a very dilapidated condition in consequence of having been many years untenanted. On its west side was a flower-garden and a terrace, disposed with much taste, and shaded by numbers of flowering trees and shrubs, and this communicating with a lawn on the north that was bounded by the fields and terminated by the view of Highgate, Hampstead, and the intermediate country.

On the west side of the lawn was a double avenue of lime trees, and in the front of the building a fine fountain.

George II. gave the whole of the library of printed books and manuscripts which had been gradually collected by our kings from Henry VII. to William III. George III. gave a numerous collection of pamphlets. In 1824 the valuable and extensive library formed under the direction of George III. was presented by George IV.

Vast additions have been made to the original building during the present century, and in a year or two every vestige of the old house will have disappeared, the façade of new the buildings being already in a forward state.

There is some fine carving at the principal doorway leading from the noble flight of steps to the entrance hall, and the door itself is curiously inlaid: the brackets of the principal external cornice of the house may be perhaps worth imitating on some occasion, and at any rate deserve to be admitted among a collection. The great staircase of the mansion is with its manifold curtail, its iron work, its paintings and other decoration, worthy of admiration; as are the chimney-stacks, the inlaid floors, and the other finishings of the extensive pile.

Of some of these we hope to preserve memorials.

x x x x



SEAL OF THE DEAN AND CHAPTER OF ST. PAUL'S, LONDON.

SIR,—The seal, a copy of which I send to you, is attached to the surrender, by Nicholas Ridley, Bishop of London, to the Crown, of the manors of Stepney and Hackney, 4th Edward VI. (1549-50) in the Augmentation-office.

It is not engraved in "Dugdale's History of St. Paul's," nor is it noticed in the "Monas-

ticon," but there is a very fair impression of it among a collection of original seals in the British Museum.

On the obverse is the representation of the front elevation of the church of St. Paul, with the following legend round it:—SIGILLUM: ECCLESIE: SANCTI: PAULI: LONDONIARUM. (The seal of the Church of St. Paul, London.)

On the reverse St. Paul is represented seated under an architectural canopy, holding in his right hand a sword, and in his left a book, with the legend following round it: MYCRO: FUROR: SAULI: LIBER: EST: CONVERSIO: PAULI (The sword is the fury of Saul; the book the conversion of Paul).

Hackney.

M. A. G.

## AN ACT FOR REGULATING THE CONSTRUCTION AND THE USE OF BUILDINGS IN THE METROPOLIS AND ITS NEIGHBOURHOOD.

CLAUSE 1, after reciting the defects in the existing laws for the accomplishment of the objects contemplated by the present Act, proceeds:—

### GENERAL PROVISIONS.

#### Operation of Act—Statutes repealed.

Now for all the several purposes above mentioned, and for the purpose of consolidating the provisions of the law relating to the construction and the use of buildings in the metropolis and its neighbourhood, be it enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, that with regard to this Act generally, so far as relates to the operation thereof in reference to time, it shall come into operation at the following times; (that is to say,) as to the districts and the officers to be appointed in pursuance hereof on the first day of September next, and as to the buildings, streets, and other matters on the first day of January one thousand eight hundred and forty-five; and that on the said first day of January all the Acts mentioned in the schedule hereto annexed, except so far as in the said schedule is provided, shall be and are hereby repealed.

Construction of Terms—Street—Alley—Square—Floor—Story—External Wall—Party-wall—Already built—Hereafter to be built—Parish—Owner—Official Referees—Surveyor—The Surveyor—Month—The Commissioners of Works and Buildings

—Justice of Peace—Local Officers—Singular and Plural—Masculine and Feminine—Corporate Body.

2. And be it declared, with regard to this Act generally, so far as relates to the construction of certain terms and expressions used therein, that the following terms and expressions are intended to have the meanings hereby assigned to them respectively, so far as such meanings are not excluded by the context, or by the nature of the subject-matter; (that is to say):

The word "street" to include every square, circus, crescent, street, road, place, row, mews, lane, or place along which carriages can pass or are intended to pass, and that whether there be or be not, in addition to the carriageway, a footway, paved or otherwise:

The word "alley" to include any court, alley, passage, or other public place which can be used as a footway only:

The word "square," as applied to any area of building, to contain one hundred superficial feet:

The word "floor" to mean the horizontal platform forming the base of any story, and to include the timber or bricks or any other substance constituting such platform:

The word "story" to include the full thickness of such floor, as well as the space between the upper surface of one floor and the under surface of the floor next above it; or if there be no floor, then the space between the surface of the ground and the under surface of the floor next above it:

The term "external wall" to apply to every outer wall of buildings now built or hereafter to be built, which (excepting the footing thereof on one side) shall stand wholly upon ground of the owner of such buildings, and shall not be used or intended to be used as a party-wall under the definition hereinafter contained, whether the same shall adjoin or not to other outer or to party-walls:

The term "party-wall" to apply to every wall which shall be used, or be built in order to be used, as a separation of two or more buildings with a view to the occupation thereof by different families, or which shall be actually occupied by different families, and also every wall which shall stand upon ground not wholly belonging to the same owner to a greater extent than the projection of its footing on one side:

The term "already built," used in reference to buildings, to apply to buildings built before the first day of January one thousand eight hundred and forty-five, or commenced before that day, and covered in five, or commenced before that day, and rendered fit for use within twelve months thereafter; and, used in reference to streets and alleys, to apply to all streets or alleys made or laid out before that day, and which shall be formed and rendered fit for use within twelve months thereafter:

The term "hereafter to be built," used in reference to buildings, to apply to all buildings to be built or commenced after the first day of January one thousand eight hundred and forty-five, or which, being commenced, shall not be covered in within twelve



months thereafter; and, used in reference to streets and alleys, to apply to all streets or alleys not laid out before the said first day of January, or which, being laid out, shall not be rendered fit for use within twelve months thereafter:

The word "parish" to include all parochial districts and extra-parochial places in which separate churchwardens, overseers, or constables are appointed; and where two parishes have been united for ecclesiastical purposes, then to include such united parishes:

The word "owner" to apply generally to every person in possession or receipt either of the whole or of any part of the rents or profits of any ground or tenement, or in the occupation of such ground or tenement, other than as a tenant from year to year, or for any less term, or a tenant at will:

The term "official referees" to mean the persons appointed in pursuance of this Act to be official referees of metropolitan buildings:

The word "surveyor" to apply to all surveyors to be appointed in pursuance of this Act, or whose appointment is confirmed by this Act, and also to all deputy or assistant surveyors to be appointed under this Act.

The words "the surveyor," used without any addition, to mean the surveyor in whose district the buildings, street, or alley, or other subject-matter shall be, or any deputy or assistant surveyor duly acting in his behalf:

The word "month" to mean a calendar month:

The expression "the Commissioners of Works and Buildings" to mean the Commissioners of her Majesty's Woods, Forests, Land Revenues, Works, and Buildings:

The expression "justice of the peace" to mean a justice of the peace for the county, division, or liberty within which the building or other subject-matter, or any part thereof, is situate; unless it be situate within the city of London or the liberties thereof, in reference to which any matter or thing elsewhere required or authorized to be done, either by one or by two or more justices of the peace, may be done, either by the Lord Mayor of the City of London, or by any one, two, or more justices of the peace for the said city; or unless the subject-matter be situate in the district of any police court of the metropolis, in reference to which any matter or thing elsewhere required or authorized to be done by two or more justices may be done by one magistrate:

And, generally, whenever the name of an officer having local jurisdiction in respect of his office is referred to, without mention of the locality to which the jurisdiction extends, such reference is to be understood to indicate the officer having jurisdiction in that place within which is situate the building or other subject-matter, or any part thereof, to which such reference applies:

And, subject as aforesaid to the context and to the nature of the subject-matter, when any number, or singular number are to be understood to apply to a plurality of persons or things, and words importing the masculine gender are to be understood to apply to persons of the feminine gender, and words importing an individual are to be understood to apply to a corporation or company, or other body of persons.

*Extent of Operation of Act in reference to Localities.*

3. And be it enacted, with regard to this Act generally, so far as relates to the operation thereof in reference to localities, that the operation of this Act shall extend to all places within the following limits; (that is to say,)

To all such places lying on the north side or left bank of the river Thames as are within the exterior boundaries of the parishes of Fulham, Hammersmith, Kensington, Paddington, Hampstead, Hornsey, Tottenham, Saint Pancras, Islington, Stoke Newington, Hackney, Stratford-le-Bow, Bromley, Poplar, and Shadwell:

And to such part or parish of Chelsea as lies north of the said parish of Kensington:

And to all such parts and places lying on the south side or right bank of the said river as are within the exterior boundaries of the parishes of Woolwich, Charlton, Greenwich, Deptford, Lee, Lewisham, Camberwell, Lambeth, Streatham, Tooting, and Wandsworth:

And to all places lying within two hundred yards from the exterior boundary of the district hereby defined, except the eastern part of the said boundary which is bounded by the river Lea.

*Power to extend the Limits of Act—Publication of Notice of Intention to extend Limits of Act.*

4. And forasmuch as, partly by the rapid increase of population in the neighbourhood of the districts to which this Act is to apply, and partly by the tendency of this Act to induce building speculation in such neighbourhoods in order to evade the provisions thereof, the evils which have arisen in the districts not now subject to regulation will in all probability arise in such neighbourhoods, it is expedient to make provision for the prevention of such evils, and, if they should arise, for the remedy thereof; now for those purposes be it enacted, with regard to this Act generally, so far as relates to the application thereof to other parts and places in the neighbourhood of the districts appointed by this Act, whether such districts immediately adjoin such parts or places, or not, that if, from the growing increase of the population or otherwise, it shall appear to her Majesty in Council to be expedient that the provisions of this Act should be extended to any place within twelve miles from Charing Cross in the city of Westminster, then it shall be lawful for her Majesty in Council to direct, by order in Council, that at or from a time to be named in such order the provisions of this Act shall apply to such places; and at or from such time all such provisions, of whatever nature, whether penal

or otherwise, so far as they shall be capable of application to such places, shall be and are hereby declared to apply thereto as if such places were expressly named herein; and that notice of the time when it shall please her Majesty to order any such extension to be taken into consideration by her Privy Council shall be published by royal proclamation in the *London Gazette* one month at the least before such extension shall be so taken into consideration; and that three weeks at the least before such matter shall be so considered it shall be the duty of the official referees, and the overseers of the parishes within which such parts or places are situate, to cause copies of such proclamation to be fixed on the doors of the churches and chapels within such parishes; and that every order in Council made in pursuance of this enactment shall be published in the *London Gazette*.

#### BUILDINGS, NEW AND OLD.

*Regulation of Buildings—Rates of Buildings, and Thickness of Walls and Footings, and Rules concerning Buildings.*

5. And now generally, for the purpose of regulating the building and the rebuilding upon sites of former buildings, and the enlarging and altering of all buildings of what nature soever, within the limits aforesaid, be it enacted, with regard to every such building hereafter to be built (except the buildings comprised in schedule (B.) hereinafter mentioned) that all orders made by or under the direction of any Commissioners of Sewers, so far as relates to building the same, and with regard to every such building either already or hereafter built (except the said buildings comprised in the said schedule (B.)), and except the said sewers, so far as relates to the rebuilding and the enlarging or altering the same, and that whether such buildings be built or rebuilt on old or new foundations, or on old and partly on new foundations, that notwithstanding any thing contained to the contrary in any Act of Parliament now in force, every such building shall be built, rebuilt, enlarged, or altered in reference to the walls, whether external or party-walls, and to the number and height of the stories or rooms therein, and to the chimneys, and to the roofs, and to the eaves, and to the drains, and to the projections, and to any other parts or appendages of every such building, and in the manner of the materials, and in every other respect in conformity with the several particulars, rules, and directions which are specified and set forth in the several schedules (C.), (D.), (E.), (F.), (G.), (H.), (I.), (K.) to this Act annexed, according to the classes of buildings, and the rates of such classes to which such buildings are by the schedule (C.) declared to belong; subject nevertheless to any other rules and directions in this Act contained in the same behalf; and subject in every case of doubt, difference, or dissatisfaction in respect thereof, either between any parties concerned or between any party concerned and the surveyor of the district, to the determination of the official referees, upon a reference of the matter in question, according to the provisions of this Act in that behalf.

*Buildings under Supervision of Official Referees.*

6. And be it enacted, with regard to all buildings of the first rate of the second or warehouse class, and to all buildings of the third or public building class (except the buildings hereinbefore excepted), so far as relates to the supervision thereof, that, subject to the provisions in schedule (C.) and elsewhere in this Act made in respect thereof, every such building shall be built under the special supervision of the official referees, according to the provisions of this Act in that behalf, as well as under the ordinary supervision of the surveyor; and if any difference arise as to whether any such building be liable to such special supervision, the same shall be determined by the official referees; subject nevertheless to an appeal, at the instance of any party interested, to the Commissioners of Works and Buildings, whose decision in the matter shall be final.

*Special Supervision of exempted Buildings.*

7. And whereas by several Acts now in force certain buildings and structures have been exempted from the operation of the Act mentioned in the schedule (A.) hereto annexed, for the regulation of buildings and party-walls within the cities of London and Westminster, and the liberties thereof, and other the parishes and places therein mentioned; be it enacted, with regard to the buildings hereinbefore exempted and comprised in schedule (B.), so far as relates to the supervision thereof, that notwithstanding any thing contained to the contrary in any Act or Acts now in force, every such building or other structure mentioned in the said schedule (B.) Part I. shall be subject to special supervision by the official referees, according to the provisions of this Act in that behalf, and every such building or other structure mentioned in the said schedule (B.) Part II. shall be exempt from supervision.

*Buildings not within Rates.*

8. Provided always, and be it enacted, with regard to any building of whatever kind which is not hereby expressly assigned to any class or rate of a class, so far as relates to the application of this Act thereto, that if any party be desirous of erecting any building which does not come within any one of the said classes, or of any rate of such classes, then such building shall be built in accordance with such class and rate as shall be directed by the surveyor, subject, as in other cases of doubt, difference, or dissatisfaction, to an appeal to the official referees.

*Modification of Building Contracts—Reference to the Surveyor, or on Appeal to the Official Referees.*

9. Provided always, and be it enacted, with regard to any building of whatever class, so far as relates to

the modification of any written contract or agreement now in force for erecting or altering such building (other than a contract or agreement in the nature of a building lease), that it shall not be lawful to execute such contract otherwise than in conformity with the provisions of this Act; but it shall be lawful for either party and he is hereby entitled to deviate from such contract in so far as such deviation may be necessary to be executed after this Act shall have come into operation; and the alterations rendered necessary by this Act shall be performed as if this Act had been in force when such contract was entered into; and that if the parties thereto shall disagree about the difference of the costs and expenses of the works when performed according to the provisions of this Act, and the works as stipulated for in such contract, then, upon notice being given in writing by one party to the other, it shall be lawful for either party and he is hereby entitled to refer the matter to the surveyor, who shall determine the same, subject to appeal as aforesaid to the official referees; and the award of such official referees shall be final and binding on all parties, and all in respect as if such award had formed part of the contract; and the costs of the reference shall be borne by all or any or either of the parties in such manner and proportion as the surveyor, or in case of appeal as the official referees, shall appoint.

*Modification of Building Leases—Application to Official Referees—Proceedings thereon.*

10. Provided always, and be it enacted, with regard to any building, of whatever class, so far as relates to the modification of any existing lease or agreement for a lease, being of the nature of a building lease, whereby any person may be bound to erect buildings, that notwithstanding any thing herein contained, if it be made to appear to the official referees that any rules by this Act prescribed will prevent the due observance of or be at variance with any such lease or agreement, and that the objects of this Act may be obtained by modifying such rules, either entirely or partially, in conformity with such lease or agreement, then it shall be lawful for the said official referees, by their award to authorize such modification, subject nevertheless, to the approbation of the Commissioners of Works and Buildings; and, subject to such modification, or in default thereof, it shall be the duty of such person so bound to erect buildings and he is hereby required to erect every building agreed to be built by such lease or agreement according to the conditions and covenants contained in the same, in the same or in any manner as if this Act had been passed and in operation at the time of making such lease or agreement; and that on the completion of such works, either according to the provisions of this Act or according to such modification aforesaid, and on giving to the lessor and other owners of such building fourteen days' notice of his intention to apply to the official referees on this behalf, it shall be lawful for the lessee or tenant and he is hereby entitled to require the official referees to ascertain what loss, present and prospective, has been occasioned by the observance of the provisions of this Act, and having regard to the respective terms and interests of the lessee or tenant, the lessor and other owners of such building, and having regard to any profit, benefit, or advantage which may have accrued to such lessee or tenant since the execution of such lease or agreement, and which may appear to the said official referees not to have been in the contemplation of the parties to such lease or agreement at the time of such execution thereof as aforesaid, to determine whether he is entitled to any compensation, or to any payment of money or reduction of rent, or both, or otherwise; and that on the receipt of such requisition, and on proof of due notice thereof having been given to the lessor and other owners of such building, it shall be the duty of such official referees and they are hereby required to proceed to ascertain if any and what loss has been so occasioned, and having regard as aforesaid to such terms and interest as aforesaid, and to such profit, benefit, or advantage as aforesaid, to determine if any and what compensation as aforesaid is to be paid in respect thereof, and by whom the same is to be paid, and in what proportions, and their decision in the matter shall be final.

*Commissioners of Works and Buildings empowered to modify Rules generally—Report of Official Referees—Extent of Modification—Representation by Parties—Order thereupon.*

11. And for the purpose of preventing the express provisions of this Act from hindering the adoption of improvements, and of providing for the adoption of expedients either better or equally well adapted to accomplish the purposes thereof, be it enacted, with regard to every building of whatever class, so far as relates to the modification of any rules hereby prescribed, that if in the opinion of the official referees the rules by this Act imposed shall be inapplicable, or will defeat the objects of this Act, and that by the adoption of any modification of such rules such objects will be attained either better or as effectually, it shall be the duty of such official referees to report their opinion thereon, stating the grounds of such their opinion to the Commissioners of Works and Buildings; and that if on the investigation thereof it shall appear to the said commissioners that such opinion is founded on facts, and that by the said commissioners or any two of them to direct that such modification may be made in such rules as will in their opinion give effect to the purposes of this Act; and that although such official referees shall be of opinion that such modifications are not requisite or admissible, yet if any party interested present to the official referees a representation, setting forth the grounds whereon such modification is claimed, it shall be the duty of the official referees and they are hereby



required to report such representation, as well as their opinion thereon, to the said commissioners, with the grounds of such their report and opinion; and that thereupon, if the said commissioners think fit, it shall be lawful for them or any two of them to direct the official referees to make such order in the matter as may appear to them to be requisite.

**Power to modify Provisions of this Act as to existing Buildings to be rebuilt.**

12. And be it enacted, with regard to buildings already built, so far as relates to the rebuilding thereof in conformity with this Act in respect of the required area, or in any other respect than the required height and thickness of walls, that if a full compliance with the provisions of this Act be attended by great loss and inconvenience, then, subject to the report of the official referees, and to the consent of the Commissioners of Works and Buildings, and to such terms as the said commissioners may impose in that behalf, it shall be lawful for the parties concerned to rebuild such buildings on the site of the old buildings as near as may be practicable, but so that nevertheless both the party-walls and the external walls be of the required height and thickness.

#### BUILDERS.

**Works to be executed by Surveyors—20l. Penalty for Neglect to give Notice, &c.—20l. Penalty for not giving fresh Notices—Penalty for beginning without Notice, or Refusal to admit Surveyor—Emergency.**

13. And be it enacted, with regard to the works to be executed in pursuance of this Act, so far as relates to the supervision thereof by the surveyors, that two days before the following acts or events, that is to say—

Before any building shall be begun to be built; and also

Before any addition or alteration which by this Act is placed under the supervision of the surveyor, shall be made to any building; and also

Before any party-wall, external wall, chimney-stack, or flue shall be begun to be built, pulled down, rebuilt, cut into, or altered; and also

Before any opening shall be made in any party-wall; and also

Before any other matter or thing shall be done which by this Act is placed under the supervision of the surveyor, except as hereinafter is provided;

It shall be the duty of the builder (by which term is meant the person or persons, both in this provision and elsewhere throughout this Act, the master builder or other person employed to execute any work, or if there be no master builder or other person so employed, then the owner of the building or other person for whom or by whose order such work is to be done), and he is hereby required to give to the surveyor, at his office, notice in the terms specified in the form (No. 1.) contained in the Schedule of Notices annexed to this Act, or to the like effect; and that if any builder neglect to give such notice, or begin to build, or do any of the things aforesaid, before such notice, or before the expiration of such period of two days, then in every such case the party offending shall for every such default forfeit and pay to such surveyor treble the amount of the fees which such surveyor would have been entitled to receive for his trouble in inspecting the same, and shall also forfeit for every such default a sum not exceeding twenty pounds; and that if for any period exceeding three months any builder, having duly begun any building requiring compliance with the provisions of this Act, suspend the progress of such building, and again go on with the same, or if during the progress thereof the builder be changed, then two days before such builder shall enter upon the performance of the work, it shall be the duty of such builder to give notice to the surveyor, and such notices must be in the terms specified in the forms (Nos. 2 and 3) contained in the Schedule of Notices annexed to this Act, or to the like effect, and must be given to the surveyor, or left at the surveyor's office, in like manner as is required upon beginning any new building, and that if any builder make default, or neglect to give or leave such notice, he shall forfeit for every such offence a sum not exceeding twenty pounds; and that if any such building, chimney, or wall be begun to be built, pulled down, rebuilt, cut into, or altered as aforesaid, or be proceeded with after any suspension of the progress thereof before such notice has been given; or if such surveyor or the official referees be refused admittance to inspect the same premises, then such building or work shall be liable to be abated as a nuisance under the provisions herein contained: provided always, that if by reason of any emergency any act, matter, or thing placed under the supervision of the surveyor be required to be done immediately, or before notice can be given to the surveyor, then it shall be lawful for the builder or any person to do such act, matter, or thing so requisite, but upon this condition, that within forty-eight hours after beginning to execute such work notice thereof be given to the surveyor.

#### BUILDINGS GENERALLY.

**Supervision of Works—Notice of Irregularities to Builders and Others—To cut into Works—Amendment of Works—Proceeding thereon by Official Referees—Costs.**

14. And be it enacted, with regard to such buildings and works, so far as relates to the supervision thereof, that if any building, or any part of any building, or party-wall or external wall, or chimney-stack or flue, drains, cesspools, or any work or other thing be done contrary to or not conformably with the rules and directions of this Act, then forthwith it shall be the duty of the surveyor and he is hereby required to give forty-eight hours notice according to the form (No. 4.) in the Schedule of Notices, or to the like effect, to the

builder, foreman, or principal workman on the premises, to amend any such irregularity which he shall deem to have been committed, and forthwith after the expiration of such notice to proceed to amend the work; and that if the work be so far advanced that he cannot ascertain whether the irregularity has been committed or not, or exists or not, then it shall be lawful for him and he is hereby empowered to order any work to be cut into, laid open, or pulled down, which shall in his opinion prevent his ascertaining whether any such irregularity exists or not; and that if within forty-eight hours the builder or workman to whom any such notice shall have been given refuse or fail to amend any irregular work, or if any such building, when ordered by the surveyor, refuse to cut into, lay open, or pull down any work which shall in his opinion prevent his ascertaining whether such irregular work exists or not, then, as soon as conveniently shall be, it shall be the duty of the surveyor to give information thereof to the official referees; and that upon the receipt of such information it shall be the duty of such official referees and they are hereby required to proceed to hear the matter, and if any breach of the rules, regulations, and directions of this Act be found to have been committed, or if there appear good reason to suppose any such breach has been committed and is concealed, then it shall be lawful for the official referees and they are hereby authorized to direct by their award that such building, party-wall, external wall, chimney-stack, flue, or other thing or such part thereof as they shall deem necessary, shall be amended, removed, cut into, laid open, or pulled down; and that all the costs, charges, and expenses of the said work, and of the said application to the official referees, shall be borne by such party or parties as the official referees shall determine.

**Special Supervision of First-rate Buildings of Second Class and of Buildings of Third Class—Notice to Official Referees—Survey—Approval—Disapproval—Amendment of Defects—Notice of Completion—New Survey—Certificate—Prohibition of Use—Penalty—Justices to consider Circumstances.**

15. And now, for the purpose of making provision for the supervision of buildings of the first-rate of the second or warehouse class, and of all buildings of the third or public building class (except the buildings hereinbefore excepted), be it enacted, with regard to every such building, so far as relates to the special supervision thereof, that when all the walls of any such building shall have been built to their full height, and all the timbers of the floors, roofs, and partitions shall have been fixed, it shall be the duty of the architect or builder and he is hereby required to give notice thereof to the official referees, according to the form (No. 6.) in the Schedule of Notices, or to the like effect; and if the official referees be of opinion that such building is subject to the special supervision herein provided, then within seven days after such notice it shall be their duty to survey the said building; and that if they approve of the same, then within seven days after such survey to certify such approval, under their hands, to the architect or builder; or that if any part of the walls, timbers, roof, or internal supports appear to such official referees defective, insufficient, or insecure, then within the said seven days after such survey they are hereby required to give to such architect or builder notice of such parts as shall so appear to them defective, insufficient, or insecure, which notice must be in writing; and that upon the receipt of such notice it shall be the duty of the said architect or builder and he is hereby required to amend and strengthen such defective, insufficient, or insecure parts; and that during or within a period of seven days after notice has been given to the official referees that such works have been amended or strengthened as aforesaid, it shall be the duty of the official referees and they are hereby required to inspect the same, or in default thereof the said parts may be covered up; and that upon completion of every such building it shall be the duty of the architect or builder to give fresh notice to the official referees, according to the form (No. 7.) in the Schedule of Notices, or to the like effect; and that thereupon, or within seven days after such notice, it shall be the duty of the official referees to survey the same; and that if upon such survey it shall appear that such building has been built sufficiently strong, and is sufficiently set to be safe, then within fourteen days after such survey it shall be their duty and they are hereby required to certify accordingly, which certificate must be under their hands and the seal of office of Registrar of Metropolitan Buildings; and that until such certificate shall have been made, or until fourteen days after such survey shall have elapsed without the official referees having given notice in writing that they are not satisfied, it shall not be lawful to use such building for any purpose whatever without the express authority in writing of the official referees under their hands and the seal of office of Registrar of Metropolitan Buildings; and that if before the certificate of satisfaction shall have been made, or if such fourteen days as aforesaid shall have elapsed without due notice being given in writing as aforesaid, any such building subject to special supervision shall be used for any purpose without such express authority in writing, then, on conviction thereof before two justices of the peace, the occupier of such building, or other the person by whom such building shall be so used, shall forfeit for every day during which such building shall be so used without having obtained such certificate of satisfaction, or such express authority as aforesaid, and that, in determining the amount of any such penalty, it shall be the duty of the justices and they are hereby directed to have regard to the size and character of the building, and to the nature

and extent of danger involved in the use of such building, and to the amount of profit which might be derived from such use thereof.

**Special Supervision of Buildings in Schedule (B.), Part I.—Survey by Official Referees—Occasional Inspection—Notice of Deficiencies—Amendment of Defects—Approval by Official Referees—Notice of Completion—New Survey Certificate—Prohibition of Use—Penalty—Justices to consider Circumstances.**

16. And be it enacted, with regard to the buildings comprised in schedule (B.) Part I. to this Act, annexed, so far as relates to the supervision thereof, that before the builder begin to build the same it shall be the duty of the architect or the builder and he is hereby required to give notice thereof to the official referees, and also, at the same time, to transmit for their inspection the plans, elevations, and other drawings which have been made for the same; and that forthwith thereupon it shall be the duty of the official referees and they are hereby required to proceed to survey the situation of the intended building with a view to ascertain whether such building can be erected on such situation with due regard to the security of the public; and that, from time to time during the progress of such building, it shall be the duty of such official referees and they are hereby directed to inspect the same with a view to ascertain the sufficiency thereof; and that if such building or any part thereof appear to such official referees defective, insufficient, or insecure, then they are hereby required to give to such architect or builder notice of such parts as shall so appear to them defective, insufficient, or insecure, which notice must be in writing; and that upon the receipt of such notice it shall be the duty of the said architect or builder and he is hereby required to amend and strengthen such defective, insufficient, or insecure parts; and that during or within a period of seven days after notice has been given to the official referees that such works have been amended or strengthened as aforesaid, it shall be the duty of the official referees and they are hereby required to inspect the same, or in default thereof the said parts may be covered up; and that upon completion of every such building it shall be the duty of the architect or builder to give fresh notice to the official referees; and that if upon such survey it shall appear that such building has been built sufficiently strong, then it shall be their duty to certify accordingly, which certificate must be under their hands and the seal of office of Registrar of Metropolitan Buildings; and that until such certificate shall have been made, or until fourteen days after such survey shall have elapsed without the official referees having given notice in writing that they are not satisfied, it shall not be lawful to use such building for any purpose whatever without the express authority in writing of the official referees under their hands and the seal of office of Registrar of Metropolitan Buildings; and that if before the certificate of satisfaction shall have been made, or if such fourteen days as aforesaid shall have elapsed without due notice being given in writing as aforesaid, any such building subject to special supervision shall be used for any purpose without such express authority in writing, then, on conviction thereof before two justices of the peace, the occupier of such building, or other the person by whom such building shall be so used, shall forfeit for every day during which such building shall be so used without having obtained such certificate of satisfaction, or such express authority as aforesaid; and that, in determining the amount of any such penalty, it shall be the duty of the justices and they are hereby directed to have regard to the nature and extent of danger involved in the use of such building, and to the amount of profit which might be derived from such use thereof.

**Entry on Premises—Refusal to permit Inspection—Forcible Entry.**

17. And be it enacted, with regard to buildings and works, so far as relates to the entry thereon for the supervision thereof, that at all times during the progress of any operations in respect thereof within the meaning of this Act, it shall be lawful for the surveyor and the official referees, and they are hereby respectively authorized, to enter upon the premises upon which such operations have been commenced; and that if at any time whilst any building is in course of construction, demolition, alteration, or reconstruction any person refuse to admit the surveyor, or the official referees authorized under this Act, during the customary working hours, to inspect such building, or any person refuse or neglect to afford such surveyor or official referee every assistance which may be reasonably required in and about such inspection, then in every such case on conviction thereof the party offending shall forfeit for every such offence a sum not exceeding twenty pounds; and that if at any time during such customary working hours the surveyor or the official referees be refused admittance to make inspection of any work, then for that purpose it shall be lawful for such surveyor or for such official referees, and they are hereby empowered, accompanied by a peace officer, to enter upon the ground, building, and premises where the same shall be.

**All Buildings not according to this Act declared a Nuisance—Summonses before Justices—Compulsory Appearance—Recognizances to pull down and amend—Imprisonment—Removal of Buildings declared Nuisances—Expenses.**

18. And for the purpose of more effectually en-



forcing the observance of the provisions of this Act, be it enacted, with regard to any buildings, drains, timber buildings, chimneys and flues, party-walls, party fence-walls, external walls and projections, and every other part of every building of every class, or rate of any class, which shall be hereafter built, rebuilt, enlarged, or altered, within the limits of this Act, contrary to the provisions hereof, so far as relates to the removal thereof, that if the same be not built, rebuilt, enlarged, or altered in the manner and in the materials, and in every other respect according to and in conformity with the several rules and directions which are in this Act particularly specified, and if any person build or begin to build, or cause the building or beginning to build, or alter or cause to be altered, or use or cause to be used, any part of any ground or building, projection, drain, or other thing contrary thereto, and if in either of such cases it so appear by the certificate of the official referees, then the said building, projection, drain, or other thing, or such part thereof, shall be lawfully built or begun to be built, or so irregularly altered or begun to be altered, or so used, shall be deemed a nuisance; and that thereupon it shall be the duty of the surveyor and he is hereby directed to summon the builder before any two justices of the peace; and that if at the time and place appointed on such summons such builder fail to appear, then the justices shall be authorized to issue a warrant under their hands and seals to compel such builder to appear before such justices or any other two justices; and that thereupon it shall be the duty of such builder and he is hereby required to enter into a recognizance, in such sum as the said justices shall appoint, for abating and taking down the same within such convenient time as the said justices shall respectively appoint, or otherwise for amending the same according to such rules and directions as are herein contained, and also for paying the costs, charges, and expenses incurred by the surveyor in laying the information and obtaining the conviction, including such compensation for the surveyor's loss of time as the said justices shall think fit; and if the said party so required fail to enter into such recognizance, then it shall be lawful for either of such justices or any justice, and they are hereby required, to commit such builder to the common goal of the city, county, or liberty where the offence shall be committed, there to remain without bail or mainprize until he shall have entered into such recognizance as aforesaid, or until such irregular building shall have been abated or demolished or otherwise amended, or such nuisance shall be abated or demolished by order of such justices respectively (which order the said justices are hereby empowered to make), and until the costs, charges, and expenses thereof, and of all operations and proceedings in relation thereto, shall have been paid; and further, that if application be made to any two or more justices, then thereupon it shall be their duty, and they are hereby empowered, to order the surveyor or any other person to abate or demolish such nuisance, and to order the persons authorized by them so to abate or demolish the same to sell and dispose of the materials thereof, and out of the moneys arising by such sale to pay to themselves, and all persons by them employed for such purpose, the reasonable charges for abating or demolishing such nuisance, and also such costs and expenses as aforesaid, and to pay the surplus moneys arising by such sale (if any) to such owner of the building as the official referees shall determine to be entitled thereto; and that if the moneys arising by such sale be not sufficient to pay such charges, then it shall be the duty of the person entitled to the immediate possession of such building, or the occupier, to make good the deficiency, subject to reimbursement as hereinafter provided; and if he fail, then he shall be liable to the same remedies for the recovery thereof as are by this Act provided concerning the expense of taking down ruinous buildings, and putting up boards for the safety of passengers.

#### *Fifty Shillings Penalty on Workmen offending—Imprisonment.*

19. And be it enacted, with regard to any building or work, so far as relates to the nonobservance of the provisions of this Act in that behalf by workmen and others, that if any workman, labourer, servant, or other person employed in any building, or in the alteration, fitting up, or decoration of any building, wilfully, and without the direction, privity, or consent of the person causing such work to be done, do any thing in or about such building contrary to the rules and directions of this Act, then upon conviction thereof before any two justices of the peace, upon the oath of one or more credible witnesses or witnesses (which oath the said justices are hereby empowered and required to administer), every such offender shall be liable to forfeit for every such offence a sum not exceeding fifty shillings; and that if upon or immediately after such conviction any such forfeiture be not paid, then it shall be the duty of any two justices of the peace to whom application shall be made to commit the offenders, by warrant under the hand and seal of such justices, to the common goal for any term not exceeding one month, at the discretion of such justices.

#### *ADJOINING PROPERTIES—PARTY WALLS—PARTY FENCES—INTERMIXED BUILDINGS.*

##### *Erection of Works.*

20. And forthwith as from time to time occasion hath arisen and will hereafter arise to execute the following works in relation to adjoining buildings and premises parted by the same party-wall or party fence-wall, but belonging to different owners or occupied by different persons, or to buildings intermixed be-

longing to different owners or occupied by different persons, namely,

The reparation of the party-walls by which such premises shall be parted:

The pulling down and rebuilding of such party-walls:

The raising of such party-walls:

The reparation of party fence-walls:

The rebuilding of such party fence-walls:

The raising of such party fence-walls:

The pulling down of timber partitions which part buildings the property of different owners or occupied by different persons, and building in lieu thereof proper party-walls:

The pulling down of buildings built over public ways, or having rooms or stories the property of different persons, or occupied by different persons, lying intermixed, for the purpose of building proper party-walls or party-arches:

And generally the performance of other necessary works incident to the connection of such party-walls or party fence-walls with the premises adjoining: it is expedient to make provision, as well for facilitating the execution of such works by any such owner desirous to execute the same (who is herein denominated the "building owner"), as for protecting the interests of the owner of the adjoining premises (who herein denominated the "adjoining owner"); now for that purpose be it enacted, with regard to all premises parted by a party-wall or party fence-wall, or parted by timber partitions, and with regard to all intermixed properties not so parted, so far as relates to the execution of any such works by any owner of any such premises, that if the adjoining owner shall have consented thereto, or if, without such consent, he shall require notice of such work to be given by or on the part of the building owner to such adjoining owner, then, subject to such modification as shall be made by virtue of the provision in that behalf, and subject to the provision for supplying the want of consent of the owners, and subject moreover to the respective conditions hereby prescribed with regard to such works respectively, as well as to the payment of the costs of such works, and to the sanction or to the award of the surveyors or of the official referees, as hereby prescribed in reference thereto, it shall be lawful for every such building owner and he is hereby authorized or required to execute such works.

##### *Consent of or Notice to adjoining Owner.*

21. And be it enacted, with regard to such works, so far as relates to the notice thereof, that, unless the adjoining owner consent thereto, it shall not be lawful for the "building owner" to execute such works until he have given notice thereof to such "adjoining owner;" and every such notice with regard to the pulling down, rebuilding, or repairing of party-walls or party fence-walls must be given three months at the least before the work is to be commenced; and every such notice with regard to the pulling down and rebuilding intermixed walls and timber partitions must be given three months at the least before such work is to be commenced; and every such notice must be in the form or to the effect of the notice (No. 8.) for that purpose contained in the Schedule of Notices hereunto annexed.

##### *Modification of Work to suit adjoining Owner—Modification of Operations—Application to Official Referees—Authority to build.*

22. And be it enacted, with regard to every such work, so far as relates to the modification thereof, in order to render it suitable to the premises of the adjoining owner or his tenant, that if the adjoining owner, at any time within two months after the receipt of the said notice from the building owner, give notice of his desire that any modification be made to the work, so as to render it suitable to his premises, according to the form (No. 18.) in the Schedule of Notices, or to the like effect, then within seven days after the receipt of such notice it shall be the duty of the building owner, and he is hereby required, to signify his consent to or dissent from such modification or delay; and that if the building owner dissent from, or do not within such seven days signify his consent to such modification, then it shall be lawful for the adjoining owner and he is hereby entitled to require the building owner not to commence the work until the official referees shall have determined thereon; and that if within seven days thereafter application be made in writing to the official referees, according to the form (No. 19.) in the Schedule of Notices, or to the like effect, and notice thereof be given to the building owner, according to the other form (No. 18.) then within ten days after such application it shall be the duty of the official referees to signify their decision thereon, and it shall be the duty of the building owner not to commence the work till the decision of such official referees shall have been given; and that if within the period of three months from the date of the first notice such adjoining owner shall make any objection or any requisition in conformity with this enactment, then, subject to the provisions of this Act with regard to such works, it shall be lawful for the building owner and he is hereby authorized to proceed to execute the same.

##### *Delay of Work to suit adjoining Owner—Delay of Operations—Application to Official Referees—Authority to build.*

23. And be it enacted, with regard to every such work, so far as relates to the modification thereof, in order to render it suitable to the premises, or to the convenience of the adjoining owner or his tenant, that if the adjoining owner, at any time within three months after the receipt of the said notice from the building owner, give notice of his desire that the work be delayed, so as to cause it to be executed at a more seasonable or a more convenient time in

reference to the business or to the family or domestic arrangements of such adjoining owner or his tenants, according to the form (No. 18.) in the Schedule of Notices, or to the like effect, then within seven days after the receipt of the notice thereof it shall be the duty of the building owner and he is hereby required to signify his consent to or dissent from such modification or delay; and that if the building owner do not within such seven days signify his consent to such modification or delay, then it shall be lawful for the adjoining owner and he is hereby entitled to require the building owner to delay the work until the official referees shall have determined thereon; and that if within seven days thereafter application be made in writing to the official referees, according to the form (No. 19.) in the Schedule of Notices, or to the like effect, and notice thereof be given to the building owner, according to the other form (No. 20.), then within ten days after such application it shall be the duty of the official referees to signify their decision thereon, and it shall be the duty of the building owner to delay the same till the decision of such official referees shall have been given; and that if within the period of three months from the date of the first notice such adjoining owner do not make any objection or any requisition in conformity with this enactment, then, subject to the provisions of this Act with regard to such works, it shall be lawful for the building owner and he is hereby authorized to proceed to execute the same.

##### *Supplying Want of Consent of adjoining Owners—Notice of Inspection by Surveyor—Notice to Parties—Confirmation by Official Referees—Proceedings on Appeal against Certificate—Notice by Official Referees—Survey—Award—Works authorized.*

24. And be it enacted, with regard to any such work which shall be authorized to be done in relation to party-walls, party-arches, party fence-walls, or other such structures belonging to the owners of adjoining buildings or parting adjoining premises, so far as relates to supplying the want of consent of the adjoining owners, that if the adjoining premises be unoccupied, or if the owner thereof cannot be found, or if the owner, although found, cannot, by reason of legal disability or otherwise, consent to the work, or if the owner will not consent thereto, or if differences arise amongst the parties concerned, then the notice required to be given in respect of such work must be served both on the surveyor and on the official referees, in addition to such other parties entitled to notice under this Act upon whom such notice can be served, which must be according to the form (No. 9.) in the Schedule of Notices, or to the like effect; and that forthwith on the receipt of such notice it shall be the duty of the surveyor and he is hereby required to give notice to the parties by whom such work is to be executed, and to any one or more surveyors or other agents by them appointed, as to the day and hour when he is authorized to do the work, according to the form (No. 10.) in the Schedule of Notices, or to the like effect; and at such time it shall be the duty of the surveyor of the district and he is hereby authorized to proceed to inspect such premises accordingly, and to certify to the official referees,

First, whether such work ought to be done or not; and

Secondly, if the same ought to be done, whether it ought to be done in the proposed manner; and

Thirdly, the site whereon the party-wall should be built; and, with regard to intermixed buildings, what party-arches may be necessary over or under any rooms of such buildings as intended to be rebuilt; and

Fourthly, the quantity of the soil or ground or other part of the premises (if any) necessary to be laid to or taken from the house of the person permitting him to erect a party-wall or party-arch; and

Fifthly, the compensation (if any) which should be made and paid by either the building owner or the adjoining owner to the other in lieu of the lessening effect of the said buildings by such party-wall or party-arch, or as a satisfaction for such other injury (if any) as shall be done or occasioned thereby to any of the said parties;

And that upon the receipt of such certificate it shall be the duty of the official referees, and they are hereby required, to cause notice thereof to be given to the parties or to such of them as are known; and that if within seven days after such notice to the parties the certificate be not appealed against, and if the official referees be of opinion that the work is proper to be done, and the compensation is fair, then it shall be lawful for the official referees to confirm such certificate, and to authorize the building owner to proceed with the works as if the consent of the adjoining owner had been obtained; and that if any party concerned shall appeal against the certificate of the surveyor as to the work to be done, or as to the compensation, or as to any other matter referred to in such certificate in pursuance of the above provisions, then it shall be the duty of the official referees, and they are hereby required, to appoint one of their number to survey the building in question; and for that purpose it shall be the duty of the official referees so appointed, and he is hereby required, to give notice to the parties, and to any one or more surveyors or other agents by them appointed, as to the time when he will view the premises; and that at such time it shall be the duty of such referee and he is hereby authorized to view such premises accordingly, and to inquire into the matters appealed against, and to certify to the official referees his opinion thereon; and that upon such certificate being made it shall be lawful for the official referees to make their award, thereby either confirming or reversing or modifying, as to

[For continuation see SUPPLEMENT.]



# THE BUILDER.

## Tenders.

TENDERS delivered for building a first-rate House at Camden Town.—C. W. Eppy, Esq., Architect, 21, Lincoln's-inn-Fields. August 28.

Pilbeam.....	£2,264
M. Cubitt.....	2,224
Newton and Kelk.....	2,208
J. and C. Rigby.....	2,186
T. Anson.....	2,167
Woolcott and Son.....	2,076
Chapman.....	1,983
Ternan and Son.....	1,750

TENDERS delivered for building New Spread Eagle Public-house at Homerton.—Arthur Asphitel, Esq., Surveyor.

Yeoman.....	£745
Lloyd and Parker.....	736
Buck.....	730
Norris.....	670
Crook and Son.....	661
Bondley.....	630

Quantities supplied and lowest tender accepted.

TENDERS delivered for the Erection of a New Wesleyan Chapel at Boughton, in the Faversham Circuit.—William Wesley Jenkins, Esq., Architect, 20, Bartlett's-buildings, Holborn. August 16.

Standen and Broadbridge.....	£1,733	5
Boughton.....	1,555	0
Cooper and Davis, London.....	1,534	0
C. Stevenson, London.....	1,534	0
Dawson, Faversham.....	1,533	0
Haynes and Co.....	1,520	0

The lowest tender accepted.

## NOTICES OF CONTRACTS.

For Building a School and Schoolmaster's House at Tickenham, and a Conservatory at Wrexhall.—Mr. Bennet, Porthead, near Bristol. September 1.

For the Execution of the various Works in the formation, ballasting and laying the permanent way of the Canterbury, Ramsgate, and Margate Branch Railway.—Plans and specifications at the office of Mr. Joseph Cubitt, Civil Engineer, 12, Manchester-buildings, Westminster; Mr. J. Whitehead, Secretary, South Eastern Railway, London-bridge. September 24.

For supplying 2,250 Loads of African Timber, and delivering at H. M.'s several Dockyards during the year 1845.—Secretary of the Admiralty. 3rd September.

For supplying and delivering at H. M.'s several Dockyards during the year 1845, 1,500 loads of Honduras Mahogany.—Secretary of the Admiralty. 3rd September.

For Erecting a Small Kitchen, and a Room over the same, next to and adjoining the wards for the sick of the Workhouse at Duppas Hill, Croydon.—Plan, &c., Mr. T. Haydon, Master, on the premises. September 3.

For pulling down sundry extensive Premises at St. Neots, Clearing and Stacking the Materials, and for Erecting a new Lime Kiln, &c.—Plans and Specifications at the Offices of Messrs. Abbott and Habershon, Architects, St. Neots. Sept. 5.

For taking down and rebuilding about fifty feet in length of the Town Quay Wall, in front of the New Crane, to be laid on a platform of Green Beech Timber, on Dwarf Piles.—Specifications, &c. of Mr. Doswell, Albion-place. Sept. 5.

For making and completing the necessary approaches to the New Bridge at Somersham, consisting of Embanked Roadway, Brick Walls, Iron and Wood Fencing.—Plans, &c., at the Offices of Messrs. Pocock and Glover, Architects and Surveyors, Huntingdon. Sept. 7.

For sundry Alterations and Repairs at Swift's House, Cranbrook, Kent.—Plans, &c., to be seen at the House; Mr. Wilson, Solicitor, Cranbrook. Sept. 13.

For Paving, Pitching, Cleansing, and Lighting the City of Bristol for three years, commencing September 29.—Commissioners' Offices, 44, Queen-square, Bristol. Sept. 16.

For a Police Station at Newport.—Mr. Langdon, Architect, Stow Hill, Newport.

For a Pair of New Boilers for the Vesta Steamship, now lying at Hillgate End, Gateshead.—Parker and Shield, 50, Quayside, Newcastle.

To raise any quantity of Stone at per foot, from the quarries of the Right Hon. Lord Hastings, at Seaton Delaval, for the erection of the Leicester Testimonial at Holkham Park, Norfolk.—Mr. J. Brown, Seaton, Delaval Hall.

## ERRATA.

The amount of Mr. Cooper's tender for rebuilding Aldridge's Horse Repository should have been given as 2,998l., and not 2,988l., as stated in No. 80.

## ADVERTISEMENTS.

### PREPARED FLOORING BOARDS.

**ALWAYS ON SALE, a LARGE ASSORTMENT OF DRY PREPARED FLOORING BOARDS AND MATCHED BOARDING of all sorts, planed to a parallel width and thickness, from 1/2 inch to 1 1/2 inch thick. Rough Boarding for Plots. TIMBER, DEALS, OAK PLANKS, SCANTLINGS, SASH SILLS, &c.**  
Apply at W. CLEAVE'S Timber Yard, Smith-street, Westminster.

### PREPARED FLOORING BOARDS.

**ALWAYS ON SALE at A. ROSLING'S, SOUTHWARK-BRIDGE-WHARF, BANKSIDE, and Old-Barge-Wharf, Upper Ground-street, Blackfriars, a very large stock of well seasoned Floor Boards of every variety.**  
A. R., in calling the attention of builders and consumers, confidently presumes on his being able to supply them at such advantageous terms, as will ensure and merit their favours and approbation.

**FIRE BRICKS at Ward's Honduras Wharf, Bankside, 25 per cent. under the current prices.** Shipping orders and country dealers well supplied. Plaster stone, white and gray, for gypsum and calcining. River ballast for concreting, and Thames sand. Orders executed from ships in the river at the lowest prices. Patent maling and corn drying kiln bricks. Prices by letter attended to at the Hall of Commerce, Threadneedle-street, in Change hours.

**RICHARD GOODLAD and Co., MANUFACTURERS OF PAPER-HANGINGS, invite the attention of the TRADE, BUILDERS, and OTHERS, to the large and extensive STOCK OF PAPER-HANGINGS, at their Warehouse, 1, SOUTHAMPTON-STREET, STRAND; and at the same time tender their best thanks to their numerous friends for the liberal patronage bestowed on their Establishment; respectfully soliciting a further continuance.**

**BRITANNIA IRON AND ZINC WORKS, 174, HIGH HOLBORN, STOVE GRATE, KITCHEN RANGE, AND STEAM-COOKING APPARATUS MANUFACTORY, WHOLESALE AND RETAIL IRONMONGERY WAREHOUSE.**

**R. K. BUTLER**

INFORMS THE NOBILITY, GENTRY, ARCHITECTS, BUILDERS, AND ALL PERSONS DESIROUS OF ECONOMICAL OUTLAY IN FURNISHING IRONMONGERY.

That he has completed very extensive alterations at his Premises. The Stock has been renewed with the most varied selection of every description of Ironmongery required for General and Domestic Use, and orders to any extent can be selected in a few minutes.

R. K. Butler is determined to sell at prices that cannot fail giving satisfaction to the most frugal purchaser. He respectfully solicits an early inspection of his Show Rooms and Warehouses, which will be found replete with every novelty of useful and ornamental manufacture for Household and Culinary purposes, which he proudly asserts rank second to none in the Kingdom.

**KITCHEN RANGES and COOKING APPARATUS** fitted upon R. K. Butler's approved principle, with the latest modern improvements.

**REGISTER STOVE GRATES**, in Bright Steel and Black Metal, with Fenders and Fire Irons "en suite," for Dining and Drawing Rooms, Libraries, Halls, and Chambers. This class of Goods is universally acknowledged to be of the newest and most elegant design and recherche style of ornamental manufacture now gratuitously exhibited for public view.

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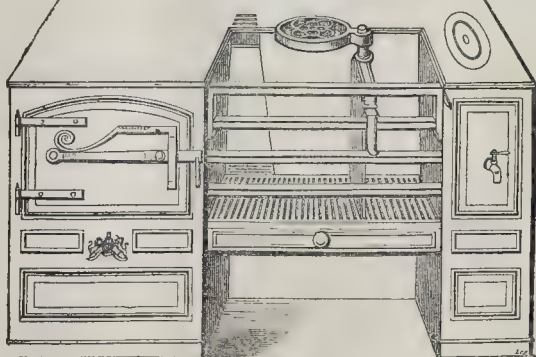
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(Continued from p. 436.)

them the case may seem to require, the certificate of the surveyor, and appointing by whom and in what proportions the expenses of the surveys and of the reports thereon are to be paid, and such award shall be final and conclusive; and with regard to any works by such award authorized, so far as relates to the proceedings of the building owner, that if upon the making of the award the periods of the notices by this Act prescribed with regard to works of that nature have elapsed, then immediately upon the making of the award, but if such periods have not elapsed, then as soon after the making of the award as such periods shall have elapsed, it shall be lawful for the building owner, his agents, servants, and workmen, to proceed to execute the works.

#### Repairation and Rebuilding at joint expense.

25. And be it enacted, with regard to any party-wall, party-arch, or external wall used wholly or in part as a party fence-wall, so far as relates to the repairation and rebuilding thereof at the joint expense of the owners of the buildings parted thereby, that if such party structure be so defective or so far out of repair as to render it necessary to pull down and rebuild the same, or any part thereof, then on notice being given by the owner of one of the buildings to the adjoining owner, according to the form (No. 8.) in the Schedule of Notices, or to the like effect, it shall be lawful for the building owner to require a survey, certificate, and award, authorizing the execution of such repairation or rebuilding, according to the provisions hereinbefore contained in that behalf.

#### Rebuilding of Party-walls.

26. And be it enacted, with regard to sound party-walls, so far as relates to the rebuilding thereof at the expense of the building owner, that if the owner of one of the buildings desire to rebuild such party-wall, then, on giving to the adjoining owner the required notice of three months according to the form (No. 14.) in the Schedule of Notices, or to the like effect, it shall be lawful for such building owner and he is hereby entitled to pull down and rebuild such party-wall, but upon condition that he do reinstate and make good all the internal finishings and decorations of the adjoining premises, and pay all the costs and charges thereof, and also all the expenses incidental to the execution of the work, including therein the fees and expenses of the surveyor, and the fees of the surveyors, and any fees in respect of any services performed by the official referees, and also such reasonable compensation as to the said official referees may seem proper for any loss which the adjoining owner shall have incurred by reason of such work.

#### Rebuilding a Party-wall—Building of an external Wall against a Party-wall.

27. And be it enacted, with regard to any party-wall, so far as the rebuilding thereof, that if the owner of one of the buildings parted by such party-wall rebuild such building of a higher rate, and do pull down such party-wall and build a proper wall in lieu thereof, then it shall be his duty and he is hereby required to build up an external wall against such party-wall.

#### Damage arising from erection of external Wall against a Party-wall.—Cutting into Footings and Chimneys.

28. And be it enacted, with regard to an external wall built against a party-wall, so far as relates to the operations incident thereto, and to the making good any damage or expenses which it may be necessary to excavate or dig out the ground against the wall of any adjoining building for the purpose of erecting a wall thereon, or for any other purpose, then it shall be lawful for the building owner and he is hereby entitled so to do, but upon condition that the said building owner do at his own costs shore up and underpin such wall, or such part thereof, to its full thickness and to the full depth of such excavation, with good sound stock bricks and tiles or slates bedded in cement, or with other proper and sufficient materials, such underpinning to be done in a workmanlike and substantial manner; and that if for the purpose of erecting such external wall it be necessary to cut away part of the footings of such party-wall on the side next to the wall so to be built, and any part of the chimney breasts and chimney shafts belonging to the building about to be rebuilt as shall project beyond the perpendicular face of such party-wall in the lowest floor thereof, then, on giving notice of such intention in writing to the owner of the adjoining building at least one month before commencing operations, according to the form (No. 15.) in the Schedule of Notices, or to the like effect, and on the expiration of such notice, it shall be lawful for the building owner and he is hereby authorized to cut away such portions of the footings, breasts, and chimney-shafts aforesaid, but so that the same be done, and the brick-work where cut be again made good in cement, under the superintendence and to the satisfaction of the surveyor.

#### Making good such Damage—Survey—Damage from Carelessness—Rebuilding.

29. Provided always, and be it enacted, with regard to such party-wall, so far as relates to the making good of any such damage, that if it be so damaged and injured by such cutting away as in the opinion of the adjoining owner or occupier to be ruinous or dangerous, then upon application for that purpose it shall be the duty of the surveyor and he is hereby required to survey such wall; and if upon the survey thereof it be found ruinous or dangerous then to condemn it; and that thereupon it shall be the duty of the building owner to pull down and rebuild such party-wall; and that if in the opinion of the surveyor or of the official referees such damage or injury shall have been occasioned by want of due care on the part of the build-

ing owner, then it shall be the duty of such building owner and he is hereby required to pull down and rebuild such party-wall, and that at his own costs and charges, including therein all the costs and expenses incident to such survey, and the pulling down and rebuilding of such party-wall, and the reinstating and making good all the internal finishings and decorations damaged thereby; and that if the owner of the building to be rebuilt do not proceed with all due despatch to pull down and rebuild such party-wall, and to reinstate and make good all the internal finishings and decorations of the adjoining premises, and to pay the costs and charges and expenses of the survey, then it shall be lawful for the adjoining owner so to do, and he is hereby entitled to recover all the costs and expenses in respect thereof from such owner, his heirs, executors, administrators, or assigns.

#### Rebuilding of sound Party-walls—Reference to Official Referees.

30. And be it enacted, with regard to any sound party-wall against which an external wall shall have been built, and which shall have been suffered to remain, so far as relates to the rebuilding thereof, that if, while such party-wall continues sound, the adjoining building be pulled down or rebuilt, and such party-wall be pulled down, then the owner of such adjoining building shall not be entitled to more than his just proportion of the materials thereof, nor to more than his just proportion of the ground on which such party-wall was built, nor shall he build on more than his just proportion of the said ground, unless he shall have agreed with and satisfied the owner of the building so previously rebuilt for his half thereof; and that if the said owners cannot agree concerning the division of such materials, or of such ground, or of the building thereon, or concerning the reimbursement of the party first rebuilding as aforesaid, then the price and all matters in difference, including the sale and purchase of the ground in question, shall be settled by a reference to the official referees, whose award shall be final.

#### Raising of future Buildings—Existing Buildings—Chimneys of adjoining Buildings—Use of raised Buildings.

31. And be it enacted, with regard to every building hereafter built, so far as relates to the raising thereof, that it shall be lawful to raise any building, but so that nevertheless the party and external walls and chimneys thereof, when so raised, be of the materials and of the several heights and thicknesses hereinbefore described for party and external walls and chimneys of the rate such building shall be of when so raised; and with regard to buildings already built, so far as relates to the raising thereof, that although the walls of such buildings be not of the thicknesses prescribed by this Act, if, in the opinion of the surveyor, such walls be sufficiently secure to allow of the raising thereof, then it shall be lawful to raise any such building already built to an additional height not exceeding ten feet; and with regard to any building adjoining one which shall be raised, so far as relates to the raising of the chimneys thereof, that if any building be raised it shall be the duty of the owner of such building, and he is hereby required to build up, at his own expense, the party-walls between his own and any adjoining building, and all flues and chimney-stacks belonging thereto; and with regard to any building raised, so far as relates to the use thereof by the adjoining owner, that if at any time the owner of any such adjoining building make use of any portion of the part raised of such party-wall by building against it, or otherwise, it shall be lawful for the owner of the premises so first raised to claim, and he is hereby entitled to recover, the cost of a proportionate part of the portion which shall be so used, together with the cost of such parts of the chimney-stacks as belong thereto.

#### Repairing and Rebuilding of Party Fence-walls—Deficient Party Fence-wall—Reimbursement of Expense of Operations—Limitation of Height of Screen Walls.

32. And be it enacted, with regard to party fence-walls, by which term it is to be understood any boundary wall parting the grounds belonging to different owners or occupied by different persons, so far as relates to the repairation and rebuilding and raising thereof, that if the owner of any of the premises parted thereby give one month's notice to his intention to the adjoining owner to repair, pull down, and rebuild the same, it shall be lawful for him so to do; and if the wall be below the height of nine feet from the ground on either side, then either to raise it to that height, or to pull it down and to rebuild it to that height, but upon condition that he do pay all the expenses thereof; and that if a building be to be erected against such party fence-wall, and such wall be not conformable to the requisites prescribed for a proper party-wall for a building of that class and rate, then it shall be lawful for the building owner and he is hereby entitled to pull down such party fence-wall, but upon condition that he do pay all the expenses thereof, and also that he do make good every damage which shall accrue to such adjoining premises by such rebuilding; provided always, with regard to the expense of so pulling down and rebuilding such party fence-wall, that if thereafter the adjoining owner use such party fence-wall for any purpose to which, if it had not been pulled down and rebuilt, it would not have been applicable, then to such extent as such adjoining owner shall so use such wall the building owner shall be entitled to be reimbursed the expenses of so pulling down and rebuilding such party fence-wall; provided also, with regard to any such party fence-wall, so far as relates to the limitation of the height thereof, that if any party desire to raise such wall so as to screen from view any offensive object or neighbourhood, then

on application to the official referees it shall be lawful for them to authorize such work, but not so as to obstruct the free circulation of the air, or to injure the property adjoining to or in the neighbourhood of such wall.

#### Pulling down Party Timber Partitions.

33. And be it enacted, with regard to the party timber partitions of existing buildings belonging to different owners, so far as relates to the pulling down thereof, and any wall under or over the same, that if one of the buildings be rebuilt, or if one of the fronts of any such building be taken down to the height of story, or for a space equal to one-fourth of such front from the level of the second floor upwards, then without the consent of the adjoining owner, but upon giving the requisite notice, according to the forms (Nos. 11, 12, 13) in the Schedule of Notices, or to the like effect, it shall be the duty of the building owner and he is hereby required to pull down such timber partitions, and the walls under or over the same, and in lieu thereof to build a proper party-wall, and that at the expense of the owners of all the premises parted thereby.

#### Pulling down intermixed Buildings.

34. And be it enacted, with regard to buildings built over public ways, or having rooms or stories, the property of different persons lying intermixed (except Inns of Court hereinafter provided for), so far as relates to the pulling down and laying the parts thereof to each other, that if a party-wall or party-arch cannot be built without pulling down such buildings, and so laying parts thereof to each other, and if in default of the consent of all proper parties the official referees authorize such works, then it shall be lawful for the owner of either of the said buildings to execute the same, but so that the party-walls or party-arches be conformable to the provisions of this Act, and the directions of the said official referees in their award made in that behalf.

#### Inns of Court, Chambers, &c.

35. And be it enacted, with regard to the rooms or chambers in the Inns of Court (that is to say), in *Serjeants' Inn, Chancery-lane*, or in any of the four Inns of Court, or in any of the Inns of Chancery, or any other inns set apart for the study or practice of the law, and with regard to other buildings divided into rooms or chambers, offices, or counting-houses, let out or to be let in separate suites or sets, so far as relates to the pulling down of party-walls, that the walls or divisions between the several rooms and chambers in such inns, or such buildings, belonging to and communicating with each separate and distinct staircase, shall be deemed to be party-walls within the meaning of this Act, and as such must be built in conformity with the regulations and clauses herein contained relating to party-walls.

#### Power of Entry on Premises to effect Works—Opening Doors and Removal of Goods, &c.—Continuance of Entry—Penalty for Hindrance.

36. And for the purpose of facilitating and regulating the execution of any works authorized by this Act, or by any award in pursuance thereof, in respect of any party-wall or party-arch parting the buildings or grounds belonging to different owners, or in the occupation of different persons, or in respect of intermixed buildings, be it enacted, with regard to any such works, so far as relates to the power to enter the adjoining premises in order to execute the same, that if such work have been duly authorized, either by the consent of the parties competent to give such consent, or by the award or certificate of the official referees, then, at any time between the hours of six in the morning and seven in the afternoon (*Sundays excepted*), it shall be lawful for the building owner, or any other person acting in his behalf, accompanied by a constable or other officer of the peace, and they are hereby respectively empowered, to enter on the premises of the adjoining owner, so far as may be necessary for executing such work; and that if the outer door of such building be shut, and being thereunto required the person therein refuse to open the same, or if such building be empty and unoccupied, then it shall be lawful to break open such outer door; and if any fixtures, goods, furniture, or other thing obstruct the building of such intended party-wall or party-arch, or the pulling down any wall, partition, or other thing necessary to be pulled down and removed in order to the building such intended party-wall or party-arch, then to remove such fixtures, goods, furniture, and things to some other part of the same premises, or if there be no room on the premises sufficient for that purpose, to remove them to some convenient place of safe custody; and that from and after such entry, and at all usual times of working, it shall be lawful for the builder employed to erect such intended party-wall or party-arch, and for his servants and all others employed by him, to enter into and upon the premises, and abide therein the usual times of working, as well for the shoring up of the said building so broken into and entered upon, and for taking down and removing any party-wall, partition, wainscot, or other thing necessary to be taken down and removed for the purpose aforesaid, as to build such intended party-wall or party-arch; and that if in any manner any such owner or other person hinder or obstruct any workman employed for any of the purposes aforesaid, or wilfully damage or injure the said workmen, then every such person so offending shall forfeit for every such offence a sum not exceeding ten pounds.

#### Stopping of Openings in external Walls abutting on other Premises—Stopping thereof—Costs of Stopping up—Certificate of Official Referees—Recovery of Costs.

37. And now, for the purpose of further protecting the interests of adjoining owners, be it enacted, with regard to external walls adjoining the ground or



building of another owner, so far as relates to the making of openings therein, that if, without the consent in writing of the owner of such ground or building, any opening be made in any such wall, then it shall be lawful for such owner, and he is hereby entitled to require the owner of the premises in which such opening shall be made to stop up the same with brick or stone-work, as the case may be, according to the form (No. 5.) in the Schedule of Notices, or to the like effect; and that if within one month after such notice such stoppage be not effected, then it shall be lawful for such owner and he is hereby entitled, either by himself or his workmen, with tools, implements, and materials, to cause such openings so to be stopped, and he is also hereby entitled to be repaid the costs thereof; and with regard to such costs, so far as relates to the adjustment thereof, that if such owner refuse to make payment thereof, or if there be any dispute as to the amount thereof, then, on application for the purpose to the official referees, by either of the parties concerned, it shall be lawful for the person by whom they have been incurred and he is hereby entitled to refer the matter of such dispute to the official referees, and to have their determination thereon; and that it shall be the duty of such official referees to give to the applicant a certificate in relation thereto; and that if any party fails to pay any sum of money under such certificate fail to do so, then it shall be lawful for the party entitled to such costs to recover the same in the manner hereinafter provided for the recovery of the costs, charges, and expenses of executing any works in pursuance of this Act.

**Building of Party-walls next vacant Ground—Consent of adjoining Owner.**

38. And be it enacted, with regard to walls, so far as relates to the building thereof on vacant ground at the line of junction of premises belonging to different owners or in different occupations, that one month before the owner of any piece of vacant ground, or ground not hitherto built upon, shall build any building adjoining to another piece of vacant ground, or ground not hitherto built upon, or build a fence-wall for such piece of ground, it shall be his duty and he is hereby required to give to the owner or occupier of such adjoining vacant ground a notice, which shall be in writing, and must set forth his desire to build a party-wall or party fence-wall, and describe the thicknesses and dimensions of such desired party-wall or party fence-wall, according to the form (No. 16) in the Schedule of Notices, or to the like effect; and that if within such period of one month such adjoining owner shall signify his consent in writing, then the same must be built partly on the ground of one of the said owners or occupiers, and partly on the ground of the other owner, and such last mentioned part is to be paid for as is hereinafter directed by such other owner or occupier; but if he do not signify such consent, then it shall be the duty of the building owner to build an external wall for such building, and fence-wall for such ground, entirely upon his own ground, except as to the footings of any such wall.

**Building of Chimney Breasts, &c. in new Party-wall for adjoining Owner—Instructions by adjoining Owner—Reimbursement of Expenses.**

39. And be it enacted, with regard to any new party wall built on the line of junction of premises belonging to different owners, so far as relates to the providing of chimney breasts and other accommodation for the adjoining owner, that when the owner of any piece of vacant ground shall have obtained the consent of the adjoining owner to build a party-wall on the line of junction of their respective premises, then, ten days at the least before beginning to build such party-wall, it shall be the duty of the building owner to give the adjoining owner notice thereof, according to the form (No. 16) in the Schedule of Notices, or to the like effect; and that if in due time the adjoining owner shall give instructions in writing, or by a plan and elevations or other sufficient drawings, then it shall be the duty of the building owner to construct, if practicable, such and so many chimney jambs, breasts, and flues of chimneys in all such parts of such party-wall as shall be by such instructions required, and to leave such recesses in every such wall as may be so required, but so that they be conformable with the directions of this Act concerning party-walls and chimneys; and that thereupon it shall be lawful for the building owner to claim and he is hereby entitled to recover from the adjoining owner all the expenses of constructing such chimney jambs, breasts, and flues of chimneys, and recesses, as provided by this Act in that behalf.

**RUINOUS BUILDINGS.**

**Repairing and Rebuilding—Application to Official Referees—Survey—Notice to Lord Mayor, &c. and to Overseers—Shoring and Erection of Hoards, and Notice to Parties—Repairs—Appeal against Survey—Demolition.**

40. And whereas buildings within the limits of this Act are often, either from litigated titles thereto, or from the obstinacy, neglect, or poverty of the owners thereof or of the parties interested therein, or from other causes, in so ruinous a condition that passengers are endangered thereby; now, for the purpose of making provision in that behalf, be it enacted, with regard to ruinous buildings or parts of buildings, so far as relates to repairing or pulling down the same, that upon receiving information of any building being in a ruinous and dangerous condition it shall be the duty of the surveyor and of the overseers for the time being of the parish or place in which the same shall be, and they are hereby respectively required, to apply forthwith to the official referees to authorize a survey to be made thereof; and that thereupon it shall be lawful for the official referees to

direct the surveyor to make such survey; and that thereupon it shall be the duty of such surveyor to act in all respects as in and to the effect of a survey of the walls; and that upon the receipt of the certificate of the surveyor it shall be lawful for the official referees and they are hereby required to cause a copy thereof to be transmitted, if the premises be within the city of London, then to the Court of Lord Mayor and Aldermen, and if they be elsewhere, then to the overseers of the poor of the parish or place in which such premises shall be; and that thereupon it shall be the duty of such Mayor and Court of Aldermen, and overseers, to cause with all convenient speed any such ruinous building to be securely shored, or a proper and sufficient hoard to be put up for the safety of all passengers, and to cause notice in writing to be given to the owner of such building to repair or pull down the same or any part thereof, as the case may require, within fourteen days, then next ensuing; and that if within the said fourteen days the repair or demolition thereof be not begun, and be not completed as soon as the nature of the case will admit, then, on a declaration being made before the said Lord Mayor or a justice of the peace of such notice having been so given (which declaration the said Lord Mayor and justice are hereby respectively empowered and required, and to receive), it shall be lawful for the said Lord Mayor and Court of Aldermen, and they are hereby authorized and required, out of the cash in the chamber of London, and also for every such overseer of the poor by and out of the money in his hands, and they are hereby severally authorized and required, with all convenient speed, to order and cause such building, or such part thereof so certified to be in a ruinous and dangerous condition as shall be necessary for the safety of the passengers, to be repaired or pulled down, or secured in such manner as shall from time to time be requisite: provided always, that if such Lord Mayor and Aldermen, or such overseers, appeal against such certificate, it shall be the duty of the official referees to proceed to survey, to certify, and to award in all respects as in the case of an appeal from the certificate of the surveyor with reference to party-walls or intermixed buildings; and that if such official referees certify that the said premises are ruinous and dangerous, it shall be the duty of the said Lord Mayor or the said overseers to repair or pull down such building as aforesaid.

**Disposal of Materials to pay Costs—Payment of Surplus on Demand—If no Demand—City of London or Overseers to refund within Six Years.**

41. And be it enacted, with regard to any such ruinous building so pulled down, so far as relates to the disposal of the materials thereof, and to the application of the proceeds, that it shall be lawful for the said Lord Mayor and Court of Aldermen, or the said overseers, to sell and dispose of such of the materials as they shall judge necessary, and out of the moneys arising from the sale thereof to reimburse to themselves, the surveyor and official referees, and to any person by them respectively employed for the purposes aforesaid, all the charges of the survey and appeal, and of putting up every such hoard, and of repairing, pulling down, and securing such premises, and of making good the pavement, and of selling the said materials as aforesaid, or so much thereof as the moneys arising by such sale will extend to; and that if there be any surplus after payment of all expenses, then, upon demand thereof made by such owner, it shall be the duty of the said Lord Mayor, or of the said overseers, to account for and pay such surplus of the moneys arising by such sale to the owner of such building; or if there be any question as to the person entitled to such surplus, or as to the priority of title to such sum of money, then the person so entitled, or as to the proportions to which such persons are so entitled, then it shall be lawful, either for the Lord Mayor or the overseers, or for any person claiming to be so entitled, to refer the matter to the determination of the official referees, and their decision shall be final; and that if no such demand be made then such surplus shall, as regards places within the city of London and the liberties thereof, be paid to the chamberlain of the city, and as regards all other places such surplus shall be paid to the overseers, and added to the moneys raised as rates for the relief of the poor of the parish or place, and accounted for accordingly: provided nevertheless, that at any time within six years from the deposit of such surplus, if shall be required by any such owner, his executors or administrators, to claim and he is hereby entitled to recover such surplus; and the said Lord Mayor and Aldermen of the city of London, as regards the said city and liberties thereof, are hereby required to pay such surplus out of the cash in the chamber of London; and every overseer, as regards places not within the said city or the liberties thereof, is hereby required to pay such surplus out of any moneys raised or to be raised by any rate for the relief of the poor.

**If a Deficiency, to be paid by the Owner: or levied by Warrant of Distress; or Occupier to pay and deduct from Rent: or by Distress on Occupier—Payment of Money to Chamberlain or to the Overseers.**

42. And be it enacted, with regard to such ruinous buildings, so far as relates to the expenses of any such survey and appeal, putting up such hoard, repairing, pulling down, and securing such buildings, and selling the materials, beyond the amount thereof which shall have been satisfied by the application thereto of the proceeds of the materials, that if the moneys arising from such sale be insufficient to repay all such expenses, then from time to time such deficiency shall be paid by the owner of every such building, being the person entitled to the immediate possession thereof, if known; and that if, on demand thereof, such owner fail to pay such deficiency, then

it shall be lawful for the Lord Mayor for the time being, if such ruinous building in question be within the city of London or the liberties thereof, or if elsewhere, for two or more justices of the peace to give the amount thereof by warrant under their hands and seals, by distress and sale of the goods and chattels of such owner, if any such can be found; and that if no such owner can be met with, or being met with, shall not demand pay the said deficiency, and no sufficient distress of the goods and chattels of such owner can be found, then it shall be lawful for the person or persons at any time hereafter occupy any such building, or the ground where the same stood, and he is hereby authorized and required, to pay and deduct the same out of the rent thereof; and that if he neglect or refuse to pay such deficiency, then it shall be lawful for the said Lord Mayor, or two or more such justices of the peace, and they are hereby empowered and required, to cause the same to be levied by distress the sale of the goods and chattels of any occupier of the premises, together with the costs of every such distress and sale; and that if the premises be situate within the city of London and its liberties it shall be the duty of the person by whom the same shall be received, and he is hereby required, to pay the amount to the chamberlain, to be by him from time to time placed to the credit of the cash of the said city of London, and if the premises in respect of which such money shall be received or recovered be not situate within the said city of London and the liberties thereof, then to pay the amount received to the overseers of the poor for the time being of the parish or place where the premises shall be situate, to be by them placed to the account of the said parish, in aid of the poor rate of the parish or place.

**Repair of ruinous Chimneys, &c.—Notice—Repairs—Certification of Expenses—Recovery from Owner or Occupier—Partially—Fees and Expenses—Reimbursement of Occupier.**

43. And be it enacted, with regard to ruinous chimneys, roofs, and projections, so far as relates to the repairing thereof, that if a chimney-shaft, chimney-pot or other thing thereon, or the eaves, or parapet or coping, or slates or tiles on the roof, or any projection from the front walls of any building, be in danger of falling, then it shall be the duty of such surveyor and official referees to require the occupier of such building, or if there be no occupier then the owner thereof, to take down or secure the same within thirty-six hours after notice thereof shall have been given; and that if within the time specified such occupier, or some other person interested in such building, do not begin to take down or secure the same, or as soon as the nature of the case will admit complete such taking down or securing of the same, then it shall be the duty of such surveyor to give information thereof to a justice of the peace, and thereupon it shall be the duty of such justice of the peace to proceed to cause such chimney-shaft, chimney-pot or other thing thereon, or the eaves, or parapet or coping, or slates or tiles on the roof, or projection from the front or side wall of such building as shall be considered by such surveyor in danger of falling, to be forthwith taken down or secured; and that if there be no occupier or known owner, then it shall be lawful for such justice to direct that the reasonable expenses, to be certified by the official referees, be paid by the overseers of the parish or place in which the same shall be situated; and that if thereafter the owner of such building become known, or if the building become occupied, then it shall be lawful for the overseers of the poor and they are hereby entitled to recover the amount of such expenses from such owner or from such occupier as in the case of ruinous buildings hereinbefore provided for; and that if within the time limited the owner or some other person interested in such building, do not take down or secure the same, then for every day during which the same shall so remain unrepaired or not sufficiently secured such occupier, or the owner if there be no occupier, shall forfeit and pay a sum not exceeding five pounds; and that such occupier or owner shall also pay the surveyor's fees, and all other costs, charges, and expenses attendant upon any such taking down or securing the building; and all such surveyor's fees, and other costs, charges, and expenses, may be recovered and levied in the same manner as such penalty: provided always, that if the occupier of such building be not bound by virtue of any lease or other instrument to repair, reinstate, or secure the premises, then such occupier is hereby entitled to recover the same payable in respect of such premises all such penalties, costs, charges, and expenses attendant upon or arising out of the taking down or securing, or the repairing or rebuilding the same, as in the case of any other works the costs of which he is hereby required to pay in the first instance.

**Injury by the fall of Chimneys, &c.—Compensation.**

44. And be it enacted, with regard to adjoining buildings, so far as relates to the making good any damage arising from the falling down of parts thereof (except any such part of a party-wall as shall belong to and be used conjointly by the owners or occupiers of the buildings parted thereby), that if at any time any injury or damage be caused to any part of an adjoining building, or to the internal decorations and furniture, goods, wares, and merchandise in such building, by the falling down of any other building, or of any chimney-shaft, chimney-pot, or other thing, then it shall be the duty of the owner of the building from which such part shall fall, and he is hereby bound and required, to reimburse the expense to which the owner or occupier may be put in making good such injury or damage, in like manner as herein directed concerning the reimbursement of the expenses of ruinous party-walls; and such costs shall



be recoverable in the manner hereinafter directed for the recovery of the costs and expenses of executing works in pursuance of this Act.

*Court of Mayor and Aldermen.*

45. And be it enacted, that all the powers and authorities by this Act vested in the mayor and aldermen of the city of London may be lawfully exercised by the Court of Mayor and Aldermen of the said city to be holden in the outer chamber of the Guildhall of the said city according to the custom of the said city.

#### EXPENSES OF WORKS.

*Repayment of Expenses of Works in certain Cases—Recovery of Expenses from adjoining Owners—Delay of Payment.*

46. And for the purpose of reimbursing any building owner for the expense of works incurred in respect of any party structure, be it enacted, with regard to the following works, so far as relates to the reimbursement by the adjoining owner of expenses incurred by the building owner in respect of any party structure built to part the buildings or premises belonging to other owners from the buildings or premises belonging to himself, that is to say,

First, with regard to any party-wall hereafter built on the line of junction of any two buildings; and, Second, with regard to any party-wall hereafter built on the line of junction of any building and any vacant ground or of vacant premises belonging to different owners or occupiers; and,

Third, with regard to any ruinous and defective party-wall pulled down and rebuilt, either with the consent of the adjoining owner, or in pursuance of the condemnation thereof according to this Act, except a party-wall condemned on account of the injury done thereby by any building owner, and the expenses of which and of other incidental works the official referees shall have awarded to be paid by such building owner by virtue of the provision in that behalf; and,

Fourth, with regard to any party-wall or timber partitions between any two or more buildings, pulled down, and a party-wall built in lieu thereof; and,

Fifth, with regard to a new party wall or party-arch built in lieu of any party-wall or party-arch between intermixed properties pulled down, either with the consent of the adjoining owner, or in pursuance of the condemnation of such party-wall or party-arch; and,

Sixth, with regard to any party-wall built on the site of a party-fence or party-fence-wall, and used otherwise than as a party-fence-wall by the person who shall not have built the same; and,

Seventh, with regard to every other case of reimbursement in respect of any party structure,

That if the party structure be built in the manner, and of the materials, and of the thicknesses of such structure as required by this Act in reference thereto, then it shall be lawful for the building owner at whose expense such work shall have been executed to claim and he is hereby entitled to be paid, and to recover from the person who is entitled to the immediate possession of the adjoining building or ground, or who is in the immediate occupation thereof, the following compensations; that is to say,

If a new party-wall or party-arch built on the line of junction by one owner be made use of, either wholly or partially, by the adjoining owner, then the sum of money proportionate to the value of so much of such party structure so made use of; and,

If chimney-jambs, chimney-breasts and flues, have been set up in any party-wall, in pursuance of the instructions of the owner of any vacant ground adjoining to the same, then a sum equal to the value thereof; and,

If an unsound party-wall or other party structure be pulled down and rebuilt, then a sum of money equal to a proper proportion of the value of the new party structure, deduction being made for adue proportion of the old materials, and also a proportionate part of all expenses which shall be necessary for pulling down the old party structure in lieu of which such new party structure shall be built; and,

If a party-wall be built in lieu of a timber partition or other party structure, and be made use of by the adjoining owner, then a sum of money proportionate to the value of so much of such new party-wall as shall be so made use of, and also a proportionate part of all expenses which shall be necessary for pulling down the old timber partition or other party structure; and,

If a party-wall or party-arch already built or hereafter rebuilt be used by any adjoining owner, then a sum of money proportionate to the value of so much of such party structure as the adjoining owner shall use, deduction being made, where proper, for the value of old materials;

And in every case the whole or the reasonable expenses of the shoring up the adjoining building, and of removing any goods, furniture, or other things therein, and of pulling down any wainscot or partition thereof;

And also such surveyor's fees and any other fees payable in respect of any acts performed by the official referees, and also such other costs (if any) as may have been awarded by the official referees as aforesaid in any of the cases hereby provided for: And until such expenses shall be so paid every person at whose expense such party structure shall have been built is hereby entitled to and shall be possessed of the sole property thereof, and of the ground whereon it stands, and the same shall be vested entirely in the person at whose expense such party structure shall have been built.

*Recovery of Costs of building—Account—Data of Account—Examination of Accounts by Official Referees—Disapproval—Approval and Demand of Payment—Recovery of Amount.*

47. And be it enacted, with regard to the costs of

all the works which shall be executed under this Act, incurred either by an owner or by an occupier, either on behalf of the owners of the same premises or on behalf of the owner of the adjoining premises, so far as relates to the recovery thereof, that within twenty-one days after the completion of the work it shall be the duty of the person by whom such expense shall have been incurred to deliver to the adjoining owner of the building or premises in respect of which such expense shall have been incurred an account in writing of the expenses of the work, including all preliminary and incidental operations, and also if the work shall have been executed by the authority of the official referees, by virtue of the power hereby provided for supplying the want of consent of owners, then a copy of such account shall also be delivered to the official referees at their office; and that every such account must contain a true account,—

First, of the number of rods and parts of rods of brick-work, and of all digging, and of concrete, stonework, and other requisite materials, and of the labour required in executing so much of the work as the owner of the adjoining building shall be liable to pay, and of the respective prices thereof; and,

Secondly, of any deduction which such adjoining owner shall be entitled to make therefrom on account of the old materials of so much of the wall or other structure pulled down which shall have belonged to him;

And also a true account of the expenses of all other preliminary and incidental operations; and that all such works must be estimated and valued in every such account at such rates and prices as shall from time to time be fixed by the official referees; and that if within ten days from the delivery of such account any party dissatisfied with the proportion of the amount thereof charged to him appeal to the official referees, then upon the receipt thereof, or if in cases of want of due consent as aforesaid, such account be delivered to the official referees as aforesaid, it shall be the duty of the official referees to examine such account, and to certify whether they approve or disapprove of the items thereof, and whether the rates and prices are duly charged, and whether the proportion of the account charged to him appeal to the official referees, and also to appoint how and by whom the expenses of such examination are to be borne, and also to appoint the time or times at which the amount of such account and of such expenses payable by any party are to be paid; and that if they certify their disapproval, or that the charges are not duly made, or the amount fairly apportioned with regard to the party appealing, then before any demand be made or any proceedings be taken thereon, the account must be amended, and again examined by the official referees, and certified as aforesaid; and that if the official referees certify their approval, then at the time or times appointed by the said official referees it shall be lawful for the person entitled to such costs and expenses to demand the amount thereof; and that if, within ten days after the delivering of such account to the party liable to pay the same, such party do not either appeal against such account or pay the same, or if, within ten days after the demand thereof, in conformity with the certificate of the official referees, the amount thereof, together with the costs of the examination of the account as the official referees shall certify, be paid, then it shall be lawful for the person entitled thereto to recover the same, or so much thereof as shall be then due, by the summary proceeding hereby provided.

*Reimbursements of Costs of Works to Occupiers—Discharge and Repayment.*

48. Provided always, and be it enacted, with regard to works executed under this Act, so far as relates to the reimbursement to the occupier of any costs by him paid in respect thereof, that, unless there be some covenant or agreement to the contrary between the parties, it shall be lawful for such occupier and he is hereby entitled to demand the rents due or becoming due from him to his lessor or landlord the amount of any such costs, charges, and expenses payable by his lessor or landlord, and the costs, charges, and expenses of any distress and sale made on him through the default of his lessor or landlord; and that the receipt for such payment shall be a sufficient discharge to any occupier for so much money as he shall have so paid, or which shall have been so levied on his goods and chattels in pursuance of this Act, and shall be allowed by such lessor or landlord in part or full payment (as the case may be) of the rent due to him by such occupier.

*Recovery of Expenses of Buildings—Differences—Determination by Official Referees—Charges—Receipt of Rents—Recovery of Rents—Priority of Right—Limitation of Distress—Continuance of Distress until Payment made.*

49. And be it enacted, with regard to the costs and all other expenses of pulling down, securing, repairing, and rebuilding party structures, or other parts of buildings, according to the provisions of this Act, so far as relates to the recovery thereof amongst the several owners of the premises, that when such costs and expenses shall have been ascertained and paid by the owner upon whom the payment thereof shall have first fallen, then, as to any building or tenement held under any lease or agreement for a lease, or other agreement for the occupation thereof, made before the coming into operation of this Act, it shall be lawful for such owner and he is hereby entitled to recover the same from the persons now bound or liable by law or by any existing contract to maintain and repair such buildings in respect of which such costs and expenses shall have been incurred; but if any dispute or difference arise as to the persons so bound or liable, then every such dispute or difference shall

be referred to the official referees; and that thereupon such official referees shall ascertain and determine the persons bound or liable to pay such costs and expenses, and also in what proportions such costs and expenses are to be paid by the parties liable to pay the same, and their decision shall be final; and that as to any building or tenement to be held under any lease or agreement for a lease, or other agreement for the occupation thereof, made after the coming into operation of this Act, except a lease renewable for ever on a fixed fine or other customary payment, all such costs and expenses shall be charged upon the lessor granting such lease or making such agreement, and not upon any lessee or sub-lessee holding under any such lease or agreement, subject, nevertheless, to any express covenant or agreement made between any such lessor and lessee in that behalf; and in case of such excepted lease such costs and expenses shall be charged upon the lessee instead of the lessor, subject, as aforesaid, to any express covenant or agreement in that behalf between any such lessee and his sub-lessee holding under such lease upon other than a fixed fine or customary payment as aforesaid; and that in default of such costs and expenses being duly paid it shall be lawful for the party to whom the same shall be payable and he is hereby entitled to receive from the occupier thereof the rents and profits of such building or tenement, and for that purpose to give notice to such occupier to pay over to him such rents and profits; and that thereupon, if such occupier fail to pay such rent and profits accordingly, then it shall be lawful for the person to whom such costs and expenses shall be payable to recover the same from such occupier by the summary proceeding hereby provided, in such proportions and at such times as shall be appointed by the award of the said official referees in that behalf; and that after such notice shall be given, and before such costs and expenses shall be paid, it shall not be lawful for any person otherwise entitled to receive such rents and profits and he is hereby disabled from bringing any action, and from taking any proceeding at law or in equity to recover such rents and profits: provided always, that if on the hearing of the application for the warrant to levy such costs and expenses by distress, according to the provision of this Act in that behalf, the occupier, not being an owner, shew that he is not bound to pay in respect of such building or tenement any rent or profit, or that the amount of the rent or profit payable by him is not sufficient, then it shall not be lawful to issue such warrant, if there be no rent due or accruing, or if there be rent due or accruing, then to the extent only of the amount of such rent; and that if such costs and expenses or any part thereof remain unpaid, and if the same or any future occupier be or become liable to pay rent in respect of such building or tenement, then, from time to time until the same be paid, it shall be lawful to levy the same by distress, according to the provisions of this Act in that behalf, upon the same or any such future occupier.

*Official Referees to determine Contributions—Proportional Contributions—Decision of Official Referees—Recovery of Excess paid by any Contributor.*

50. And be it enacted, with regard to such costs and expenses of works executed under this Act, so far as relates to contribution thereto by persons bound or liable to make contribution, that for the purpose of enabling the party upon whom the payment of such costs and expenses shall fall, either in the first instance or subsequently, to obtain contribution from other persons, being owners according to the meaning of this Act, in like degree, and so bound or liable to make contribution, it shall be lawful for every such first-mentioned person, whether he be freeholder, copyholder, leaseholder, mortgagee in possession, and whatever may be his interest, or the nature and extent of such his interest, and whether he hold in his own right or in right of others, and whatever may be the kinds and degrees of their respective interests, and he is hereby entitled to a contribution from every other person having as owner an interest in the premises, of whatever kind or degree, which contribution is to be computed according to the amount of his interest in proportion to that of other persons interested, so far as such persons may be known, or can be reached by process of any court of law or equity; and that it shall be lawful for any party so interested and he is hereby entitled to require the official referees to settle and determine the same by their award, and their decision shall be final; and that if the person upon whom the payment of such costs and expenses shall have fallen have paid in respect of the interest of another or others, either unknown or who could not be reached by process of any court of law or equity, more than his own just proportion, then, on the production of such award, duly made, signed, and sealed, it shall be lawful for such person to have and exercise against other parties against whom such award shall be made and he is hereby entitled to the like remedies to compel payment of money as are hereby given for compelling the first payment of such costs and charges of such expenses.

#### DRAINAGE OF HOUSES.

*Making of Drains according to Schedule (H.)—Penalties—Communications with Sewers—Saving Powers, &c. of Commissioners of Sewers.*

51. And now, for the purpose of facilitating the improvement of the drainage of houses, be it enacted, with regard to the drains, cesspools, and privies to be built or made, or to be altered, or to be pulled down, or to be built or made hereafter built, so far as relates to the making thereof, that from the passing of this Act all the conditions, regulations, and directions contained in the Schedule (H.) to this Act annexed shall be duly observed and performed; and that if any person offend in respect thereof he shall be liable to all the penalties and forfeitures by this Act imposed in re-



pect of any buildings either built contrary thereto, or without due notice to the surveyor appointed in pursuance of this Act to inspect such buildings; provided always, with regard to such drains, so far as relates to the communication thereof with the sewers under the jurisdiction of the Commissioners of Sewers, that unless the regulations of such commissioners now or hereafter in force be repugnant to the directions contained in such schedule, and to the extent to which such regulations are not so repugnant, it shall be the duty of every person and he is hereby required to make such drains to conform to such regulations; and that with regard to such drains, except so far as is hereby otherwise provided, all the rights, powers, jurisdiction, and authority vested in any such commissioners shall be as valid and effectual as if this Act had not been passed.

**STREETS AND ALLEYS.  
Width thereof—Penalties.**

52. And now, for the purpose of making provision concerning streets and other ways of the metropolis, be it enacted, with regard to such streets and other ways hereafter formed, so far as relates to securing a sufficient width thereof, that from the passing of this Act all the conditions, regulations, and directions contained in the Schedule (I.) to this Act annexed shall be duly observed and performed; and that if any person offend in respect thereof he shall be liable to all the penalties and forfeitures by this Act imposed in respect of any buildings, either built contrary thereto, or without due notice to the surveyor appointed in pursuance of this Act to inspect such buildings.

**BUILDINGS, USE THEREOF.**

**Occupation of Cellars or Rooms unfit for Duellings—Penalty—Report by Overseers of Poor as to Number and Situation of Duellings—Notice thereon by Official Referees to Owners and Occupiers—District Surveyors to observe Directions of Official Referees.**

53. And now, for the purpose of discouraging and prohibiting the use of buildings unfit for dwellings, be it enacted, with regard to every building of the first or dwelling-house class, whether already or hereafter built, so far as relates to the occupation thereof, or to the occupation of any underground room or cellar thereof, that from and after the first day of July, one thousand eight hundred and forty-six it shall not be lawful to let separately to hire as a dwelling any such room or cellar not constructed according to the rules specified in the schedule (K.) to this Act annexed, nor to occupy or suffer it to be occupied as such, nor to let, hire, occupy, or suffer to be occupied any such room or cellar built underground for any purpose (except for a warehouse or storeroom); and that if any person wilfully let or suffer to be occupied in manner aforesaid any underground cellar or room, contrary to the provisions of this Act, then, on conviction thereof before two justices of the peace, such person shall be liable to forfeit for every day during which such cellar or room shall be so occupied a sum not exceeding twenty shillings; and one-half of such penalty shall go to the person who shall sue for the same, and the other half to the poor of the parish in which such unlawfully occupied cellar or room shall be situated; and that on or before the first day of January, one thousand eight hundred and forty-five, it shall be the duty of the overseers of the poor of every parish hereby required to report to the official referees the number and situation of the dwellings within their respective parishes of which any underground room or cellar shall be so occupied, and that thereupon it shall be the duty of the official referees and they are hereby empowered to direct such notice to be given to the owners of such dwellings, and such owners shall appear to such official referees to be best calculated to give to such owners or occupiers full knowledge of the existence, nature, and consequences of this enactment; and that it shall be the duty of the district surveyors and they are hereby required to give full effect to the directions of such official referees in this behalf.

**Buildings near dangerous Businesses as to Fire—Distance from Buildings—New Businesses—Prohibition after Twenty Years—Fifty Pounds Penalty, and Costs—Costs—Distress, or Imprisonment.**

54. And now, for the purpose of making provision concerning businesses dangerous in respect of fire or explosion, be it enacted, with regard to the following businesses (that is to say), the manufacture of gunpowder or of detonating powder, or of matches ignitable by friction or otherwise, or other substances liable to sudden explosion, inflammation, or ignition, or of vitriol, or of turpentine, or of naphtha, or of varnish, or of fireworks, or painted table-covers, and any other manufacture dangerous on account of the liability of the materials or substances employed therein to cause sudden fire or explosion, so far as relates to the erection of buildings in the neighbourhood of the place where any such business is carried on, and so far as relates to the carrying on of any such business in the neighbourhood of public ways or buildings, that it shall not be lawful hereafter to erect any building of any class nearer than fifty feet from any building which shall be in use for any such dangerous business; but if a building already existing within fifty feet from any such building be hereafter pulled down, and so destroyed by tempest, such building may be rebuilt; and that it shall not be lawful for any person to establish or newly carry on any such business, either in any building or vault or in the open air, at a less distance than forty feet from any public way, or than fifty feet from any other building, or any vacant ground belonging to any other person than his landlord; and that if any such business be now carried on in any situation within such distances, then from the expiration of the period of twenty years next after the

passing of this Act it shall not be lawful to continue to carry on such business in such situations; and that if any person erect any building in the neighbourhood of any such business contrary to this Act, then, on conviction thereof before two justices, he shall forfeit a sum not exceeding fifty pounds for every day during which such building shall so remain near to such dangerous business; or if any person establish anew any such business, or carry on any such business contrary to this Act, then, on conviction thereof before two justices, such person shall be liable to forfeit for every day during which such business shall be so carried on a sum not exceeding fifty pounds, as the said justices shall determine, and that it shall be lawful for the justices also to award to the prosecutor such costs as shall be deemed reasonable; and that if the offender either fail or refuse to pay such penalty and costs immediately after such conviction, then they may be levied by distress of the goods and chattels of the person convicted; or if there be no such distress, then such person shall be committed to the common goal or house of correction for any time not exceeding six months, at the discretion of such justices, and that by warrant under the hands and seals of two or more justices of the peace.

**Buildings near noxious Businesses as regards Health—Distance from Buildings—New Businesses—Prohibition after Thirty Years—Fifty Pounds Penalty and Costs—Distress, or Imprisonment.**

55. And now, for the purpose of making provision concerning businesses offensive or noxious, be it enacted, with regard to the following businesses, that is to say, blood-boiler, bone-boiler, fellmonger, slaughterer of cattle, sheep, or horses, soap-boiler, tallow-melter, tripe-boiler, and any other like business offensive or noxious, so far as relates to the erection of buildings in the neighbourhood of any such business, and so far as relates to the carrying on of any such business in the neighbourhood of any public way, or of other buildings of the first or dwelling-house class, that it shall not be lawful hereafter to erect any buildings of the first or dwelling-house class nearer to than fifty feet from any building which shall be in use for any such offensive or noxious business; but if a building already existing within fifty feet from any such business be hereafter pulled down, or destroyed by tempest, such building may be rebuilt; and that it shall not be lawful for any person to establish or newly carry on any such business, either in any building or vault or in the open air, at a less distance than forty feet from any public way, or than fifty feet from any other such buildings of the first or dwelling-house class; and that if any such business be now carried on in any situation within such distances, then, from the expiration of the period of thirty years next after the passing of this Act, it shall cease to be lawful to continue to carry on such business in such situation, save as is hereinafter provided; and that if any person erect any building in the neighbourhood of any such business contrary to this Act, then, on conviction thereof before two justices, he shall forfeit a sum not exceeding fifty pounds for every day during which such building shall remain near to such offensive or noxious business; or if any person establish anew any such business, or carry on any such business contrary to this Act, then, on conviction thereof before two justices, such person is hereby made liable to forfeit for every day during which such business shall be carried on a sum not exceeding fifty pounds, as the said justices shall determine, and that it shall be lawful for the justices also to award to the prosecutor such costs as shall be deemed reasonable; and that if the offender either fail or refuse to pay such penalty and costs immediately after such conviction, then they may be levied by distress of the goods and chattels of the person convicted; or if there be no such distress, then such person shall be committed to the common goal or house of correction for any time not exceeding six months, at the discretion of such justices, and that by warrant under the hands and seals of two or more justices of the peace.

**The Penalty herein-before imposed to be enforceable only at a Special Session—Use of Means to mitigate Noxiousness of Businesses—Adoption of Means to mitigate, after Conviction—Mitigation of Penalty by Superior Courts.**

56. Provided always, and be it enacted, with regard to any such offensive or noxious business, whether such business be now carried on at a less distance than forty feet from any public way, or than fifty feet from any other building, or any vacant ground, or at a greater distance, so as to cause danger or annoyance, so far as relates to the mitigation of any penalty or punishment for unlawfully carrying on thereof, that every such penalty herein-before imposed shall be enforceable only at a special session of the peace summoned for that purpose, or on an appeal as hereinafter provided, or according to the provisions of this Act; and that, notwithstanding the said term of thirty years shall have expired, if any party charged with carrying on such business shew that in carrying on such business all the means then known to be available for mitigating the effect of such business in any such respect have been adopted, then it shall be lawful for such justices, whether at a petty session or aforesaid, or on appeal, or on trial by jury, as hereinafter provided, that the party carrying on any such business shall have made due endeavours to carry on the same

with a view to mitigate, so far as possible, the effects of such business, then, although he hath not adopted all or the best means available for the purpose, yet it shall be lawful for such justices assembled and they are hereby empowered to suspend the execution of their order or determination, upon condition that within a reasonable time, to be named, the party convicted do adopt such other or better means as to the said justices shall seem fit, or before passing final sentence, and without consulting the prosecutor, to make such order touching the carrying on of such business as shall be by the said court thought expedient for preventing the nuisance in future; provided always, that if the matter in respect of which such penalty shall be incurred come before any superior court it shall be lawful for such court to exercise such power of mitigating such penalty, or of suspending the execution of any judgment, order, or determination in the matter, or to make such order touching the carrying on of such business, as to the court shall seem fit in the case.

**Conviction and Appeal as to certain Trades not specified—Recognizances—Sessions—Proceedings.**

57. And be it enacted, with regard to any business offensive, noxious, or dangerous, and with regard to any building erected or continued within any such distance as aforesaid from any such business dangerous, noxious, or offensive, so far as relates to a conviction in respect of any such business, and to an appeal from such conviction, that if any person be dissatisfied with the decision of such justices, and if, within four days after such decision, notice be given to the party appealed against, by or on behalf of such person, of his intention to appeal, and if he enter into a recognizance, with two sufficient securities, conditioned to try such appeal, and to abide the order of the court, and to pay to the party appealed against the costs of such appeal, then it shall be lawful for such party so dissatisfied to appeal against such conviction to the justices of the peace at their general Quarter Sessions of the peace to be holden within four months after such conviction for the place in which such premises shall be situated; and that if the premises be situate within the City of London and liberties thereof, then the appeal must be made to the Quarter Sessions thereof, or if the premises be situate in the counties of Middlesex, Kent, or Surrey, or in the City and the liberties of Westminster, or in the liberties of her Majesty's Tower of London, then to the Quarter Sessions thereof respectively, as the case shall be; and that if within the above-mentioned period such appellant shall have entered into such recognizance as herein required, and if within one month thereafter he give notice of the grounds of such appeal, then it shall be lawful for such justices and they are hereby empowered to proceed to hear and examine on oath into the causes and matters of such appeal (which oath they are hereby empowered to administer), and to determine the same, and to award such costs to be paid by the said parties as they think proper; and the order, judgment, and determination of the said justices in their respective sessions shall be binding and conclusive upon all parties.

**Trial by Jury at Quarter Sessions—Summoning of a Jury—6 G. 4, c. 50—Witnesses—View of the Premises—Verdict of Jury—Judgment according to Verdict, and Judgment to be binding.**

58. And be it enacted, that if before conviction by two such justices the party complained against desire to have the matter tried by a jury, and enter into a recognizance to try such matter without delay, and to pay all costs of trial if a verdict be found against him, then such matter may be tried at the next practicable Court of Quarter Sessions, or whensoever the Court shall appear; and that if the application of such party, it shall be lawful for the said Court of Quarter Sessions and they are hereby authorized and required to issue their warrant or precept to the sheriff or other proper officer (as the case may be), requiring him to return a competent number of persons qualified to serve on juries according to the provisions of an Act made in the sixth year of the reign of his late Majesty King George the Fourth, "for consolidating and amending the laws relative to jurors and juries;" and that it shall be lawful for the said Court of Quarter Sessions and they are hereby authorized and empowered, by precept, from time to time as occasion may require, to call before them respectively every person who shall be brought before them, or to summon a witness before them on oath concerning the premises; and that if the said court think fit it shall be lawful for them and they are hereby empowered to authorize the said jury to view the place in question in such manner as they shall direct, and to command the attendance of such jury, and of all such witnesses and parties as shall be necessary or proper for the application of such party, and that the verdict so concluded; and that the said jury shall inquire and try, and determine by their verdict, whether the business in question be offensive or noxious, and whether the party in question have done any act whereby the penalty hereby imposed in respect thereof has been incurred; and that, subject to the power hereinafter conferred, that mitigating such penalty, or suspending their judgment, order, or determination thereon, or making such order touching the carrying on of the business aforesaid, the said Court of Quarter Sessions shall give judgment according to such verdict, and shall award the penalty (if any incurred) by the defendant, and shall and may (if they see fit) award to either of the parties such costs as they may deem reasonable, which verdict, and the judgment, award, order, or determination thereupon, shall be binding and conclusive.



*Appeals to Quarter Sessions for Survey and Kent: to Sessions at Southwark: to Sessions at Greenwich—Further Meetings—Adjournments.*

59. And be it enacted, with regard to any appeal in respect of a conviction for carrying on any such dangerous, offensive, or noxious business, so far as relates to the place where such appeal is to be heard, that the appeal shall be heard at the Quarter Sessions of the peace for the county of Surrey or the county of Kent, then the jury (if any) to be impanelled in pursuance of this Act, and all parties required to attend the Quarter Sessions for the said counties pursuant to such application, shall be impanelled and required to attend at some general or special adjournment of the said Quarter Sessions to be held within six weeks next after the original sessions; and that if the matter relate to the county of Surrey, then such adjournment shall be to some convenient place in the borough of Southwark in the said county; and that if the matter relate to the county of Kent, then such adjournment shall be to some convenient place in the borough of Greenwich in the said county; and such times and places shall be appointed by the justices of the said counties respectively assembled at the said Quarter Sessions, and from time to time every further meeting of the said sessions, for any thing to be done upon such application, shall be appointed at or within the space of three weeks from the last meeting; and that from time to time it shall be lawful for the justices of the peace for the said counties of Surrey and Kent respectively, and they respectively are hereby empowered and required, to make such adjournment and hold such sessions as there shall be occasion.

*Common Law and Statutory Remedies not affected.*  
60. Provided always, and be it declared, with regard to any business which is contrary to any existing Act of Parliament otherwise contrary to law, so far as relates to the operation of this Act in that behalf, that notwithstanding any thing in this Act contained, this Act shall not be deemed to authorize any person to carry on any such business either within such district or without such district, which is in any manner contrary to any public, local, or private Act of Parliament, or otherwise contrary to law; nor to affect, abridge, or restrain the right, the duty, or the power of any person, whether private person or public officer, to prosecute, either civilly or criminally, any person who shall carry on within the limits of this Act any offensive, noxious, or dangerous business.

*Regulation or Removal of Trades deemed Nuisances by the Purchase of a Quota in Council—Order for Removal—Compensation—4 & 5 Vict. c. 12—Unlawful to continue such Trades after Purchase.*

61. And further, for the regulation or removal of any offensive, noxious, or dangerous business now carried on, be it enacted, with regard to any such business, so far as relates to the purchase thereof, or of the premises wherein it shall be carried on, that if two-thirds in number of the inhabitant householders of any parish in which such business shall be carried on present a memorial to her Majesty in Council, stating the existence of such offensive, noxious, or dangerous business in such parish or the neighbourhood thereof, and praying the removal of such business therefrom, and thereby engaging to provide compensation to the persons carrying on the same, either as the expense of the removal, or by means of a rate to be levied on the inhabitants of the said parish, or such part thereof as may be affected by such business, then it shall be lawful for her Majesty to refer the matter to the Lords of the Committee of Privy Council for Trade to consider the character of such business, whether it be offensive, noxious, or dangerous; and if it appear to be so, and that there are no means of rendering it otherwise by the adoption of methods available, without unreasonable sacrifice on the part of the person by whom it is carried on, then it shall be lawful for her Majesty, by order in Council, to direct that the removal of such business may be purchased, either at the expense of the memorialists or by means of a rate as aforesaid, as to her Majesty shall seem fit, and also to direct the sheriff of the county or other proper person in the parish or liberty in which such business is carried on to summon a jury, according to the provisions of an Act made and passed in the fourth year of the reign of her present Majesty, intitled "An Act to enable her Majesty's Commissioners of Woods to make a new Street from Coventry-street to Long Acre, and for other Improvements in the Metropolis," to determine what compensation shall be paid to the party carrying on such business for the removal thereof, and to the owner and occupier of the premises for the restriction of the use of his buildings for such purpose; and that if within three months after the verdict of such jury shall be given, and judgment thereon, the inhabitants of such parish or neighbourhood pay or tender such compensation, then within three months from the payment or tender of such compensation it shall cease to be lawful for the party carrying on such business to continue the same, and for any owner or occupier thereof either to carry on or to permit to be carried on such business in the same or any part of the same premises.

*Funds for defraying Compensation—Levy of Rate.*  
62. And be it enacted, with regard to the funds for defraying such compensation, so far as relates to the raising thereof, that if her Majesty shall by such order direct the compensation to be paid by means of a rate, then it shall be lawful for the overseers of the parish to raise such sum as shall be necessary, either as a separate rate in the nature of poor's rate, or as part of the poor's rate, on the inhabitants at large of such parish; or if in pursuance of the memorial of the inhabitants of such part of the said parish

as shall be affected by the said business it be appointed by such order in Council that such last-mentioned inhabitants do defray such compensation, then it shall be lawful for the said overseers to raise such sum as shall be necessary for that purpose; and that if such rate be so levied either on the inhabitants at large of such parish, or on the inhabitants of such part thereof as aforesaid, then such rate may be levied and recovered as poor's rates are leviable and recoverable.

*Exemption of public Gas Works—Extension or Substitution of Works—Distilleries.*

63. Provided always, and be it enacted, with regard to public gas works and other works heretofore established within the limits of this Act, so far as relates to the operation of the provisions of this Act in reference to businesses dangerous in respect of fire or explosion, or offensive or noxious, that such provisions shall not be deemed to apply to any such public gas works; and that if by any Act of Parliament now in force relating to gas companies to which such works belong, any extension of such works, or any additional works, or any other works, be authorized to be erected or substituted, then such provisions shall not be deemed to apply to any such extension, addition, or substitution within the limits of the district now lighted from such first-mentioned works; and that such provisions shall not be deemed to apply to any premises entered or used for the purpose of distillation or the rectification of spirits under the survey of the Commissioners of Excise or their officers.

*SURVEYORS, THEIR DISTRICTS AND DUTIES.*

*Appointment of Districts.*

64. And now, for the purpose of dividing the district to which this Act is to apply into several small districts, for the convenient execution thereof of this Act, and for appointing competent surveyors for superintending the same in each such district, and for regulating the duties of their office, be it enacted, with regard to such districts, so far as relates to the appointment and alteration thereof, that at any time after this Act shall come into operation, and from time to time, it shall be lawful for the Lord Mayor and Aldermen of the city of London, with reference to the city of London and the liberties thereof, and for the justices of the peace for the county of Middlesex, the county of Surrey, the county of Kent, the city and liberties of Westminster, and the liberty of her Majesty's Tower of London, in their General Quarter Sessions respectively, or any adjournment thereof, with reference to their respective counties, city, and liberties, and they respectively are hereby empowered, but subject, nevertheless, to the consent of one of her Majesty's principal Secretaries of State, to appoint the districts to which the respective places within their jurisdiction shall belong for the purposes of this Act, and to unite, enlarge, and alter such districts for the more convenient distribution of the business.

*Appointment of Surveyors.*

65. And be it enacted, with regard to the surveyors to be assigned to such districts for the purposes of this Act, so far as relates to their appointment, that at any time after this Act shall come into operation, and from time to time, it shall be lawful for the said Lord Mayor and Aldermen of the city of London, with reference to the city of London and the liberties thereof, and for the said justices of the peace in their General Quarter Sessions respectively, or any adjournment thereof, with reference to their respective counties, and they are hereby required, but subject, nevertheless, to the consent of one of her Majesty's principal Secretaries of State, to nominate and appoint as surveyors such and so many discreet persons, of the full age of thirty years, and properly educated and skilled in the art and practice of building, as they the said Lord Mayor and Aldermen and the said justices shall think fit.

*Practical Qualifications of Surveyors: Examiners—Examiners to prescribe Rules—Production of Certificates of Examination.*

66. And be it enacted, with regard to such surveyors to be hereafter appointed under this Act, except present district surveyors appointed to new districts, so far as relates to the ensuring the possession of due scientific and practical qualifications, that it shall be lawful for the Commissioners of Works and Buildings and they are hereby empowered to appoint three or more architects, surveyors, or builders to examine, together with the said official referees, any persons who may present themselves to be examined for the purpose of obtaining a certificate of qualification, with the view of becoming candidates for the office of surveyors of metropolitan buildings of any district within the limits of this Act; and that for that purpose it shall be lawful for such examiners from time to time to appoint such times as to them may seem fit, and from time to time to prescribe such course of examination as to them may seem fit, and to make any other rules for the regulation of such examination, and the granting of certificates in respect thereof, subject, nevertheless, to the approval of the Commissioners of Works and Buildings; and that when such rules shall have been registered by the registrar of metropolitan buildings they shall continue to be in force until they shall be amended, altered, or rescinded by other rules to be made by such examiners and so registered as aforesaid; and that unless, one week before the election of a surveyor for any district created by this Act, or for any district in respect of which the office of surveyor may become vacant, or when such rules shall have been registered by the registrar of metropolitan buildings they shall continue to be in force until they shall be amended, altered, or rescinded by other rules to be made by such examiners and so registered as aforesaid; and that he was thereby found to be duly qualified for such office, to the town clerk of the city of London, or to the clerk of the peace for the county, city, or liberty, it shall not be lawful for any justices by this

Act empowered to appoint surveyors to appoint such person to be such surveyor, and that if such person be so appointed his election to such office shall be void.

*Tenure of Office.*

67. And be it enacted, with regard to such surveyors, so far as relates to the tenure of their office, that it shall be lawful for every such surveyor and he is hereby entitled to hold such his office of surveyor during the pleasure only of the said Lord Mayor and Aldermen and of the said justices respectively.

*Functions generally.*

68. And be it enacted, with regard to such surveyors, so far as relates to their functions generally, that it shall be the duty of every such surveyor, and he is hereby required,—

To see that all the rules and directions of the Act are well and truly observed in and throughout his district; and for that purpose, To proceed from time to time, in due course, upon the receipt of any notice, or if from ignorance or neglect, or from any other circumstance, notice of any work intended to be done have not been given, then upon such work being observed by or being made known to him, to inspect the works intended to be done, or which shall have been commenced, and to cause all the rules and directions of this Act in respect thereof to be strictly observed; and also

To attend and perform every thing required of him by this Act, whether with or without notice; and also

To inspect ruinous buildings and projections in danger, at all times when needful, and to take all necessary measures thereupon; and also

To survey all buildings built, rebuilt, enlarged, or altered by or under the superintendence of a district surveyor within any other district to which he shall be appointed by the official referees for that purpose; and also

To cause a book for registering all notices, informations, and complaints to be at all times kept at his office, and to enter in such book every notice, information, or complaint which shall be delivered or made to him, and any proceeding thereon by him taken.

*Disqualifications.*

69. And be it enacted, with regard to such surveyors, so far as relates to their disqualifications, that during the time that any such person shall act as a justice of the peace for the county in which his district shall be situated it shall not be lawful for him and he is hereby disqualified from holding the office of a surveyor or of deputy or an assistant surveyor for any district under this Act.

*Continuance of present Surveyors. 14 G. 3, c. 78—Subject to this Act.*

70. And be it enacted, with regard to the surveyors who at the time of this Act coming into operation shall have been appointed under the Act of the fourth year of the reign of King George the Third, mentioned in the schedule (A.) hereto annexed, so far as relates to their continuance in office, and the application of this Act to them, that until they shall be removed it shall be lawful for them and they are hereby entitled to continue to be the surveyors for the purposes of this Act, and for the districts assigned to them at the time this Act shall come into operation, but subject to such alteration of such districts as may be made by virtue of any power in that behalf, and to act in all respects as if they had been appointed under this Act; and that every provision in this Act applicable to district surveyors, so far as relates to the exercise of the office of surveyor, and to their remuneration in that behalf, shall apply to them.

*Declaration of official Fidelity—Penalty for acting before Declaration made.*

71. And be it enacted, with regard to every surveyor hereafter appointed, so far as relates to making a declaration of official fidelity, that before any such surveyor shall act in pursuance of this Act it shall be his duty and he is hereby required to make a declaration of official fidelity, which must be administered by the said Lord Mayor and Aldermen in their Court of Aldermen, or by the said justices of the peace in their respective General Quarter Sessions, and must be in the form or to the effect following; that is to say,

"I, A.B., being one of the surveyors appointed in pursuance of an Act made and passed in the eighth year of the reign of her Majesty Queen Victoria, intituled, 'An Act for regulating the Construction and the Use of Buildings in the Metropolis and its Neighbourhood' and commonly called the Metropolitan Buildings Act, do solemnly declare, that I will diligently, faithfully, and impartially perform the duties of my office, and to the utmost of my power, skill, and ability endeavour to cause the several provisions of the said Act to be strictly observed, and that without favour or affection, prejudice or malice, to any person whomsoever."

And that if before making such declaration any such surveyor act in pursuance of this Act, then, on conviction thereof, he shall be liable to pay, for every day during which he shall so act before making such declaration, the sum of five pounds.

*Regulation of Duties: Offices—Attendance—Return of Name and Residence.*

72. And be it enacted, with regard to the surveyors, so far as relates to the regulation of their official duties, that it shall be the duty of every surveyor for the city of London and the liberties thereof, and he is hereby required, to have an office at his own expense, in such public situation as shall be approved by the Lord Mayor and Aldermen; and that it shall be the duty of every other surveyor and he is hereby required to have an office, at his own expense, in some central part of the district to which he shall be



appointed, as shall be approved by the justices of the peace in Quarter Sessions within whose jurisdiction he shall act; and that he shall be the duty of every such surveyor and he is hereby required, by himself or by some other person in his behalf, to attend at his office every day (Sundays, Christmas Day, and Good Friday excepted) from ten of the clock in the morning till four of the clock in the afternoon; and that immediately upon his appointment, and from time to time upon every change of his residence or of his place of business, or of either, if he shall be the duty of every surveyor and he is hereby required to make a return to the registrar of metropolitan buildings, and to the overseers of the poor of every parish or place within his district, of his name and place of abode, and the place where such office shall be.

#### DISTRICT SURVEYORS.

##### *Surveyor pro tempore—Duty of Deputy—Fees.*

73. And be it enacted, with regard to such surveyor, so far as relates to the appointment of a deputy or substitute in certain cases, that if any surveyor shall be prevented by illness or any other unavoidable circumstances from attending to the duties of his office, then forthwith it shall be his duty and he is hereby required, but subject to the previous consent and approval of the official referees, to appoint some other surveyor, duly qualified as aforesaid, as his deputy, to perform all such his duties for so long a time as he shall be so prevented from executing them; and that thereupon, during such time as aforesaid, it shall be the duty of such deputy surveyor and he is hereby required to perform all the duties of such surveyor, and that in all respects as if he were the surveyor appointed or confirmed under this Act; and that it shall be lawful for such deputy surveyor and he is hereby entitled to receive the fees payable in respect of the services so performed by him in such district.

##### *Vacancies—Occasional Services—Fees for Services.*

74. And be it enacted, with regard to such surveyors, so far as relates to the filling up of vacancies, that if any vacancy shall happen through the death or removal of any surveyor, then, within one month thereafter, it shall be the duty of the lord mayor and aldermen, or of the justices of the peace in general quarter sessions or any adjournment thereof, as aforesaid, and they are hereby respectively required to appoint a successor as herein directed; and that in the meantime it shall be lawful for the official referees to direct the surveyor of any one or more of the other districts to perform the duties of surveyor for the vacant district, or if no district surveyor can be spared from his own district to appoint some other competent person duly qualified as aforesaid for that purpose; and that every such surveyor is hereby entitled to receive the fees payable in respect of the services so performed by him in such vacant district.

##### *Regulation of Business—Assistant Surveyors—Duties of Assistants—Fees.*

75. And be it enacted, with regard to the surveyors, so far as relates to the regulation of their business, that if it shall appear to the official referees that the district appointed for any surveyor is too extensive for the prompt discharge of his functions, then it shall be their duty to represent such their opinion to the Lord Mayor and aldermen of the City of London, or to the justices of the peace with whom the appointment of a surveyor for that district may rest, and for that purpose to transmit with their letter of representation a transcript of their "Register of Notices," with the results; and that if at any time it appear to such official referees that on account of the pressure of business in any district, or on any other account, the surveyor of that district cannot discharge his duties promptly as regards the builders and others engaged in building operations, and efficiently as regards the purposes of this Act, then it shall be lawful for such official referees, and they are hereby empowered to appoint any other district surveyor to assist the surveyor of such district in the performance of his duties, or if no district surveyor can be spared from his own district, then to appoint some other competent person to give such assistance; and that with regard to all buildings surveyed by such assistant surveyor, and all other acts done by him, it shall be the duty of such assistant surveyor to make returns and to act in all respects as if he had been appointed by the said Lord Mayor and aldermen, or by the said justices, to be the surveyor of such district; and that every such person shall be entitled to receive the fees payable in respect of the services so performed by him.

##### *Superintendence of Surveyors.*

76. And be it enacted, with regard to such surveyors, so far as relates to the supervision of buildings built, rebuilt, enlarged, or altered by or under their professional superintendence, that it shall not be lawful for any such surveyor to survey any such building for the purposes of this Act, but that such building must be surveyed by another district surveyor, or by another surveyor to be appointed by the official referees for that purpose.

##### *Surveyor's Fees—Refusal of Payment—Fees to be paid only for Work done agreeably to Act—Refunding Fees.*

77. And be it enacted, with regard to such surveyors, so far as relates to their remuneration, that upon the expiration of one month after the roof of any building erected and surveyed under this Act shall have been covered in, and all the walls thereof timbers and floors shall have been fixed in their places, and upon the expiration of fourteen days after the completion of any addition, alteration, and repair, and upon the expiration of fourteen days after each special service shall have been performed, and

upon delivering to the owner of the building an account of the fees incurred, and upon tendering a receipt, signed with his christian and surname, and stating the amount of such account, and the work done, it shall be lawful for the surveyor and he is hereby entitled to receive from the builder, or from the owner or from the occupier of the building, for his time and trouble and expenses in causing the rules, regulations, and directions of this Act to be observed, the several fees specified in the schedule of fees (L.) hereto annexed; and that if on tender of such receipt any builder, owner, or occupier who shall become liable to pay any such fee shall refuse to pay the same, then, upon application to any justice of the peace, it shall be lawful for such justice and he is hereby required to summon the party complained of in the first instance, and if he do not appear, or if he fail to satisfy the said justice as to the refusal of payment as aforesaid, it shall be lawful for such justice, and he is hereby required to issue his warrant to levy the amount of such fee by distress and sale of the goods and chattels of the party so refusing, in like manner as poor's rates are by law recoverable, and if such fee be paid by the occupier, he shall be entitled to recover the amount thereof from the owner: Provided always, that if the work in respect of which such fee shall become payable shall have been executed, and he is hereby required to the directions of this Act, then it shall not be lawful for any surveyor to receive such fee; and that if he shall so receive it, then, upon application to the official referees by any party interested in the building in respect of which such work shall have been executed, and upon its appearing that such fee has been received wrongfully, it shall be lawful for such official referees and they are hereby authorized (if they think fit) to order the said surveyor to refund such fees.

##### *Surveyor's Returns—Inspection of Returns—Authentication and Effect of Returns.*

78. And be it enacted, with regard to such surveyors, so far as relates to the return of the business done by them, and to the inspection thereof, that within seven days after the first day of every month, it shall be the duty of every surveyor, and he is hereby required to make a return to the registrar of metropolitan buildings, enumerating therein the number and nature of all the several works executed within the previous month under his supervision, and the fees paid to him for the same, and also a copy of the list or register of notices served upon him, with the results thereof, and to keep in his office a copy of such return; and that if any person shall apply to inspect the same, then on the payment of one shilling it shall be open for inspection at all reasonable times; and with regard to such return, so far as relates to the authentication and effect thereof, that every such return must be signed by such surveyor, and if so signed it shall be deemed to be a certificate that all the works enumerated therein have been done in all respects agreeably to this Act, according to the best of his knowledge and belief, and that they have been duly surveyed by him; but no such return shall be any protection from or hindrance to any future proceedings in respect of any works executed according to the provisions of this Act, though the same may have been done before the making of such return.

##### *Penalty for Extortion, Negligence, or Unfaithfulness—Complaint to Justices—Proceedings thereon—Decision—Incapacitation of Surveyor.*

79. And be it enacted, with regard to every surveyor, so far as relates to the discharge of his duties, that if any surveyor demand or wilfully receive any higher fee than he shall be entitled to under this Act, or if in his capacity of surveyor he receive a fee for any act or omission in respect of which he is not entitled to receive any remuneration, or if he refuse to refund any fee wrongfully received by him in respect whereof the official referees shall be empowered to order that effect, or if at any time he wilfully neglect his duty, or behave himself negligently or unfaithfully in the discharge thereof, then and in every or any such case it shall be lawful for any person to present a complaint in writing under his hand to the lord mayor and aldermen of the city of London, or the court of quarter sessions having jurisdiction over the district for which such surveyor shall act for the time being, at any sessions of the peace, quarter or general, either original, intermediate, or adjourned, and which complaint shall set forth the nature and particulars of the offence charged by the complainant against any such surveyor; and that the said lord mayor and aldermen or court of sessions, as the case may be, shall by order of court appoint a time for the hearing of the said complaint, and a copy of which order and of the said complaint shall be served by or for the said complainant on the said surveyor ten days at the least before the time appointed for the hearing of such complaint; and the said surveyor shall appear before the said lord mayor and aldermen or court of sessions, as the case may be, at the time and place so appointed for hearing the said complaint, to answer the same; and that if, upon the hearing of the complainant and of the surveyor, and the evidence respectively produced by or for them, it shall appear unto the said lord mayor and aldermen or court of sessions, as the case may be, that such complaint is well founded, then it shall be lawful for the said lord mayor and aldermen, or the said court of quarter sessions, as the case may be, and they are hereby respectively required, either to fine such surveyor in such sum of money not exceeding fifty pounds as they shall think fit, or to discharge him forthwith from his said office; and that if for any such cause such surveyor be discharged, he shall be incapable of being appointed a surveyor for the purposes of this Act.

##### *Appointment of Two Official Referees—Tenure of Office—Not to act as Surveyors—Temporary Official Referee.*

80. And now, for the purpose of providing for the appointment of competent official referees to superintend the execution of this Act throughout all the districts to which it is applicable, and also to determine sundry matters in question incident thereto, as well as to exercise, in certain cases, a discretion in the relaxation of the fixed rules and directions of this Act, where the strict observance thereof is impracticable, would defeat the object of this Act, or would needlessly affect with injury the course and operation of this branch of business, be it enacted, with regard to the official referees, so far as relates to their appointment, to their qualifications, and to the tenure of their office, that it shall be lawful for one of her Majesty's principal secretaries of state, and he is hereby empowered to appoint two persons, being of the profession of an architect or surveyor, to be official referees of metropolitan buildings, and from time to time, as he shall think proper, to remove such official referees, and in their place to appoint other persons so qualified; and that while any such person shall so hold the office of official referee it shall not be lawful for such person, and he is hereby expressly prohibited to act as surveyor, either alone or with any partner or by an agent, or to act as an official referee in the case of any building or matter in which he shall act as architect; and that if an official referee be employed as architect as to any building or matter within the limits of this Act, then it shall be the duty of such official referee and he is hereby required to report thereon to the Commissioners of Works and Buildings; and decreed it shall be the duty of such Commissioners of Works and Buildings and they are hereby required to appoint some other competent person to act in conjunction with the other official referee as to such building or matter.

##### *Their Functions generally.*

81. And be it enacted, with regard to such official referees, so far as relates to their functions generally, that it shall be the duty of such official referees and they are hereby required to superintend the execution of this Act by the several district surveyors already existing or hereby authorized to be appointed, and to perform the several matters to them respectively assigned by the provisions of this Act, and to determine all questions referred to them, whether expressly by this Act or at the instance of any one or more of the parties concerned.

##### *Matters of Reference—One Referee may act.*

82. And be it enacted, with regard to the official referees, so far as relates to their jurisdiction, that if any such difference, or dissatisfaction in respect of any matter within the limits of this Act arise between any parties concerned, or between any party and any surveyor, or between any two surveyors, as to any act done or to be done in pursuance of this Act, or as to the effect of the provisions thereof in any case, or as to the mode in which the provisions and directions of this Act are or ought to be carried into effect, and particularly as to whether the requirements implied in terms of qualification applied to sites, to soils, to materials, or to workmanship, or otherwise, and denoting good, sound, fire-proof, fit, proper, or sufficient, are fulfilled in certain cases, or as to the district in which any building, matter, or thing is to be deemed to be situate, especially in cases where such building, matter, or thing is partly in one district and partly in another, or as to the expenses to be borne by the respective owners of premises parted by the same party-walls, or the proportions thereof, or as to the proportions of the expense to be borne by the occupier or by the owners of premises in respect of any work executed, or any other matter whatever, then it shall be lawful for any party concerned and he is hereby entitled to require the official referees to determine such matter, but so that such requisition be made in writing, and that it set forth, either generally or otherwise, the matters in respect of which the determination of the official referees is required; and that the determination of such referees, or of one of such referees, with the assent of the registrar of metropolitan buildings, as to all or any of the points in difference on which such referees shall make their award, and as to the costs, charges, and expenses of such reference, shall be binding on all parties to such reference.

##### *Award and Powers of Referees—Effect of Legal Awards—Effect as to Persons.*

83. And be it enacted, with regard to the official referees, so far as relates to their authority in respect of any reference to them, and to the effect of their award upon the rights and interests of the owners and occupiers of property, that it shall be lawful for such referees and they are hereby empowered to exercise all such powers of arbitrators as they would have had in case they had been appointed under an order of her Majesty's Court of Queen's Bench at Westminster; and that if such award be given in writing, and be sealed by the official seal of the registrar of metropolitan buildings, it shall be as effectual as if made under an order of reference by such court, and shall be enforced by the said court in all respects as if made under an order of such court; and that it shall be binding and conclusive against every person, including the Queen's Majesty, her heirs and successors, claiming any estate, right, title, or any other interest in, to, or out of the said premises or any part thereof, either in possession, reversion, remainder, or expectancy, and against every other person whomsoever.

##### *Revocation of Authority of Official Referees—Not to affect their Award.*

84. And be it enacted, with regard to any reference



to the said official referees, so far as relates to the revocation of their authority, that the power and authority of the official referees shall not be revoked by any party to such reference, without the consent of all parties thereto; and that although any party shall not attend upon such reference it shall be lawful for such official referees to proceed with the reference, and to make their award.

**Taking of Evidence by the Official Referees—Appointment of Time and Place—Compensation for Attendance—Production of Documents—Administration of Oaths—Penalty for False Evidence.**

85. And be it enacted, with regard to such reference, so far as relates to the evidence of any matter thereof, that it shall be lawful for the official referees and they are hereby empowered, by their summons in writing sealed with the seal of office of the registrar of metropolitan buildings, to require the attendance of any person who may be able to give evidence in the matter of any reference to them, and to require by such summons the production of any documents to be mentioned therein; and that if in addition to the service of such summons, an appointment of the time and place of attendance in obedience thereto, signed by one at least of the official referees before whom the attendance is required, be also served either together with or after the service of such summons, then, if the party so summoned do not attend in obedience thereto, such party shall be liable to be proceeded against as for a contempt of court; and that every person whose attendance shall be required shall be entitled to the like conduct money and payment of expenses as for and upon attendance at any trial; and that no person shall be compelled to produce under any such summons any writing or other document that he would not be compelled to produce at a trial, or to attend on more than two consecutive days to be named in such summons; and that it shall be lawful for the official referees and they are hereby respectively authorized and required to administer an oath to such witnesses as may come before them, or, in cases where affirmation is allowed by law instead of an oath, to take their affirmation; and that if upon such oath or affirmation any person making the same wilfully and corruptly give false evidence, then every person so offending shall be deemed to be guilty of perjury.

**Effect of Awards as Evidence.**

86. And be it enacted, with regard to such award, so far as relates to the effect thereof as evidence of the matter thereof, that if on the trial or hearing of any cause or matter in any court of law or equity, or elsewhere, any copy of an award, signed and sealed with the seal of the said registrar, be produced, then it shall be the duty of all judges, justices, and others, and they are hereby required, to receive the same as *prima facie* evidence of the matters therein contained.

**Declaration of Official Fidelity.**

87. And be it enacted, with regard to the official referees, so far as relates to the declaration of official fidelity, that before any official referee shall set in pursuance of his appointment it shall be his duty and he is hereby required to make the following declaration, to be administered by the Chief Baron or any other of the Barons of her Majesty's Court of Exchequer; that is to say,

"I, A. B., do solemnly declare, that I will diligently, faithfully, and impartially execute the duties of an official referee in relation to matters arising under the provisions of the Act of the reign of her Majesty Queen Victoria, intitled *An Act for regulating the Construction and the Use of Buildings in the Metropolis and its Neighbourhood*, and commonly called the Metropolitan Buildings Act."

**Regulation of Business of the Official Referees—Official Referees may delegate Powers.**

88. And be it enacted, with regard to such official referees, so far as relates to the regulation of the business of their office, that when any matter is by this Act required, directed or permitted to be done by the official referees the same may be done by either of them, with the assent of the Registrar of Metropolitan Buildings, unless express provision to the contrary be made, and if done by any one of them with such assent it shall be as valid and effectual as if done by both of them; and that, subject to such restrictions and regulations as may be made in that behalf by the Commissioners of Works and Buildings, it shall be lawful for the official referees to appoint one of their number, under their hands and the seal of the Registrar of Metropolitan Buildings, to make any inquiry or any survey which shall appear to them either necessary or expedient in order to enable them to determine any matters in reference.

**REGISTRAR OF METROPOLITAN BUILDINGS. Appointment of Registrar—Tenure of Office—Rules of Office—Seal of Office—Use of Seal of Office—Report of Objections by Registrars—Authority of Commissioners of Works—Interim Registrars.**

89. And for the purpose of duly recording relaxations of the requisitions of this Act, made in pursuance of the provisions hereof in that behalf, and of providing for the revision from time to time both of such relaxations and requisitions, and of providing against the partial exercise of the powers of this Act, and for the more effectually providing for the due recording of the Acts of the official referees, and for exercising a due control thereon, be it enacted, that it shall be lawful for the Commissioners of Works and Buildings, and they are hereby authorized and required, to appoint a Registrar of Metropolitan Buildings; and that such registrar shall hold his office during the pleasure of the said commissioners; and that, subject to the provisions of this Act, it shall be lawful for the said commissioners to make rules for

regulating the execution of the duties of the office of the said registrar; and that it shall be the duty of such registrar to keep a seal, and to affix such seal to all documents made by the said official referees, and required to be sealed, and to keep all the documents and records relating to the business of their office, and to register the same: Provided always, with regard to such registrar, so far as relates to the affixing the seal of office to any document, that if it shall appear to the said registrar that any such documents are contrary to law, or not complete in any of the requisite forms, or beyond the competence of the said official referees, either with regard to the provisions of this Act, or any rules or regulations prescribed for their guidance by the said Commissioners of Works and Buildings, then it shall be the duty of the said registrar to refuse to affix the seal, and that thereafter, if the said official referees shall so require, it shall be his duty and he is hereby required to report the matter, and the particular grounds and reasons for his refusal, to the said commissioners; and that upon the receipt of such report it shall be lawful for the said commissioners to authorize the said registrar to affix the seal, or to confirm his refusal: Provided always, with regard to such office of registrar, so far as relates to the execution of his duties in certain events, that if such registrar be ill, or otherwise unable to discharge the duties of his said office, or if he be absent, then it shall be lawful for the said Commissioners of Works and Buildings to appoint some other person to act temporarily in his behalf, and to assign to such person such part of the remuneration of the said registrar, or otherwise to remunerate him, as the Lords of the Treasury shall appoint in that behalf.

**Declaration of official Fidelity.**

90. And be it enacted, with regard to the registrar, so far as relates to the declaration of official fidelity, that before any registrar shall set in pursuance of his appointment it shall be his duty and he is hereby required to make the following declaration, to be administered by the Chief Baron or any other of the barons of her Majesty's Court of Exchequer; that is to say,

"I, A. B., do solemnly declare, that I will diligently, faithfully, and impartially execute the duties of registrar in relation to matters arising under the provisions of an Act made and passed in the eighth year of the reign of her Majesty Queen Victoria, intitled *An Act for regulating the Construction and the Use of Buildings in the Metropolis and its Neighbourhood*, and commonly called the Metropolitan Buildings Act."

**Custody and Inspection of Records of Official Referees—Copies of Awards, Certificates, &c.—Authentication of Copy, and Fees therefor.**

91. And be it enacted, with regard to such awards, certificate, and other records of the said official referees, so far as relates to the custody and the inspection thereof, that all such awards, certificates, and other documents relating to the business of their office shall be kept in the office of the registrar of metropolitan buildings; and that if for the purpose of evidence or otherwise, any party require a copy of such award, or certificate, or other document, or to inspect the same, then on payment of the expense thereof, and of such fees as may be appointed in that behalf, it shall be lawful for such party and he is hereby entitled to demand from the registrar an inspection thereof, or a copy thereof or extract therefrom; and that on such payment and demand it shall be the duty of such registrar and he is hereby required to give, under his hand and seal of office, a copy of any such award or any other document to the person so demanding the same.

**Office of Registrar, and Regulation of Business.**

92. And be it enacted, with regard to the registrar of metropolitan buildings, so far as relates to his office or place of business, and to the regulation of the business thereof, that it shall be lawful for the Commissioners of Works and Buildings and they are hereby required to appoint, in some central and convenient situation within the city of London or the city of Westminster, an office for carrying on the business of the registrar of metropolitan buildings, and registering all documents relating to such business; and in such office it shall be the duty of such registrar, and he is hereby required,—

To keep a register of all matters referred to the official referees, and otherwise of all matters which shall come under their cognizance in pursuance of this Act; and also

To keep and preserve all documents connected with the duties of official referees, and also

To receive all notices requiring any act to be done by them, and to file and number them in the order in which they are received,

**Registration of Awards, &c.**

93. And be it enacted, with regard to all the awards and certificates, and all documents relating to the business of the official referees, so far as relates to the registration thereof, that the same shall be registered, not only chronologically in the order in which they are received, but according to the subject matters thereof, and also according to the order of and in relation to the provisions of this Act.

**Remuneration of Official Referees and Registrar.**

94. And be it enacted, with regard to such official referees and registrar, so far as relates to their remuneration, that it shall be lawful for her Majesty to grant to each of such official referees and the said registrar a salary not exceeding one thousand pounds by the year, in four equal quarterly payments; and that if any such official referee or such registrar shall be appointed, or shall die, resign, or be removed from office, in the interval between two quarterly days of payment, then he shall be entitled to a proportionate part of the salary for the period of such interval during which he shall hold such appointment.

**Disqualification of Official Referees and Registrar—Office vacant.**

95. Provided always, and be it enacted, with regard to the said official referees and registrar, so far as relates to their qualifications, that if any person be or become commissioner, receiver, steward, or agent for or on behalf of any owner of houses within the limits of this Act, then such person shall not be eligible to the office either of official referee or of registrar under this Act; and that if after having been appointed thereto he shall become such commissioner, receiver, steward, or agent, then he shall cease to be qualified to hold such office of official referee or registrar, and thereupon such office shall be vacant, without prejudice, nevertheless, to any acts done by any such person in his capacity of official referee or registrar, so far as other persons are affected thereby.

**Funds for defraying Expenses of the Official Referees and Registrar—Nature of Levy.**

96. And forasmuch as the services of such official referees and of such registrar will be employed chiefly on behalf of the localities comprised within the limits of this Act, it is expedient to provide for the payment of a portion of their salaries by means of a county rate, or by a rate in the nature of a county rate, on such localities, in proportion to the assessed value of inhabited houses and buildings therein, or as near thereto as may be; now for that purpose, be it enacted, with regard to such official referees and registrar, so far as relates to the payment of a portion of their salaries out of local funds, that it shall be lawful for the Lord Mayor and Aldermen of the city of London and they are hereby required to direct the chamberlain of the said city, and for the justices of the peace for the several counties of Middlesex, Surrey, and Kent, and they are hereby respectively required, to direct the treasurer of such respective counties to pay, by two half-yearly payments in the months of June and December in every year, to or into the hands of the cashier of the Commissioners of Works and Buildings, on account of the said official referees and of the said registrar, the several sums of money herein-after mentioned, as and by way of contribution to such salaries, that is to say,

The city of London and the liberties and the suburbs thereof	the sum of £ 100
The county of Middlesex	1,000
The county of Surrey	820
The county of Kent	80
	1,500

And it shall be lawful for the said justices and they are hereby empowered and required to cause the same to be levied by a rate upon the several parishes and places within the limits of this Act, in such amounts as to such justices may seem proper, having regard to the assessed value of the inhabited houses and the buildings in such places respectively, in addition to the county rate in respect thereof; and that for the purpose of levying such sums they shall be deemed to be part of the county rate, and leviable by all the ways and means by which a county rate is leviable, and subject in all respects to the legal incidents of a county rate.

**Payments of Official Referees and Registrar out of Consolidated Fund.**

97. And be it enacted, further, with regard to the official referees and registrar, so far as relates to the payment of the balance of their salaries, that such balance shall be payable and paid out of the consolidated fund of the United Kingdom of Great Britain and Ireland.

**Fees of Office, and Application thereof—Balance to Consolidated Fund—Regulations as to Receipt, Custody, and Accounts—Last of Fees to be hung up.**

98. And be it enacted, with regard to the fees payable to the registrar, so far as relates to the appointment thereof, and to the application thereof, that from time to time it shall be lawful for the Commissioners of the Treasury to appoint such fees to be paid in respect of the services to be performed by the said official referees or by the said registrar as shall be deemed requisite to defray the expenses of the said office, or incident to such services, and the salaries or other remuneration of any persons employed under the registrar in the execution of this Act, and with the sanction of the commissioners of the treasury, which the balance, if any, shall be carried to the consolidated fund of the United Kingdom, and be paid accordingly into the Receipt of her Majesty's Exchequer at Westminster; and that it shall be lawful for the Commissioners of the Treasury to regulate the manner in which such fees are to be received, and in which they are to be kept, and in which they are to be accounted for; and that it shall be the duty of the registrar and he is hereby required to cause a list of the fees so appointed by virtue of this Act to be fixed up in some conspicuous part of his office.

**OFFICERS GENERALLY.**

**Appointments of Officers subject to Regulation by any Future Act.**

99. Provided always, and be it enacted, with regard to the officers appointed by or by virtue of this Act, so far as relates to the functions, appointment, and tenure of office of such officers, that any appointments to such offices which shall be made by virtue of this Act shall be made subject to any provision that may be made by any Act of Parliament hereafter to be passed for assigning other duties than those to be imposed by virtue of this Act; and such offices shall be held not only subject to the pleasure of the officers and justices by whom such appointments shall be made, but also subject to the provisions of any future Act of Parliament in relation thereto.

**LEGAL PROCEEDINGS.**

**Informalities in Distress—Action for Damages.**  
100. And now, for the purpose of regulating sundry legal proceedings, be it enacted, with regard to any distress for any sum of money to be recovered by virtue of this Act, so far as relates to the remedying of any damage



occasioned by any irregularity therein or in reference thereto, that, notwithstanding there be any defect of form in the proceedings relative to any such distress, neither the distress itself shall be deemed unlawful, nor shall the party making the same be deemed a trespasser *ab initio*, but that if any irregularity be committed by any party, then, subject to the conditions in this Act prescribed with regard to actions brought for any thing done in pursuance thereof, it shall be lawful for the person aggrieved by such irregularity, and he is hereby entitled to recover full satisfaction for the special damage only, and that by action on the case, and not by any other action whatsoever.

**Tender of Amends—Payment of Compensation into Court.**

101. And be it enacted, with regard to any action for any irregularity or other proceeding, so far as relates to the tender of amends, or payment of money into court in respect thereof, that if before such action be brought, the party who committed or caused to be committed any such irregularity or wrongful proceeding make or cause to be made tender of sufficient amends, then the plaintiff shall not be entitled to recover in such action; and that although such tender shall not have been made, yet if at any time before issue joined the court in which such action shall be depending, or a judge of any of the superior courts, grant leave, then it shall be lawful for the defendant to pay into court any sum of money, by way of compensation or amends, in such manner, and under such regulations as to the payment of costs and the form of pleading, as is and are customary and in force in the said superior courts.

**Recovery of Money under Awards—Distress—Imprisonment.**

102. And be it enacted, with regard to every sum of money by this Act, or by any award or certificate or other proceeding in pursuance of or in accordance with this Act, charged upon any person in respect of any work done in pursuance of or in accordance with this Act, so far as relates to the recovery of such sum of money, that if any party claim any such sum of money, then it shall be lawful for any one justice of the peace to summon the person on whom such sum is alleged to be charged before any two justices, or, if the matter arise within the district of the metropolitan police, then before any police magistrate having jurisdiction within that district; and if such award or certificate be produced, or if such other proceeding be proved by the oath of the party claiming or of any other credible witness, and if it be proved by the oath of such party or other witness that such sum of money is still due, then it shall be lawful for such justices or such police magistrate, and they respectively are hereby required, to issue a warrant to levy the amount thereof, and also the costs of the proceeding, to be levied by distress of the goods and chattels of the person in default; and if such person have no goods and chattels whereon to distress, or if such goods and chattels be insufficient for that purpose, then it shall be lawful for such justices or police magistrate, or for any other justice or police magistrate, to commit the person in default, until the amount of such sum so due, and of such costs, shall have been fully paid, or until the party shall be discharged by or in accordance with the provisions of any Act for the relief and discharge of insolvent debtors.

**Prosecution of Offences—Complaint—Summons—Compulsory Appearance—Distress—Imprisonment.**

103. And be it enacted, with regard to all offences against the provisions of this Act for which no other proceeding is provided, so far as relates to the prosecution thereof, that it shall be lawful to proceed by complaint before any one justice of the peace or before a police magistrate as aforesaid; and that it shall be lawful for such justice to summon the party against whom such complaint shall be made; and that if such party fail to appear in pursuance of such summons, then it shall be lawful for such justice or magistrate, or any other justice or magistrate, to issue a warrant under his hand and seal to compel the appearance of such party; and that on conviction of the offender before two justices or before any police magistrate it shall be the duty of such justices or magistrate and they are hereby required to cause the amount of the penalty hereby imposed in respect of such offence, and of the costs of any such proceeding in respect of such offence, and that if such offender have no goods and chattels whereon to distress, or if they be insufficient for that purpose, then it shall be lawful for such justices or magistrate, or for any other justice or magistrate, and they are hereby empowered, either on failure of such distress, or in the first instance, to commit the offender, for any period not exceeding three months, or till he shall have paid the full amount of such penalty and such costs.

**Removal of Orders, &c. into Superior Courts—Certiorari.**

104. And be it enacted, with regard to every order which shall be made by virtue of or under this Act, and to any other proceeding to be had touching the conviction of any offender against this Act (except proceedings touching the conviction of any person offending for carrying on a trade or business offensive, noxious, or dangerous, contrary to this Act, otherwise than those herein-before specified), that it shall not be lawful for any person to remove such order or other proceeding by certiorari, or any other writ or process whatsoever, into any of her Majesty's Courts of Record at Westminster; and every such order and other proceeding is hereby declared not to be so removable.

**Appeal from Decisions as to Penalties—Proceedings thereon.**

105. And be it enacted, with regard to any conviction or any offence in respect of which a penalty is by this Act imposed, so far as relates to the appeal from any such conviction in respect thereof, that if any party be dissatisfied with the decision of the justices in any case

in which such penalty may be proceeded for, and if within four days after such decision notice be given by or on behalf of such party to the party appealed against of his intention to appeal against such decision, and of the grounds of such appeal, and if the appellant enter into a recognizance, with two sufficient sureties, conditioned to prosecute such appeal, and to abide the order of the court, and to pay to the party appealed against such costs (if any) as shall be awarded against him, then it shall be lawful for such party so dissatisfied to appeal against such conviction to the justices of the peace at their general Quarter Sessions of the peace to be holden within four months after such conviction; and that if within such period of four days such appellant have entered into such recognizance as is herein required, then it shall be lawful for such justices and they are hereby empowered to proceed to hear and examine on oath into the cause and matters of such appeal (which oath they are hereby empowered to administer), and to determine the same, and to award such costs to be paid by either of the said parties as they think proper; and the order, judgment, and determination of the said justices shall be binding and conclusive.

**Limitation of Actions for Penalties.**

106. And be it enacted, with regard to every penalty or forfeiture incurred under this Act, so far as relates to the limitation of proceedings for the recovery thereof, that if within six calendar months next after such penalty or forfeiture shall have been incurred an action or prosecution be not brought or commenced against the person liable in respect thereof, then thereafter it shall not be lawful for any person to bring such action or commence such proceeding in respect of such penalty or forfeiture.

**Recovery of Penalties—Appropriation—3 G. 4, c. 46.**

107. And be it enacted, with regard to every such penalty or forfeiture, so far as relates to the recovery and the appropriation thereof, that it shall be lawful for any party to sue or proceed for the same; and that if such penalty be not otherwise specifically appropriated, then the person so suing or proceeding shall be entitled to receive one-half thereof for his own benefit, and the other half shall be applied to her Majesty's use, and shall be paid to the sheriff of the county, city, or town where the same shall have been imposed; and that all convictions before justices shall be returned to the Court of Quarter Sessions, under the provisions of an Act passed in the third year of the reign of his late Majesty King George the Fourth, intitled *An Act for the more speedy Return and levying of Fines, Penalties, and Forfeitures, and Recognizances* created, and shall be paid to the sheriff of the county, city, or town, and shall be duly accounted for by him.

**Regulation of Actions against Persons acting under this Act—Limitation of Action—Notice of Action—Venue in London—Fence in Middlesex—Plea and Evidence—Verdict—Costs.**

108. And for regulating proceedings against persons acting in pursuance of this Act, be it enacted, with regard to any action or suit against any person in respect of any act or thing done or intended to be done in pursuance of this Act, so far as relates to the limitation thereof, and to the venue thereof, and to the pleas therein, and to the evidence of the matters thereof, and to the verdict therein, and to the judgment of the Court thereon, and to the costs of such action, and to the recovery of such costs, that after the expiration of six months next after the fact committed it shall not be lawful to bring any such action or suit against any person in respect of any such act; and that if, twenty-one days at the least before the commencement of the action or suit, notice in writing of an intention to bring such action or suit, and of the grounds of action, be not given to every person against whom such action or suit shall be brought, then it shall not be lawful for any person to bring any such action or suit against any person in respect of any such act; and that if the cause or matter of any such action or suit arise within the said city of London or the liberties thereof then such action or suit must be laid in the city of London, and not elsewhere; and that if the cause of any action or suit arise in any part of the limits aforesaid out of the said city of London and liberties thereof then it must be laid and tried in the county of Middlesex, and not elsewhere; and that in every such action or suit it shall be lawful for the defendant and he is hereby entitled to plead the general issue, and at the trial to be had thereof to give the fact and the special matter in evidence, and to prove that the matter or thing for which such action or suit is brought was done in pursuance and by the authority of this Act; and that if upon the trial of such action it appear that the said matter or thing has been done by the authority or in pursuance of this Act, or if it appear that such action or suit was brought before the expiration of twenty-one days after such notice given as aforesaid, or if it appear that sufficient satisfaction was tendered before such action was brought, or if upon plea of payment of money into court it shall appear that the plaintiff has not sustained damages to a greater amount than the sum paid into court, or if any such action or suit be not commenced within the time herein for that purpose limited, or if it be laid in any other county or place than as aforesaid, then and in every such case it shall be the duty of the jury and in every such case required to find for the defendant; and that if a verdict be found for the defendant, or if the plaintiff in any such action or suit become nonsuited, or discontinue or suffer a discontinuance of any such action or suit, or if judgment be given for the defendant thereon, on demurrer, or by default or otherwise, then the defendant shall be entitled to have judgment to recover full costs of suit, and to such remedy for recovering the same as any defendant shall have by law.

**Security for Costs.**

109. And further, for the prevention of vexatious

litigation, be it enacted, with regard to every action in respect of any matter or thing done or intended to be done in pursuance of this Act, so far as relates to the costs of such action, that if the defendant apply to the superior court at Westminster in which such action is pending, or to any judge of any of the said courts, then it shall be lawful for such court or any such judge to require the plaintiff to give such security as such court or judge shall think fit for the payment of all costs, charges, and expenses incurred or to be incurred in and about the said action, and which shall or become payable by him on the taxation thereof by the proper officer.

**Prosecutions for preventing Neglect or Evasion of this Act—Notice of Action.**

110. And be it enacted, with regard to any penalty or forfeiture incurred by any default in complying with the provisions of this Act, so far as relates to proceedings for the recovery thereof, that at any time within three months after such penalty or forfeiture shall have been incurred it shall be lawful for any surveyor appointed or confirmed by virtue of this Act, and all other persons, and they are hereby entitled, to commence and prosecute proceedings for the recovery thereof, or for the recovery of the expenses of pulling down or altering of any building, against any owner, occupier, builder, workman, or other person, or for any default made in complying with the provisions of this Act: provided always, that if such proceedings be taken by any person except one of the surveyors, or except the official referees, then seven days' notice of the intention to commence such proceedings must be given at the office of the surveyor of the district, and at the office of the registrar of metropolitan buildings.

**MISCELLANEOUS.**

**Liability of Owners and Occupiers for Expenses, &c., under this Act.**

111. Provided always, and be it enacted, with regard to the owners of any building, fence, ground, land, or tenement, so far as relates to their liabilities in respect of expenses incurred in respect of such premises or of the interest in all cases, whatever may be the nature of the interest in any such premises of the person entitled to the immediate possession thereof, or of the occupier thereof, such person entitled to the immediate possession of such premises, or such occupier, shall in the first instance bear all costs and expenses by this Act imposed on the owner thereof, and shall perform all duties by this Act imposed on such owner; subject, nevertheless, to any right or claim which such person or such occupier may have to be repaid such costs and expenses, and to be indemnified in respect of such duties, according to the provisions of this Act, according to the nature and extent of the covenants or agreements under which such person or occupier may hold such premises, as fully and effectually as if such covenants or agreements were herein recited.

**Notifications: Married Females—Infants, Idiots, or Lunatics—Owners unknown—Buildings unoccupied—Immediate Landlord—Part Ownership—Service of Notices—Damage arising from defective Service—Requisites of Notice.**

112. And be it enacted, with regard to notices by this Act required, so far as relates to the service thereof upon the owner or occupier of any building, fence, land, ground, or tenement, that every such notice must be given as follows; that is to say,

If such owner be a married female, other than a cestuique trust in regard to such property, then such notice must be given to the husband of such married female; or,

If such owner be an infant, idiot, or lunatic, or cestuique trust, then such notice must be given to the guardian, trustee, or committee of such infant, idiot, or lunatic, or cestuique trust, or,

If such owner, husband, trustee, guardian, or committee is not known, or cannot be found, then such notice must be given to the occupier of such building, fence, land, ground, or tenement to which it shall relate; or,

If such building, fence, land, ground, or tenement be unoccupied, then such notice must be affixed to some conspicuous part of such building, fence, land, ground, or tenement, at a height of not more than nine feet from the ground;

And if the person in the occupation of any building, fence, land, ground, or tenement, in respect of which notice is to be given, allege that he is a tenant from year to year, or for any less term, or a tenant at will, and that the owner thereof, within the intent and meaning of this Act, then such notice must be given to the immediate landlord of such occupier; and it shall be the duty of such occupier and he is hereby required to inform any person by whom such notice shall be required to be given, or any other person applying on his behalf, of the name, place of residence, or place of business of such owner or landlord, or of his agent or other person by whom the text of such building, fence, land, ground, or tenement shall be received, or in receipt of the rents or profits of such building, fence, land, ground, or tenement, and if any notice shall be served upon such owner or landlord, then, immediately upon the receipt thereof, it shall be his duty and he is hereby required to transmit to his immediate landlord or his agent, and also to any other person by whom such notice shall be received, of such building, fence, land, ground, or tenement, or in receipt of the rents or profits thereof under the same immediate landlord, or to the agent of such person, a copy of such notice; and so on in turn it shall be the duty of every landlord, agent, or other person by whom such notice shall be received to transmit it to any such landlord, agent, or other person, being part owner of any such building, fence, land,



ground, or tenement, to the intent that every person affected by the work or proceeding to which such notice relates may have due notice thereof: provided always, with regard to every such notice, so far as relates to the service thereof upon any such owner, that if it be served upon the immediate landlord of the occupier or upon his agent, by or on behalf of the person by whom it is hereby required to be served in the first instance, then, although it may not be served by such immediate landlord upon any other landlord or owner, such service is to be deemed to be sufficient service; but that nevertheless, if any owner suffer damage by the failure of any other person, being either the occupier or any person holding under such owner, to serve such notice, then such owner shall be entitled to recover the amount thereof against such person by whom such damage shall have been occasioned; and that every notice served under this clause on any person must contain a copy of the provisions thereof, so far as they require him to transmit the same to his immediate landlord, or the agent of such landlord.

#### Mode of Service upon Occupier.

113. And be it enacted, further, with regard to notices by this Act required, so far as relates to the mode of service thereof upon the occupier of any building or ground, that if such notice be intended for the occupier of any building or ground then it must be given either personally or by leaving the same with some inmate at the premises, or it must be affixed as aforesaid.

#### Mode of Service upon Owners by Delivery—Effect of Notice.

114. And be it enacted, further, with regard to all such notices, so far as relates to the mode of service thereof upon owners by delivery, that every such notice (except such notice as may according to the provision in that behalf be sent by post) must be given either personally or by leaving the same with some inmate at the usual place of abode of such party, or if that be not known then at his last known place of abode; and that every such notice, when so given to such persons respectively as aforesaid, or left at the last known place of their respective abodes, or when so affixed as aforesaid, according to the cases herein-before mentioned, shall have the same effects and consequences as if given to the actual owner.

#### Mode of Service upon Owners by Transmission.

115. And be it enacted, further, with regard to notices, so far as relates to the mode of service thereof by transmission, that if any owner upon whom the same is required to be served be not within the limits of this Act, or have not within the limits of this Act any agent acting in his behalf in the matter of the premises to which the notice refers, then it shall be lawful to give notice by post letter, duly registered according to the practice for the time being adopted with regard to letters transmitted by post, but so that nevertheless such letter be posted in such time as will afford to the person addressed, after the receipt of such letter, the full period of notice required in the case.

#### Notices for Surveyors and Official Referees.

116. And be it enacted, with regard to notices, so far as relates to the service thereof upon the surveyors and upon the official referees, that if the notice relate to the

surveyor then such notice must be served at the office of the surveyor; and that if the notice relate to the official referees or any of them, then such notice must be left at the office of the registrar of metropolitan buildings.

#### Consents by Incapacitated Persons.

117. And be it enacted, with regard to consents by this Act required to be given by the owner or occupier of any building or ground, so far as relates to the making thereof on behalf of incapacitated persons, that if such owner or occupier be a married female, not being a cestuique trust in regard to the property to which such consent relates, then such consent must be given by the husband of such married female; or that if such owner or occupier be an infant, idiot, or lunatic, or cestuique trust, then such consent must be given by the guardian, trustee, or committee of such infant, idiot, or lunatic, or cestuique trust; or that if such owner or occupier, husband, trustee, guardian, or committee, be not known or cannot be found, then with a view to protect the interests of such parties, as well as to facilitate the purposes of this Act, it shall be lawful for the official referees and they are hereby authorized, by writing duly sealed by the registrar of metropolitan buildings, to give such consent as may be requisite, upon such terms and subject to such conditions as may seem fit to them, having regard alike to the nature and purpose of the subject matter in respect of which such consent is to be given, and to the fair claims of the parties on whose behalf such consent is to be given.

#### Exemption from Stamp Duty.

118. And be it enacted, with regard to the following documents, so far as relates to the payment of stamp duty in respect thereof, that every certificate and every award required to be made or signed by the surveyor or the official referees shall be and is hereby exempted from stamp duty.

119. And be it enacted, that this Act shall be deemed to be a public Act, and shall be judicially taken notice of as such by all judges, justices, and other persons whomsoever, without specially pleading the same.

120. And be it enacted, that this Act may be amended or repealed by any Act to be passed in this present session of Parliament.

#### SCHEDULES TO WHICH THE FOREGOING ACT REFERS.

SCHEDULE (A).—This schedule contains merely a description of the Acts and parts of Acts repealed by this Act.

SCHEDULE (B).—(See § 5 & 7.)—PART I.—List of Buildings, of whatever Class, placed under Special Supervision.

Bridges, embankment walls, retaining walls, and wharf or quay walls; and her Majesty's royal palaces, and any building being in the possession of her Majesty, her heirs and successors, or employed for her Majesty's use or service; and any common gaols, prisons, houses of correction, and places of confinement under the inspection of the Inspectors of Prisons, and Bethlem Hospital and the houses of occupations adjoining; and the Mansion House, Guildhall, and Royal Exchange of the city of London; and the offices and buildings of the Governor

and Company of the Bank of England already erected and which now form the edifice called "The Bank of England," and any offices and buildings hereafter to be erected for the use of the said governor and company, either on the site of, or in addition to, and in connection with, the said edifice; and the buildings of the British Museum already erected or to be erected for the like purposes; and the erections and buildings authorized by an Act passed in the ninth year of the reign of his late Majesty King George the Fourth, for the purposes of a market in Covent Garden; and the warehouses of or belonging to the Saint Katharine Dock Company, commonly called the New-street and Outler-street Warehouses, and the Haydon-square Warehouses, purchased by the said company from the East India Company; and all other buildings exempted by any Act of Parliament from the operation of the Act passed in the fourteenth year of his late Majesty King George the Third, and by this Act repealed, except buildings included in the second part of this schedule.

SCHEDULE (B).—PART II.—List of Buildings, of whatever class, exempted from supervision.

And the warehouses of or belonging to the Saint Katharine Dock Company, and situate in the parish of Saint Botolph-without-Aldgate, and in the precinct of Saint Katharine, near the Tower of London, in the county of Middlesex; and the warehouses and buildings of or belonging to the London Dock Company, comprehended within the wall of the said company, at set forth in an Act passed in the ninth year of the reign of his late Majesty King George the Fourth; and the several warehouses and buildings of or belonging to the East and West India Dock Company, established by an Act made in the first year of the reign of her present Majesty; and the buildings erected, or to be erected, by the London and Birmingham Railway Company, established and incorporated by an Act passed in the third year of the reign of his late Majesty King William the Fourth, within and in connection with the works of their railway, by virtue of the several Acts relating thereto; and the buildings and structures belonging to any other dock or railway authorized to be executed by any Act of Parliament.

SCHEDULE (C).—PART I.—(See § 5.)—Rules for determining the Classes and Rates to which Buildings are to be deemed to belong for the purposes of this Act, and the Thicknesses of the Walls of Buildings of such Rates.

CLASSES OF BUILDINGS.—For the purposes of this Act, all buildings of whatever kind, subject to the provisions thereof, are to be deemed to belong to one or other of the following three classes; that is to say,—

First Class.—If a building be built originally as a dwelling-house, or be occupied, or intended to be occupied, as such, then it is to be deemed to belong to the first, or dwelling-house class.

Second Class.—If a building be built originally as a warehouse, storehouse, granary, brewery, distillery, manufactory, workshop, or stable, or be occupied or intended to be occupied as such, or for a similar purpose, then it is to be deemed to belong to the second or warehouse class.

#### SCHEDULE (C).—PART II.—(See § 5.)

CONDITIONS for determining the Rates to which Buildings of the First or Dwelling-House Class are to be deemed to belong, and the Thickness of the External Walls and of the Party-Walls thereof.

In reference to Height.	In reference to Area.	In reference to Stories.	Rate of Building.	Requisite Thickness of External Walls of each Rate of the First Class.	Requisite Thickness of Party Walls of each Rate of the First Class.
If the Building be in height more than 25 feet, and not more than 35 feet.	If the building be more than 10 squares, and not more than 14 squares.	If the building contain more than 7 stories.	It is to be of the First Rate of this class.	And the thickness of the external walls must be at the least 21½ inches from the top of the footing up to the under side of the floor next but three below the topmost floor; and at the least 17½ inches from the under side of the floor next but three below the topmost floor up to the underside of the floor next below the topmost floor up to the top of the wall.	And the thickness of the party-walls must be at the least 21½ inches from the top of the footing up to the underside of the floor next but three below the topmost floor; and at the least 17½ inches from the under side of the floor next but three below the topmost floor up to the underside of the floor next below the topmost floor up to the top of the wall.
But if it be in height more than 35 feet.	Or if it cover more than 14 squares.	Or if it contain more than 7 stories.	It is to be an extra First Rate of this class.	And the thickness of the external walls must be at the least 21½ inches from the top of the footing up to the under side of the floor next but two below the topmost floor up to the top of the wall.	And the thickness of the party-walls must be at the least 21½ inches from the top of the footing up to the under side of the floor next but three below the topmost floor; and at the least 17½ inches from the under side of the floor next but three below the topmost floor up to the underside of the floor next below the topmost floor up to the top of the wall.
2. If more than 35 feet, and not more than 45 feet.	Or if it cover more than 14 squares, and not more than 18 squares.	Or if it contain more than 8 stories.	It is to be of the Second Rate of this class.	And the thickness of the external walls must be at the least 17½ inches from the top of the footing up to the under side of the floor next but one below the topmost floor; and at the least 13 inches from the under side of the floor next but one below the topmost floor up to the top of the wall.	And the thickness of the party-walls must be at the least 17½ inches from the top of the footing up to the under side of the floor next but one below the topmost floor; and at the least 13 inches from the under side of the floor next but one below the topmost floor up to the top of the wall.
3. If more than 45 feet, and not more than 55 feet.	Or if it cover more than 18 squares, and not more than 24 squares.	Or if it contain more than 9 stories.	It is to be of the Third Rate of this class.	And the thickness of the external walls must be at the least 13 inches from the top of the footing up to the under side of the floor next but two below the topmost floor up to the top of the wall.	And the thickness of the party-walls must be at the least 13 inches from the top of the footing up to the under side of the floor next but two below the topmost floor; and at the least 8 inches from the under side of the floor next but two below the topmost floor up to the top of the wall.
4. If not more than 35 feet.	Or if it do not cover more than 14 squares.	Or if it do not contain more than 7 stories.	It is to be of the Fourth Rate of this class.	And the thickness of the external walls must be at the least 13 inches from the top of the footing up to the under side of the floor next below the topmost floor; and at the least 8 inches from the under side of the floor next below the topmost floor up to the top of the wall.	And the thickness of the party-walls must be at the least 13 inches from the top of the footing up to the under side of the floor next but one below the topmost floor; and at the least 8 inches from the under side of the floor next but one below the topmost floor up to the top of the wall.



**Third Class.**—If a building be built originally as a church, chapel, or other place of public worship, college, hall, hospital, theatre, public concert-room, public ball-room, public lecture-room, public exhibition-room, or occupied or intended to be occupied as such, or for a similar purpose, or otherwise used or intended to be used, either temporarily or permanently, for the assemblage of persons in large numbers, whether for public worship, business, instruction, debate, diversion, or resort, then it is to be deemed to belong to the third or public building class.

**Alteration of Class.**—And if any room, whether constructed within any other building or not, and whether included in the aforesaid classes or not, be used at any time for the public or general congregation of persons, then the building containing such room is to be deemed a building of the third or public building class. Or if a building originally built, or subsequently altered, so as to bring it within any one class, be subsequently converted into or used as a building of another class, then it is to be deemed to belong to such other class; and, as to it, all the conditions prescribed with regard to buildings of the same rate of such other class must be fulfilled, as if it had been originally built of such class; subject, nevertheless, to such modifications as shall be sanctioned by the official referees on a special supervision thereof. Or if a building be used partly as a dwelling-house and partly for any purpose which would bring it within the second or warehouse class, then it is to be deemed to belong to the said second or warehouse class; and as to it all the conditions prescribed with regard to buildings

of the same rate of such class must be fulfilled as if it had been originally built of such class, subject nevertheless to such modifications as shall be sanctioned by the official referees on a special supervision thereof.

**RATES OF BUILDINGS.**—And the buildings included in the said classes are to be deemed to belong to the rates of those classes, according to the conditions of height, area, and number of stories set forth in the following tables; which conditions are to be determined according to the following rules:

**Rule for ascertaining Height.**—The height of every building is to be ascertained by measuring from the surface of the lowest floor of the building, up to the underside of the ceiling of the topmost story, at the highest part thereof, whether such story be within the roof or not. And if there be no ceiling made, or intended to be made to the topmost story, then by measuring from the surface of such lowest floor of the building up to the under side of any tie-beam, collar-beam, or other substitute for a tie-beam, to or within the roof of the building, and to the highest part of such roof; and the level of the under side of such tie-beam, or such substitute for a tie-beam, is in such case to be taken to mean the ceiling of the topmost story. And if there be no tie-beam, collar-beam, or other substitute for a tie-beam to or within the roof of any building, then up to a level three feet below the level of the under side of the ridge-piece, or substitute for a ridge-piece, to the roof of such building.

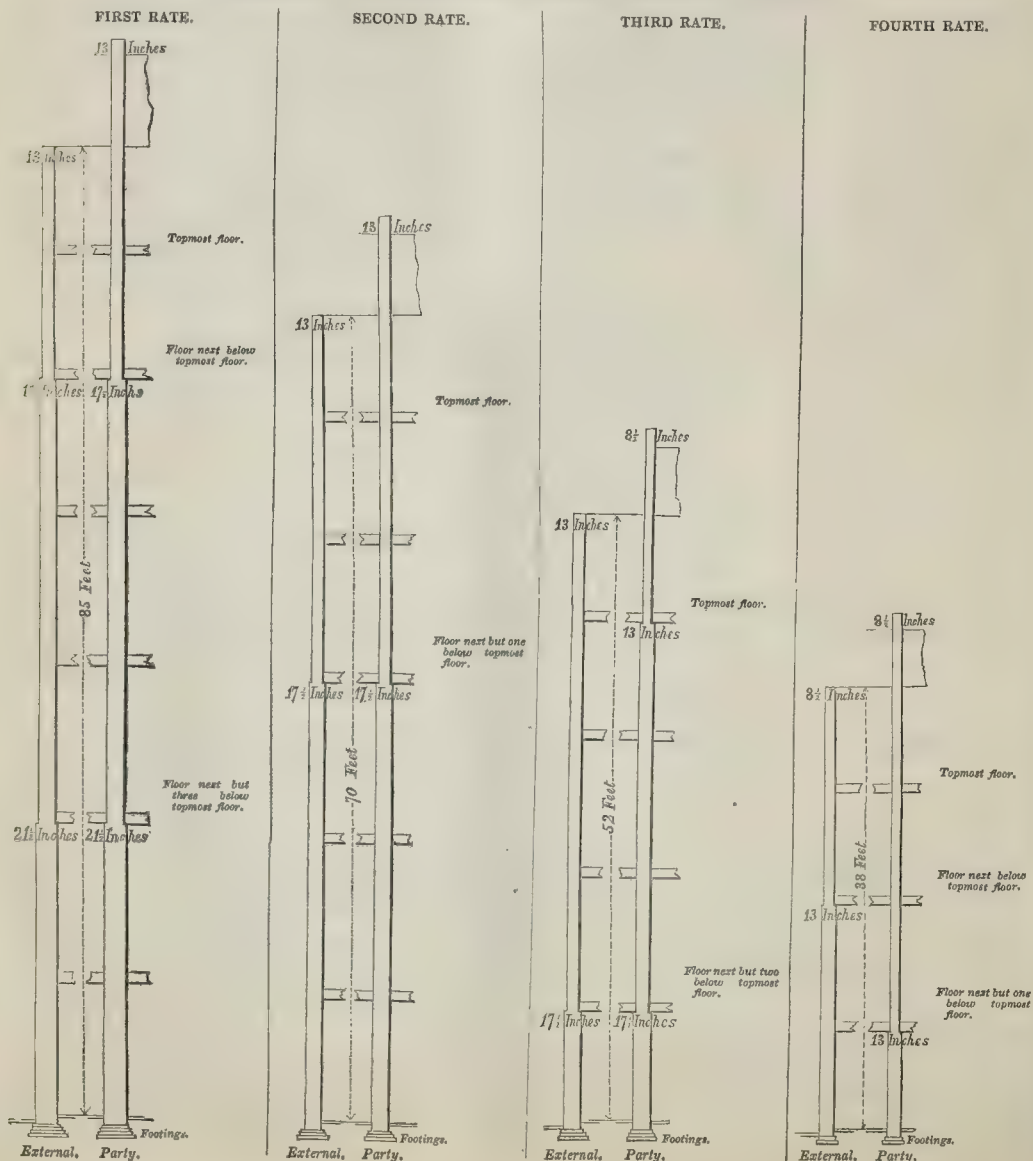
**Rule for ascertaining Area.**—And the area of every building is to be determined by the number of squares contained in the surface of any floor which shall contain the greatest number of squares at or above the principal entrance to such building; including in such surface the area of all the external walls and such portions of the party-walls as belong to such building, but excluding from such surface the area of any attached building, or office, area, balcony, or open portico.

**Rule for ascertaining the Capacity of any Building of the Second Class.**—And the capacity or cubical contents of any such building is to be ascertained by measuring according to the rule for ascertaining area, and from the surface of the lowest floor up to the under surface of the roof covering of such building.

**Rule for ascertaining Number of Stories.**—And the stories of every building are to be counted from the foundation upwards. And if the space in height between the top of the footings and the level of the lowest floor do not exceed five feet, then the story nearest the foundation is to be considered the lowest or first story; but if such space exceed five feet, then such space is to be considered to contain the lowest or first story; and in that case nine inches above the top of the footing is to be considered the level of the lowest floor.

**Rule for ascertaining Thickness of Walls.**—And the thickness or width of every wall, and of the footing thereof, is to be ascertained by measuring only the thickness or width of which such walls or footings shall have been originally built.

TRANSVERSE SECTIONS OF WALLS OF THE FIRST OR DWELLING-HOUSE CLASS, ACCORDING TO THE DESCRIPTIONS OF THEIR THICKNESSES IN SCHEDULE (C.) PART II.



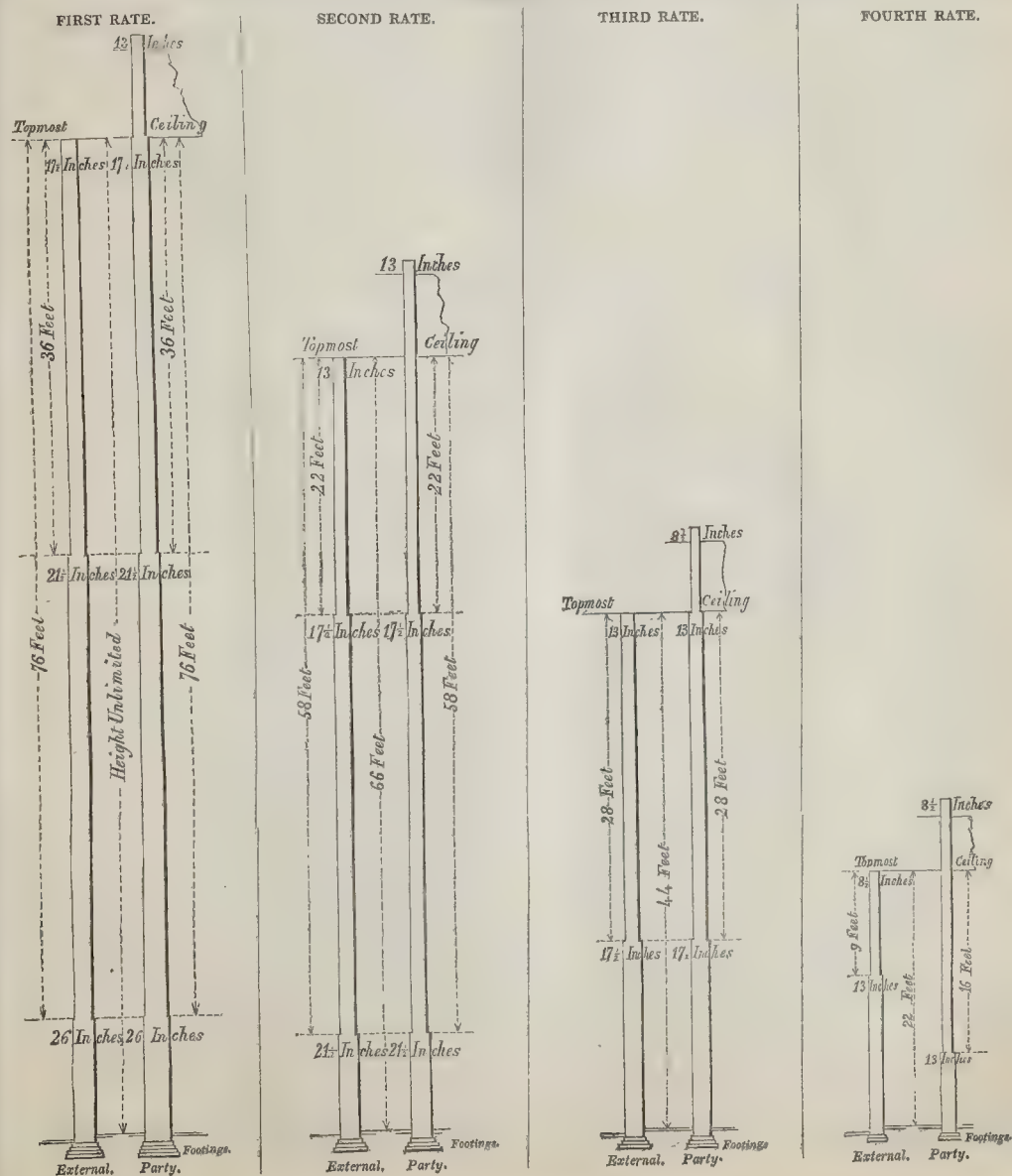


## SCHEDULE (C.)—PART III.—(See § 5).

CONDITIONS for determining the Rates to which Buildings of the Second or Warehouse Class are to be deemed to belong, and the Thickness of the External Walls and of the Party-Walls thereof.

In reference to Height.	Rate of Building.	Requisite Thickness of the External Walls of each Rate of the Second Class.	Requisite Thickness of the Party-wall of each Rate of the Second Class.
1. If the building be in height more than 66 feet,	It is to be of the First Rate of this class.	And the thickness of the external walls must be at the least 26 inches from the top of the footing up to the level of 76 feet below the topmost ceiling; and at the least 21½ inches from the level of 76 feet below the topmost ceiling up to the level of 36 feet below the topmost ceiling; and at the least 17½ inches from the level of 36 feet below the topmost ceiling up to the top of the wall.	And the thickness of the party-walls must be at the least 56 inches from the top of the footing to the level of 76 feet below the topmost ceiling; and at the least 21½ inches from the level of 76 feet below the topmost ceiling up to the level of 36 feet below the topmost ceiling; and at the least 17½ inches from the level of 36 feet below the topmost ceiling up to the level of the topmost ceiling; and at the least 13 inches from the level of the topmost ceiling up to the top of the wall.
2. If more than 44 feet and not more than 66 feet,	It is to be of the Second Rate of this class.	And the thickness of the external walls must be at the least 21½ inches from the top of the footing up to the level of 58 feet below the topmost ceiling; and at the least 17½ inches from the level of 58 feet below the topmost ceiling up to the level of 22 feet below the topmost ceiling; and at the least 13 inches from the level of 22 feet below the topmost ceiling up to the top of the wall.	And the thickness of the party-walls must be at the least 21½ inches from the top of the footing up to the level of 58 feet below the topmost ceiling; and at the least 17½ inches from the level of 58 feet below the topmost ceiling up to the level of 22 feet below the topmost ceiling; and at the least 13 inches from the level of 22 feet below the topmost ceiling up to the top of the wall.
3. If more than 22 feet and not more than 44 feet,	It is to be of the Third Rate of this class.	And the thickness of the external walls must be at the least 17½ inches from the top of the footing up to the level of 28 feet below the topmost ceiling; and at the least 13 inches from the level of 28 feet below the topmost ceiling up to the top of the wall.	And the thickness of the party-walls must be at the least 17½ inches from the top of the footing up to the level of 28 feet below the topmost ceiling; and at the least 13 inches from the level of 28 feet below the topmost ceiling up to the level of the topmost ceiling; and at the least 8½ inches from the level of the topmost ceiling up to the top of the wall.
4. If not more than 22 feet,	It is to be of the Fourth Rate of this class.	And the thickness of the external walls must be at the least 13 inches from the top of the footing up to the level of 9 feet below the topmost ceiling; and at the least 8½ inches from the level of 9 feet below the topmost ceiling up to the top of the wall.	And the thickness of the party-walls must be at the least 13 inches from the top of the footing up to the level of 16 feet below the topmost ceiling; and at the least 8½ inches from the level of 16 feet below the topmost ceiling up to the top of the wall.

TRANSVERSE SECTIONS OF WALLS OF THE SECOND OR WAREHOUSE CLASS, ACCORDING TO THE DESCRIPTIONS OF THEIR THICKNESSES IN SCHEDULE (C.)—PART III.





**SCHEDULE (C).—PART IV.—Rules concerning**

**Buildings of the Second or Warehouse Class.**  
**Warehouses, &c.**—With regard to any building of the second class hereafter built or re-built, in reference to the capacity or contents thereof within the same inclosing walls: If such building contain more than 200,000 cubic feet, then such building must be divided by party-walls, so as that there be not in any one part of such building more than 200,000 cubic feet without party-walls.

**Openings in Party-walls.**—And with regard to buildings of the second class, in reference to openings through party-walls, such openings must not be made wider than six feet, nor higher than eight feet, unless in each case, and upon special evidence of necessity for convenience or otherwise, the official referees shall previously authorize larger openings. And the floor, and the jambs, and the head of every such opening must be composed of brick or stone, or iron-work throughout the whole thickness of the wall; and every such opening must have a strong wrought-iron door on each side of the party-wall, fitted and hung to such opening without wood-work of any kind; and such doors must not be less than one-fourth of an inch thick in the panels thereof; and each of such doors must be distant from the other not less than the full thickness of the party-wall.

**Roofs.**—And with regard to the roofs of buildings of the second class, in order to prevent the formation of curved roofs to such buildings, the plane of the surface of the roof of every such building must not incline from the external or party-walls upwards at a greater angle than 40 degrees with the horizon.

**SCHEDULE (C).—PART V.—Requisites for determining the Rate to which any Building of the Third or Public Building Class is to be deemed to belong.**

If any building of the third or public building class correspond in form or structure or disposition with a dwelling-house, then the rate thereof is to be determined by the same rules as the rates of the first or dwelling-house class; and the thicknesses of the external and party-walls, and the width of the footings thereof, are to be at the least four inches more than is hereby required for the external and party-walls, and the footings thereof, of buildings of the same rate of the first or dwelling-house class, unless the official referees, on special supervision in each case, shall otherwise appoint. But if it correspond in form or structure or disposition with a warehouse, or any building of the second class, then the rate thereof is to be determined by the same rules as the rates of the second or warehouse class; and the thickness of the external and party-walls, and the width of the footings thereof, are to be at the least four inches more than is hereby required for the external and party-walls, and the footings thereof, of buildings of the same rate of the second or warehouse class, unless the official referees, on special supervision in each case, shall otherwise appoint. But if it do not correspond in form or structure, or in either, with buildings of the first or second classes, or any of them, then such building is to be subject, as to its walls or other construction, to the special approval of the official referees.

**SCHEDULE (C).—PART VI.—Rule concerning Fire-proof Accesses and Stairs to Buildings of the First and Third Classes.**

With regard to buildings of the first class, whereof the internal stairs are of stone or other incombustible substance, such stairs must be set in, or be fixed to, and be wholly upborne by, fire-proof constructions, and must be connected internally by landings, the floors of which are fire-proof, and wholly upborne and supported by fire-proof constructions, and must be connected with the exterior entrance by passages, the floors of which are fire-proof, and wholly upborne and supported by fire-proof constructions. And with regard to buildings of the third class, the floor of the halls, vestibules, lobbies, corridors, passages, and the stairs and landings, and all other ways of ingress and egress within the building to and from all rooms or apartments used for public congregation, and to and from all galleries being part of, or being connected with, any such room or apartment, must be wholly supported, constructed, formed, made, and finished fire-proof.

**SCHEDULE (C).—PART VII.—Rules concerning Attached and detached and insulated Buildings, as to the Rates and Walls thereof.**

**Attached Buildings and Offices.**—With regard to buildings or offices now built or hereafter to be built (except greenhouses, vine-tries, aviaries, or such like buildings), and that whether such buildings or offices be attached to or detached from the buildings to which they belong. Every such building is to be deemed, in respect of the walls thereof, and all other requisites, as a building of the rate to which it would belong if it had been built separately.

**Insulated Buildings.**—And with regard to buildings of the first or dwelling-house class, and of the second or warehouse class, which shall be insulated, so far as relates to the distance thereof from a public street or way, every such building must be distant from any public street or alley one-third of the height thereof at the least; and if the building do not exceed twenty-four feet in height, then it must be so distant at the least eight feet; and with regard to such building, so far as relates to the distance thereof from any other building, or from ground not the same possession or occupation therewith, or connected therewith only by a fence or fence-wall, it must be distant from such other building or such other ground at the least 80 feet; and if such building be so distant from a public street or alley, and from any other building, or from ground not in the same possession or occupation therewith, then such building is not to be liable in respect of the dimensions and materials thereof to the rules and directions of this Act.

**Insulated Buildings afterwards divided.**—Provided always, that if any such building be hereafter divided into two or more distinct buildings, and the several parts

of such buildings so divided be not at the aforesaid distance from each other, and from other buildings and ground, then such several parts must be separated from each other by such party-walls as are herein prescribed for the rates to which such several parts, if adjoining, would belong. And if such requisites be not observed, then such several parts of such buildings in respect of which they are not so observed, shall be deemed a public nuisance, and as such be taken down, according to the provisions of this Act in that behalf.

**Toll-houses, &c.**—And with regard to certain buildings which shall be built for the purposes of trade or the collection of toll, if such buildings be situate fifteen feet at the least from any other building, and do not cover an area of more than one square and one half, and the height thereof do not exceed twelve feet from the ground to the highest point of the roof, then every such building may be inclosed with any materials whatsoever; but the roof thereof must be covered as herein directed with regard to roofs, and the chimney and flue (if any) must be built as herein directed with regard to chimneys and flues.

**SCHEDULE (D).—PART I.—Rules concerning Walls, of**

**Foundations.**—With regard to the foundations of walls, every external wall, and every party-wall, and every party fence-wall, must be built upon a constructed footing, based upon solid ground, or upon other sufficient foundation.

**Footings.**—With regard to footings of walls, in reference to the materials thereof, to the width thereof, to the height thereof above the foundation, and to the depth below the surface:—

**Materials.**—1. In reference to the materials thereof:—Every footing must be built, either of sound bricks or of stone, or of such bricks and stone together, laid in and with mortar or cement in such manner as to produce solid work.

**Height.**—2. In reference to the width thereof:—The bottom of the footing of every external wall and party-wall of the first rate must be at the least seventeen and a half inches wider than the wall standing thereon; and the bottom of every footing of every external wall and party-wall of the second and third rates must be at the least thirteen inches wider than the wall standing thereon; and the bottom of the footing of every external wall and party-wall of the fourth rate, and of every party fence-wall, must be at the least eight and a half inches wider than the wall standing thereon. The top of the footing of every party fence-wall, and of every external wall and party-wall, must be at the least four inches wider than the wall standing thereon.

**Height.**—3. In reference to the height above the foundation:—The footing of every external wall and party-wall of the first rate must be at the least eleven inches high above the foundation. The footing of every external wall and party-wall of the second and third rates, must be at the least eight inches high above the foundation. The footing of every party fence-wall and of every external wall and party-wall of the fourth rate must be at the least five inches high above the foundation.

**Depth below Ground.**—4. In reference to the depth thereof below the surface of the lowest ground or area adjoining:—The top of the footing of every party fence-wall and of every external wall and party-wall must be at the least three inches below such surface.

**Depth below lowest Floor.**—5. In reference to the depth thereof below the surface of the lowest floor adjoining or intended to adjoin thereto:—The top of the footing of every external wall and party-wall must be at the least nine inches below such surface; and in any building of the first class the surface of the earth or of any paving on the outside (except the pavement of any public way) must not at any time be raised to within six inches of the surface of the lowest or first floor of such building.

**Thicknesses of inclosing Walls to Stories of Buildings of whatever Rate.**—With regard to the inclosing walls to stories of buildings of the first and second classes, each of the inclosing walls of any such story throughout the whole height thereof, from the top of the footing up to the top of such story, and with all the set-offs in addition required for such wall, to whatever rate or whichever class it may belong, and throughout at the least one-third of the whole length of such wall, in piers properly distributed, must be of the following dimensions (unless cross or return walls, coursed and bonded with the inclosing walls, shall in the opinion of the official referees, upon special application to them in each particular case, give sufficient strength with less thickness in such inclosing walls); that is to say, as to first-class buildings:—if the story be in height more than 14 feet, then the thickness of its inclosing walls must be at the least 13 inches. Or if the story be in height more than 15 feet, then the thickness of its inclosing walls must be at the least 17½ inches. As to second-class buildings:—if the story be in height more than 9 feet, then the thickness of its inclosing walls must be at the least 13 inches. Or if the story be in height more than 12 feet, then the thickness of its inclosing walls must be at the least 17½ inches. Or if the story be in height more than 15 feet, then the thickness of its inclosing walls must be at the least 21½ inches. Or if the story be in height more than 18 feet, then the thickness of its inclosing walls must be at the least 26 inches. Nevertheless as to any external wall of any building of the first class in which there are no apertures or recesses, or if there be another external wall and a cross wall of not less than 84 inches thick coursed and bonded with such external wall, or if two such cross walls occur within a length of 24 feet of such wall, then such external wall may be built of the thickness of 13 inches, of any height not exceeding 18 feet, within any story, although the rate of the wall may require a greater thickness, but always upon condition that the substructure of such wall is 4 inches thicker at the least than such superstructure, and vertically under it. And also if any such wall be abutted by cross or return walls within a length of 12 feet, and if

not more than one aperture or recess occur within such length of 12 feet, and not more than one-half the quantity in length be taken out of such compartment of a wall by any such aperture or recess, then such external wall may be built of any thickness not less than 13 inches, notwithstanding the rate of such wall may require a greater thickness.

**SCHEDULE (D).—PART II.—EXTERNAL WALLS.**

**Construction and Materials.**—And with regard to the component materials of external walls to buildings of the first class:—every such wall must be built of sound bricks or of stone, or of such bricks and stone together, laid in and with mortar or cement in such manner as to produce solid work; and every such wall must be carried up of its full thickness to the under side of the plate under the roof. Nevertheless, in such walls, besides all requisite openings for doors and windows, recesses may be formed, so that the back thereof be of the thickness of eight inches and a half at the least, and so that the stability and sufficiency of the wall be not injuriously affected by making such recesses. And with regard to other substances than the component materials of external walls:—There may be such wood and iron as shall be necessary. And every plate, lintel, bond, corbel, being of wood, and every wood-brick laid into any external wall, and every joint of girders, and of the heads and sills of partitions running into any external wall, must be fixed at a distance from the external face of the wall of four inches at the least. And the frames of doors and windows must be fixed in reveals at a distance from the external face of the wall of four inches at the least. And shop fronts must be fixed in such manner as is herein specially directed. And the tiers of door cases to warehouses must be fixed in the openings left in steel walls at a distance from the external face of the wall of two inches at the least. But no timber must be laid into any external wall in such manner or of such length as to render the part of the wall above it wholly or in great part dependent upon the wood for support, or so that any such wood might not be withdrawn without endangering the safety of the superincumbent structure, except in the case of brestrummers.

**Height and Thickness of Parapets.**—And with regard to external walls, in reference to the height and thickness of any parapet thereof:—If an external wall adjoin a gutter, then such external wall must be carried up, and remain one foot at the least above the highest part of such gutter. And the thickness of an external wall so carried up above the level of the under side of the gutter plate, and forming a parapet, must be at the least, in every such wall of the extra first rate of the first class, and in every such wall of the first rate of the second class, 13 inches thick; and in every other external wall, of whatever rate or whichever class, 8½ inches thick.

**Brestrummers.**—With regard to every brestrummer fixed to carry any front wall of a building, or if such brestrummer have a bearing at one end upon a party-wall, then it must be laid upon a template or corbel of stone or iron, which template or corbel must be tailed through such wall at least two-thirds of the thickness thereof; and the end of such brestrummer must not be fixed into, and must not have its bearing solely upon such party-wall, but must be supported by a sufficient pier built of brick or stone, or by an iron column, or iron or timber story-post fixed on a solid foundation. And if any such brestrummer have its bearing at each end upon a party-wall, then it must be supported by at least two solid walls, each built of brick or stone, or by iron columns, or by iron or timber story-posts fixed on solid foundations, and standing within and clear of the party-walls. Or any such brestrummer may bear upon constructed returns in the direction of the length of the brestrummer of four inches at the least, coursed and bonded with the substance of the party-wall or party-walls; and such construction must be increased one inch at the least for every six feet in length that the brestrummer may be otherwise unsupported. And if the height of the under side of any brestrummer laid from party-wall to party-wall to carry any external wall exceed 15 feet from the surface of the public foot pavement in front of the building, then there must be constructed returns in the direction of the length of the brestrummer from the inside of each party-wall of 8½ inches at the least, and at the least of the full thickness of such brestrummer; and every such return must be increased one inch at the least for every foot or part of a foot the brestrummer may be in height from the surface of the public foot pavement more than 16 feet, whether the brestrummer be otherwise supported or not.

**Materials to be used in Repairs.**—And with regard to old external walls, or other external inclosures, or of any building already built, in reference to materials to be used in the repair thereof: If any such wall or inclosure be not built of the materials required by this Act for external walls or other external inclosures hereafter to be built, then every part of such wall or other external inclosure (except the inclosure of roofs, and the flats, gutters, dormers, turn-outs, lantern-lights, and other erections thereon), may be at all times thereafter repaired, and with materials of the same sort as of those of which such external wall or inclosure has been already built.

**Materials to be used in Rebuilding.**—But if any such external wall or inclosure be at any time hereafter taken down or otherwise demolished for the height of one story, or for a space equal to one-fourth of the whole surface of such external wall, then every part thereof, not built in the manner and of the several materials by this Act directed for such external walls, must be taken down, and the same must be rebuilt in such manner, and of such materials, and in all respects as by this Act directed for external walls hereafter to be built, according to the class and rate of the building to which such external wall or inclosure shall belong.

**External Wall used as a Party-wall.**—And with regard to external walls to be used as party-walls to any building adjoining thereto (except an attached building







any timber or wood-work, in reference to the fixing thereof in or against any wall containing flues or against any chimney breast or chimney jamb. If timber or wood-work be affixed to the front of any jamb or mantle, or to the front or back of any chimney or flue, then it must be fixed by iron nails or holdfasts, or other iron fastenings, which must not be or be driven nearer than four inches to the inside of any flue or to the opening of any chimney, and such timber or wood-work must not be nearer than nine inches to the opening of any chimney. And no timber must be laid or placed within three inches of the face, or breast, back, side, or jamb of any flue, or of any chimney-opening, where the substance of brick-work or stone-work shall be less than eight and a half inches thick, nor must any flooring-board, batten, ground-skiirting, or other lining or fitting be of wood, nor any wood staircase, nor any thing else of wood, be fixed or placed against or near to the face, or breast, back, side, or jamb of any flue, fireplace, or chimney-opening, unless and until the brick or stone work constituting the same shall have been thoroughly and efficiently rendered or parge-ted with proper mortar or stucco, and such rendering must be in every case in addition to four inches at least of solid fire-proof structure.

**Slabs and Hearths.**—And as to slabs of brick, tile, stone, slate, marble, or other proper and sufficient substance, at the least twelve inches longer than the opening of every chimney when finished, and at the least eighteen inches in front of the arch over the same, must be laid before the opening of every chimney. And in every case the opening of every chimney, such slab or slabs must be laid wholly upon stone or iron bearers, or upon brick trimmers; but in the lowest floor they may be laid on a brick fender, or bedded on the solid ground. And the hearth of every chimney must be laid and bedded wholly on brick or stone, or other incombustible substance, which must be solid for a thickness of nine inches, at the least, beneath the surface of any such hearth.

**Backs.**—And as to the back of every chimney-opening of every building (except backs of chimneys in the lowest story of buildings of the fourth rate), every such back, in the lowest story, must be at the least thirteen inches thick from the hearth to the height of twelve inches above the mantle, and in every other story at the least eight and a half inches thick up to the same relative height. And as to the backs of chimney openings in the lowest story of buildings of the fourth rate, such backs must be at the least eight and a half inches thick to the height of twelve inches at the least above the level of the mantle: provided always, that if the chimney be built in any wall, not being a party-wall, then the back of every such chimney-opening may be four and a half inches less than the several thicknesses above described.

**Chimney Openings, Back to Back.**—And as to backs of all such chimney-openings, if two chimneys be built back to back, then the thickness between the same must be at the least of the thickness hereinbefore described for the back of one chimney-opening.

**Angles of Flues.**—And as to all flues, in reference to the angles thereof, if any flue be built with sufficient openings in it of not less size than nine inches square, and proper close iron doors and frames inserted in such openings, so that every part of such flue may be swept by machinery, then every angle in such flue may be of any degree. But if it be not so built then every such angle must be one hundred and thirty-five degrees at the least. And every salient or projecting angle within a flue must be rounded off four inches at the least, and protected by a rounded stone or iron bar.

**Close Fires.**—And as to every oven, furnace, cokel, or closefire used for the purpose of trade or manufacture, it must be six inches at the least distant from any party-wall, and must not be upon nor within a distance of eighteen inches of any timber or wood-work. And the floor on or above which such oven, furnace, cokel, or close fire shall be built or fixed must be formed and paved under, and for a distance of two feet all round the same, with stone, brick, tile, or slate, at the least two inches thick, or other proper incombustible and non-conducting materials.

**Chimney-shafts.**—And as to chimney-shafts or flues, every chimney-shaft or flue hereafter built, raised, or repaired must be carried up in brick or stone-work all round, at least four inches thick, to a height of not less than three feet above the highest part of such portion of the roof, flat, or gutter adjoining thereto, measured at the point of junction. And as to any chimney-shaft (except that of a steam-engine, brewery, distillery, or manufactory), the brick or stone-work of such shaft or flue must not be built higher than eight feet above the slope, flat, or gutter of the roof which it adjoins, measured from the highest point of junction, unless such chimney-shaft be built of increased thickness, or be built with and bonded to another chimney-shaft, or be otherwise rendered secure. And as to the chimney-shaft for the boiler furnaces of any steam-engine, or for any brewery, distillery, or manufactory, such shaft may be erected of any height, so that it be built in such manner and of such strength and dimensions as shall be satisfactory to the official referees, upon special application in each case.

**Chimney-pots, Tubes, &c.**—And as to earthen or metal chimney-pots, tubes, funnels, or cowls of any description whatsoever, if such pot, tube, funnel, or cowl be higher than four feet above the brick or stone-work of the flue on which the same shall be placed, then it must be fixed two feet at the least into the brick or stone-work of the flue on which it shall be placed.

**Smoke Pipes.**—And as to any metal or other pipe or funnel for conveying smoke, heated air, or steam, in reference to the position thereof, such pipe or funnel must not be fixed against or in front of any face of any building in any street or alley, nor on the inside of any building nearer than fourteen inches to any timber or other combustible material.

**Cuttings into Chimneys.**—And as to every chimney-shaft, jamb, breast, or flue already built, or which shall

be hereafter built, in reference to cutting the same, no such erection shall be cut into for any other purpose than the repair thereof, or for the formation of soot-doors, or for letting in, removing, or altering stone-pipes or smoke-jacks, except as directed for building an external wall against an old sound party-wall.

#### SCHEDULE (G).—(See § 5.)—Rules concerning Roof Coverings.

**Materials.**—With regard to roof coverings, in reference to the materials thereof, if the external parts of any roof, flat or gutter, of any building, or of any projection therefrom, and of any turret, dormer, lantern-light, and other erection on the roof or flat of any building, be hereafter built or rebuilt, stripped, ripped, or uncovered, then every such part (except the door-frames and doors, window-frames and sashes of such turrets, dormers, lantern-lights, or other erections), must be covered with slates, tiles, metal, glass, artificial stone, or cement, and such excepted parts may be made of such wood as shall be necessary.

**Rain Water Pipes.**—And with regard to the roof, flat and gutter, of any building, and of any projection therefrom, and also balconies, verandahs, and shop fronts, they must be so arranged and constructed, and so supplied with gutters and pipes, as to prevent the water therefrom dropping on to or running over any public way.

#### SCHEDULE (H).—(See § 5.)—Rules concerning Drains to Buildings hereafter built.

**Drains into Sewers.**—With regard to the drains of the several classes of any building, and of every addition thereto, before the general walls of any such building shall have been built to the height of ten feet from their foundations, the drains thereof must have been properly built and made good (that is to say), if there be within one hundred feet from any front of the building, or from the inclosure about the building, a common sewer into which it is lawful and practicable to drain, then into such common sewer; and if there be not in such situation and within such distance any such common sewer, then to the best outlet that can be obtained, so as to render in every case such drain available for the drainage of the lowest floor of such building, or addition thereto, and also of its areas, water-closets, privies, and offices (if any). And the inside of the main drains under and from every building for carrying off soil must be in transverse section at the least equal to a circular area of at least nine inches in diameter. And every such drain must be laid to a fall or current of at the least half an inch to ten feet, and so as that the whole of every such drain within the walls of such building shall be wholly covered over under the lowest floor, and independently thereof. And every such drain within the walls of such building must be built and covered over with brick, stone, or slate, and so as to render the drain air-tight. And every part of such drain inside and outside the walls of every building must be built of brick, tile, stone, or slate, set in mortar or cement.

**Cesspools and Privies.**—And with regard to cesspools and privies: If there be a common sewer within fifty feet from any front of or from the inclosure about any house or other building, then a cesspool must not be made for the reception of drainage from such house or other building, unless there be, or shall be built, a good and sufficient drain from such cesspool to such common sewer. And if any cesspool be built under a house or other building, then such cesspool must be built air-tight. And every privy built in the yard or area of any building, or under any street or alley, must have a door, and be otherwise properly inclosed, screened, and fenced from public view.

#### SCHEDULE (I).—(See § 5 & 52.)—Rules concerning Streets and Alleys hereafter formed.

**Width.**—With regard to every such street or alley hereafter to be formed, in reference to the width thereof: Every street or alley must be of at the least the following width from front to front, in every part thereof, respectively; that is to say, in every street (excepting any mews) must be of the width of forty feet at the least; but if the buildings fronting any street be more than forty feet high from the level of the street, then such street must be of a width equal at the least to the height of the buildings above such level; every alley and every mews must be of the width of

twenty feet at the least, but if the buildings fronting any alley, or to any mews, be more than twenty feet high from the level of the alley or mews, then such alley or mews must be of a width equal at the least to the height of the buildings above such level.

**Entrances to Alleys.**—And with regard to every such alley in reference to the entrance thereof: Every alley must have two entrances thereto, each being at the least of the full width of the alley, and one of the two at the least open from the ground upwards.

**Measurement of Width.**—And with regard both to such streets and alleys the aforesaid width is to be ascertained by measuring (at right angles to the course thereof) from front to front of the buildings on each side of such street or alley.

#### SCHEDULE (K).—(See § 5 & 53.)—Rules concerning dwelling-houses hereafter built or rebuilt, with regard to back-yards and areas, and rooms underground, and in the roof.

**Back-yards.**—With regard to back-yards of open spaces attached to dwelling houses: Every house hereafter built or rebuilt must have an inclosed back-yard or open space of at the least one square, exclusive of any building thereon, unless all the rooms of such house can be lighted and ventilated from the street, or from an area of the level of the second story, into which of a square above the level of the second story, into which the owner of the house to be rebuilt is entitled to open windows for every room adjoining thereto. And if any house already built be hereafter rebuilt, then, unless all the rooms of such house can be lighted and ventilated from the street, or from an area of the extent of at the least three-quarters of a square, into which the owner of the house to be rebuilt is entitled to open windows for every room adjoining thereto, there must be above the level of the floor of the third story an open space of at least three-quarters of a square. And with regard to every building of the first class, every such building must be built with some roadway, either to it, or to the inclosure about it, of such width as will admit to one of its front or side access of a scavenger's cart of the ordinary size of such carts.

**Lowest Rooms.**—And with regard to the lowest-rooms of houses, being rooms of which the surface of the floor is more than three feet below the surface of the footway of the nearest street or alley, and to cellars of buildings hereafter to be built or rebuilt: If any such room or cellar be used or intended to be used as a separate dwelling, then the floor thereof must not be below the surface or level of the ground immediately adjoining thereto, unless it have an area, fire-place, and window as required for rooms and cellars of existing buildings let separately and used as a separate dwelling, and unless it be properly drained. And with regard to every such lowest room or cellar in any existing building used or intended to be used as a separate dwelling, there must be an area not less than three feet wide in every part, from six inches below the floor of such room or cellar to the surface or level of the ground adjoining to the front, back, or external side thereof, and extending the full length of such side. And such area, to the extent of at least five feet long and two feet six inches wide, must be in front of the window of such room or cellar, and must be open, or covered only with open iron gratings. And there must be made for every such room or cellar an open fire-place, with proper flue therefrom. And there must be a window-opening of at least nine superficial feet in area, which window-opening must be fitted with a frame filled in with glazed sashes, of which at the least four and a half superficial feet must be made to open for ventilation.

**Attic Rooms.**—And with regard to rooms in the roof of any building hereafter built or rebuilt, in reference to the number of floors of rooms in the roof, and to the height of such rooms;—there must not be more than one floor of such rooms, and such rooms must not be of a less height than seven feet, except the sloping part, if any, of such roof, which sloping part must not begin at less than three feet six inches above the floor, nor extend more than three feet six inches above the ceiling of such room.

**Rooms in other Parts.**—And with regard to rooms in other parts of the building, in reference to the height thereof, every room used or intended to be used as a separate dwelling must be of at the least the height of seven feet from the floor to the ceiling.

#### SCHEDULE L.—List of Fees payable to the Surveyors under this Act.

**Fees for New Buildings.**—For any building erected on old or new foundations, as follows:—

	Dwelling-House Class.	Warehouse Class.	Public Building Class.
	£ s. d.	£ s. d.	£ s. d.
If the building be of the 1st rate.	3 10 0	3 10 0	3 10 0
Ditto extra 1st ditto	5 5 0	—	5 5 0
Ditto 2nd ditto	3 3 0	3 3 0	3 3 0
Ditto 3rd ditto	2 10 0	2 10 0	2 10 0
If the building be of the 4th rate, and contain more than two stories	2 2 0	2 2 0	2 2 0
And with regard to buildings of the warehouse class, a further fee to be paid in respect of any additional 200,000 cubic feet, or portion of 200,000 cubic feet, in any such building, beyond the first 200,000 cubic feet	1 10 0	2 2 0	1 10 0
And for inspecting and reporting to the official referees (s. 24) on party-walls and intermined buildings:—			
If the building be of the 1st rate.	3 10 0	3 10 0	3 10 0
Ditto extra 1st ditto	5 5 0	—	5 5 0
Ditto 2nd ditto	3 3 0	3 3 0	3 3 0
Ditto 3rd ditto	2 10 0	2 10 0	2 10 0
If the building be of the 4th rate, and contain more than two stories	2 2 0	2 2 0	2 2 0
If the building be of the 4th rate, and do not contain more than two stories	1 10 0	2 2 0	1 10 0
For every detached building built for the purposes of trade or collection of toll	1 1 0	1 1 0	1 1 0
For every attached or detached building, distinctly rated (except any such attached or detached building built at the same time as the building to which it belongs, and carried up and covered in within twenty-one days after			0 10 6

such building shall have been covered in within the meaning of this Act, such fee as is hereby imposed in respect of additions to, or alterations of buildings of the rate to which such attached or detached buildings shall belong,



**Fees for Additions, or Alterations.**—For every addition or alteration made to any building (after the roof thereof shall have been covered in) which shall involve the execution of works subject to the regulations of this Act, the following fees; that is to say,—

If the building be of the 1st rate . . .	£ 15 0
Ditto extra 1st ditto . . .	2 10 0
Ditto 2nd ditto . . .	1 10 0
Ditto 3rd ditto . . .	1 5 0
If the building be of the 4th rate, and contain more than two stories . . .	0 15 0
If the building be of the fourth rate, and do not contain more than two stories . . .	0 10 0
And with regard to buildings of the warehouse class, a further fee, equal to one-half of the above fees respectively, to be paid in respect of every additional 200,000 cubic feet, or any portion of 200,000 cubic feet, in any such building, beyond the first 200,000 cubic feet.	

**Fees for Special Duties.**—For the following special duties performed by any surveyor, according to the enactments of this Act, where such duties shall not be performed incidentally to the building or rebuilding of or adding to or altering any building in respect of which any other fees may be payable; that is to say,—

For attending to the cutting away of chimneys—	
breasts for external walls,—	£ s. d.
If the building be of the 1st rate . . .	8 3 0
Ditto extra 1st ditto . . .	8 3 0
Ditto 2nd ditto . . .	2 3 0
Ditto 3rd ditto . . .	2 3 0
If the building be of the 4th rate, and contain more than two stories . . .	1 1 0
If the building be of the 4th rate, and do not contain more than two stories . . .	0 10 6
For condemning party fence-walls . . .	0 10 6

For the inspection and removal of projections and riuins buildings . . .	0 10 0
For surveying party-walls not kept in repair, and consenting to notice of repair being served . . .	0 10 0
For inspecting arches or stone floors over public ways . . .	0 10 0
For inspecting formation of openings in party-walls . . .	0 10 0

**Fees for Special Services not expressly provided for.**—For any service performed by any surveyor which is required by this Act, but not comprehended under any of the foregoing heads,—

Such fee, not exceeding £2, as the official referees shall, by writing under their hands, order and appoint, with the consent of the commissioners of works and buildings.

## SCHEDULE (M).—METROPOLITAN BUILDINGS ACT.

SUMMARY OF PROCEEDINGS to be taken or observed before and after Notices in relation to Buildings.

Section of the Act.	Stages of Proceeding.	Steps to be taken.	By whom taken.	With reference to whom taken.	Form of Notice to be given.	Place of Notice.	Subsequent Proceedings.
	<b>WORKS GENERALLY.</b>						
13	Before commencing the operations specified in this section.	Two days' notice to be given.	By the Builder. See Definition, §13.	To the District Surveyor.	See Form No. 1	At the District Surveyor's office.	£20 penalty for neglect. Existing buildings altered, &c. without notice, to be abated as a nuisance.
13	Before resuming operations, after being suspended for a period exceeding three months.	Two days' notice to be given.	By the Builder. See Definition, §13.	To the District Surveyor.	See Form No. 2	At the District Surveyor's office.	£20 penalty for neglect.
13	On change of architect, master builder, or other superintendent.	Two days' notice to be given.	By the Builder. See Definition, §13.	To the District Surveyor.	See Form No. 3	At the District Surveyor's office.	£20 penalty for neglect.
14	On the occurrence of any irregularity in building operations.	48 hours' notice to be given.	By the District Surveyor.	To the Builder	See Form No. 4	At the Builder's office or place of Building or of alteration.	Proceedings by Surveyor or Official Referees.
37	As to openings hereafter made in external walls abutting on adjoining ground or buildings.	Notice to stop up within one month.	By adjoining Owner.	To Owner of external wall.	See Form No. 5	According to Sections as to Notifications.	To be stopped up.
15	On completion of the carcass of a building subject to special supervision.	Notice for inspection thereof.	By the Architect or Builder.	To the Official Referees.	See Form No. 6	At the Official Referees' office.	Survey and approval, or disapproval by Official Referees. Prohibition of use of irregular buildings of this class, and penalty of £200 per day.
15	On completion of amendments, or the entire completion of a building, subject to special supervision.	Notice relative thereto.	By the Architect or Builder.	To the Official Referees.	See Form No. 7	At the Official Referees' office.	Survey and certificate.
20, 21, 24, 25	<b>PARTY-WALLS, &amp;c.</b> Before survey, repair, or pulling down of a party-wall, party-arch, or party fence-wall.	Three months' notice before operations.	By the Building Owner. See Definition, §13.	To the adjoining Owner.	See Form No. 8	According to Sections as to Notifications.	Inspection by Surveyor. § 24.
24	In the same case . . . . .	Notice for survey.	By the Building Owner. See Definition, §13.	To the District Surveyor and Official Referees.	See Form No. 9	At the District Surveyor's and Official Referees' offices.	Inspection by Surveyor, and report to Official Referees.
—	In the same case . . . . .	Appointment of surveyor.	By the District Surveyor.	To the Owners and Agents, &c.	See Form No. 10	To Building and adjoining Owners and Agents.	Inspection by Surveyor, and report to Official Referees.
26, 34	As to pulling down rooms in intermixed property, and repairing or rebuilding party fence-walls.	Notice of intention to build a party-wall, or as directed by official referees. Notice for inspection thereof.	By the Building Owner.	To the adjoining Owner and District Surveyor, §20.	See Form No. 11	According to Sections as to Notifications.	Erection of wall.
—	In the same case . . . . .	Appointment of surveyor.	By the District Surveyor.	To the District Surveyor and the Official Referees.	See Form No. 12	At the District Surveyor's and Official Referees' office.	Inspection by Surveyor, and report to Official Referees.
—	In the same case . . . . .	Appointment of surveyor.	By the District Surveyor.	To the Owners and Agents, &c.	See Form No. 13	To Building and adjoining Owners and Agents.	Inspection by Surveyor, and report to Official Referees.
26	As to pulling down a timber partition and erecting or raising a party-wall.	Three months' notice of intention to build or raise a party-wall.	By the Building Owner.	To the adjoining Owner.	See Form No. 14	According to Sections as to Notifications.	Erection of wall, or raising of wall.
28	Excavation against existing party-wall for a deeper story, and for the erection of an external wall.	One month's notice of intention to cut away footings or breast or shaft of a party-wall.	By the Building Owner.	To the adjoining Owner.	See Form No. 15	According to Sections as to Notifications.	Execution of operations.
26	Building a party-wall on line of junction of two pieces of vacant ground.	One month's notice for consent of adjoining owner.	By the Building Owner.	To the adjoining Owner.	See Form No. 16	According to Sections as to Notifications.	Execution of operations.
38	In the same case . . . . .	Notice of consent . . .	By the adjoining Owner.	To the Building Owner.	See Form No. 17	According to Sections as to Notifications.	Erection of wall.
22, 23	<b>MODIFICATIONS.</b> Modification or delay of intended work to suit adjoining owner.	Seven days' notice for consent.	By the Building Owner.	To the Building Owner.	See Form No. 18	According to Sections as to Notifications.	If consent not given, commencement of works must be delayed for decision of Official Referees.
—	In the same case . . . . .	Application for decision.	By the Building Owner.	To the Official Referees.	See Form No. 19	At the Official Referees' office.	Delay in commencing of operations.
—	In the same case . . . . .	Notice of application.	By the adjoining Owner.	To the Building Owner.	See Form No. 20	According to Sections as to Notifications.	

SCHEDULE (M).  
FORMS OF NOTICES AS TO WORKS.

METROPOLITAN BUILDINGS ACT, VICT. c. 3, s. 13, 1844.

1.—Notice by the Builder to the District Surveyor, two days before commencing operations.

I do hereby give you notice, that I intend to (1) and that C. D., of is to be the (2) of the works to be executed; and that the said works will be begun on the day of

Dated this day of

(Signature and address.)

\*\*\* Certain penalties are attached to neglect in giving this notice.]

(1) Describing the erection or intended operation in general terms, and whether it relate to any of the following matters:—

"The erection of any building;" or, "The making of any addition to or alteration in any building;"

or, "The building, pulling down, rebuilding, cutting into, or altering any party-wall, external wall, chimney-stack, or flue;"

or, "The making of any opening in any party-wall;" or, "The doing of any other matter or thing by this Act placed under the supervision of the surveyor."

(2) Insert "architect," or "builder," or other superintendent to have charge of the works.

METROPOLITAN BUILDINGS ACT, VICT. c. 3, s. 13, 1844.

2.—Notice by the Builder to the District Surveyor, two days before resuming operations.

I do hereby give you notice, that I intend to re-commence the (1) and that C. D., of is to be the (2) of the works to be resumed; and that the said works will be continued on the day of

Dated this day of

(Signature and address.)

\*\*\* Certain penalties are attached to neglect in giving this notice.]

METROPOLITAN BUILDINGS ACT, VICT. c. 3, s. 13, 1844.

3.—Notice by the Builder to the District Surveyor, as to Change of Builder.

I do hereby give you notice, that, with reference to the works specified in my notice of

last E. F. (2) is to be placed in charge of the said works, instead of C. D., the (2) mentioned in the said notice.

Dated this day of

(Signature and address.)

(1) Describing in general terms the works referred to in notice No. 1, and which works may have been suspended three months.

(2) Insert "architect," or "builder," or other superintendent to have charge of the works.

METROPOLITAN BUILDINGS ACT, VICT. c. 3, s. 14, 1844.

4.—Notice by the District Surveyor to the Builder, as to any thing done in the Erection of any Building not conformably to the Act.

I do hereby give you notice, that the (1) now in progress (2) situate in (3) is not conformable to the statute in the portions thereof under mentioned; and I require you, within forty-eight hours from the date hereof, to amend the same.

Dated this day of

by the clock.

Note.—Irregularities referred to.

(Signature)

METROPOLITAN BUILDINGS ACT, VICT. c. 3, s. 27, 1844.

5.—Notice by an Owner or Occupier to an adjoining Owner or Occupier, to stop up an Opening in an External Wall abutting on his Premises.

I do hereby give you notice, that if within one month from the date hereof you do not stop up the opening

(1) Insert "building," or "alterations," or "building operations," as the case may be.

(2) Insert "under your superintendence," or in the building belonging to you," as the case may be.

(3) Insert the situation, as the case may be.



made in the external wall of your premises situate in (1) and which abuts on my (2)  
I shall, at your expense, cause the same to be stopped up, conformably to the statute.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

#### FORMS OF NOTICES AS TO SPECIAL SUPERVISION.

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 15, 1844.

6.—*Notice by an Architect or Builder to the Official Referees, as to Completion of the Carcase of a Building subject to special Supervision.*

I do hereby give you notice, that the building now erecting under my superintendence in (1) and being a building of the (3) and having been completed to the full height of the walls thereof, and the timbers, floors, roofs, and partitions being fixed, I require you, in accordance with the statute, should you be of opinion that the building is subject to special supervision, to survey the same, and to certify accordingly.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

[\*.\* A penalty of £200 per day for using any such building without its being certified subsequent to notice as above and following.]

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 15, 1844.

7.—*Notice by an Architect or Builder to the Official Referees, as to Completion of Amendments, and of Buildings subject to special Supervision.*

I do hereby give you notice, that the building now erecting under my superintendence in (1) and being a building of the (3) and having been completed in pursuance of your survey and notice subsequent, I require you, in accordance with the statute, to survey the same, and to certify accordingly.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

[\*.\* This notice will be used both with reference to the completion of amendments and to the entire completion of a building.]

#### FORMS OF NOTICES AS TO PARTY-WALLS, &c.

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 20, 21, 24, 25, 1844.

8.—*Notice to be given (three months before commencing operations) by an Owner or Occupier, to an adjoining Owner or Occupier, that the Party-wall, or Party-arch, or Party-fence-wall is out of Repair.*

I do hereby give you notice, that I apprehend that the (4), or some part thereof on the line of junction between my (5) situate etc., and the (6) side thereof adjoining, situate on the side thereof, is so far out of repair (6) as to render it necessary to (7) such wall or some part thereof; and that I intend to have such wall surveyed, pursuant to the statute; and also, that I have given notice to the surveyor of the district, and to the official referees, to survey the premises, for the purpose of certifying the condition of such wall, and whether the whole or any part thereof ought to be repaired or pulled down and rebuilt, and to certify accordingly.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 20, 1844.

9.—*Notice in the same case, to the Surveyor and Official Referees.*

I do hereby give you notice, that I apprehend that the (4) or some part thereof, on the line of junction between my (5) situate in and the (6) side thereof adjoining, situate on the side thereof, is so far out of repair (6) as to render it necessary to repair or pull down and rebuild such wall or some part thereof; and that I require a survey thereof to be made, pursuant to the statute, and that in presence of such one or more surveyors or agents appointed by me, as undermentioned, or by C.D., the owner of the adjoining property, for the purpose of certifying the condition of such wall, and whether the whole or any part thereof ought to be repaired, or pulled down and rebuilt; and I do hereby also intimate that I have served a notice on C.D. to the like effect.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

Names and Addresses of one or more Surveyors or Agents for Building Owner.

- (1) Specify the situation.
- (2) Insert "ground" or "building adjoining."
- (3) Insert "first rate of second class," or "of the third class," as the case may be.
- (4) Insert "party-wall," or "party-arch," or "party-fence-wall," as the case may be.
- (5) Insert "house," or "building," or "ground," as the case may be.
- (6) Insert when required "or has been rendered dangerous and ruinous by cutting away footings," or "breasts," or "chimney-shafts."
- (7) Insert "repair," or "pull down and rebuild," as the case may be.

METROPOLITAN BUILDINGS ACT VICT., c. , s. 20 and 24, 1844.

10.—*Notice, in the same case, by the District Surveyor to the Building Owner and adjoining Owner, and such one or more Surveyors and Agents by them appointed.*

I, \_\_\_\_\_ surveyor of the district, do hereby give you notice, that, in pursuance of an application made to the official referees and to me in that behalf, it is my intention to proceed to view the premises (1) situate in \_\_\_\_\_ for the purpose of certifying the condition of the (2) and whether any part thereof is so far out of repair as to require to be either wholly or in part repaired, or pulled down and rebuilt; and such survey I do intend to make on the \_\_\_\_\_ day of \_\_\_\_\_ next, at \_\_\_\_\_ by the clock in the \_\_\_\_\_ noon, in the presence of any one or more surveyors or agents, on behalf of the building owner and the adjoining owner.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 33, 34, 1844.

11.—*Notice to be given, three months before commencing operations, by an Owner to an adjoining Owner.*

I do hereby give you notice, that I intend to (3) and that I intend to have such (4) surveyed conformably to the statute; and that I have given notice to the district surveyor, and to the official referees, to survey the premises, and to certify accordingly.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 33, 34, 1844.

12.—*Notice in the same case to the Surveyor and Official Referees.*

I do hereby give you notice, that I intend to (3) and that I require a survey thereof to be made, pursuant to the statute, and that in presence of such one or more surveyors or agents appointed by me as undermentioned, or by C.D., the owner of the adjoining property, for the purpose of certifying whether the whole or any part (5) ought to be pulled down and rebuilt; and I do hereby also intimate that I have served a notice on C.D. to the like effect.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

Names and Addresses of one or more Surveyors or Agents for Building-Owner.

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 33, 34, 1844.

13.—*Notice in the same case by the District Surveyor to the Building Owner and adjoining Owner, and such one or more Surveyors and Agents by them appointed.*

I, \_\_\_\_\_ surveyor of the district, do hereby give you notice, that, in pursuance of an application made to the official referees and to me in that behalf, it is my intention to proceed to view the premises (1) situate in \_\_\_\_\_ for the purpose of certifying whether any part of such (5) require to be (6); and such survey I do intend to make on the \_\_\_\_\_ day of \_\_\_\_\_ next, at \_\_\_\_\_ by the clock in the \_\_\_\_\_ noon, in the presence of any one or more surveyors or agents whom the parties concerned shall appoint for that purpose.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature.)

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 26, 1844.

14.—*Notice to be given three months before commencing operations by an Owner to an adjoining Owner, where no survey is required.*

I do hereby give you notice, that I intend to (7) pursuant to the statute.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 28, 1844.

15.—*Notice of Intention to build an external Wall against existing Party-wall, and for that purpose to cut away Footings, Breast, and Shaft of an existing Party-wall.*

I do hereby give you notice, that it is my intention, one month after the date hereof, to build an external wall

- (1) Designated by number or other name.
- (2) Insert "party-wall," or "party-arch," or "party-fence-wall," as the case may be.
- (3) Specify the kind of operation, as to whether it be intended, —  
"To raise a party fence-wall,"  
or, "To repair or rebuild a party fence-wall,"  
or, "To pull down and rebuild rooms in intermixed property, &c.,"  
and specify the situation, &c.
- (4) Insert "party fence-wall," or, "rooms in intermixed property."
- (5) Specify the kind of operation intended.
- (6) Insert "raised," or "repaired," or "pulled down and rebuilt," as the case may be.
- (7) Specify the kind of operation, as to whether it be intended, —  
"To pull down a timber partition, and instead thereof to build a party-wall," or, to rebuild a sound party-wall,  
or, "To raise a party-wall."

against the existing party-wall by which our premises are parted, situate \_\_\_\_\_, and to cut away such portion of the footings, or chimney-breast, or shaft, in such party-wall as will be necessary for that purpose.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 38, 39, 1844.

16.—*Notice of Desire to build a Party-wall on the Line of Junction of Two Pieces of vacant Ground.*

I do hereby give you notice, that I desire to build partly on my land or ground, adjoining your vacant ground, and partly on your vacant ground, on the line of junction of the said premises (1) which will be of the under-noted thicknesses and dimensions; and should you consent thereto, I require you to signify such consent in writing on or before the \_\_\_\_\_ day of \_\_\_\_\_ next.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

Note of the Thickness and Dimensions.

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 38, 39, 1844.

17.—*Notice of Consent to the building of a Party wall on the Line of Junction of Two Pieces of vacant Ground.*

I do hereby give you notice, that I consent to the building of a (1) partly on my land or ground, adjoining your vacant ground, on the line of junction of the said premises, which I require to be of the undermentioned thicknesses and dimensions, and other particulars.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

Note of the Thickness and Dimensions, and other Particulars.

#### FORMS OF NOTICES AS TO MODIFICATION OR DELAY OF INTENDED BUILDING OPERATIONS.

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 22, 23, 1844.

18.—*Requisition to a Building Owner by an adjoining Owner as to Modification or Delay of intended Work on his behalf.*

I do hereby give you notice, that I require you to (2) the works specified in your notice of the \_\_\_\_\_ day of \_\_\_\_\_ in consequence of the inconvenience and loss that would arise to me if the same were executed at the time proposed by you; and if you do not consent hereto, or dissent therefrom within \_\_\_\_\_ days then, in pursuance of the statute, you are hereby required to delay your intended operations until the official referees shall have determined thereon.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

Note of Modifications.

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 22, 23, 1844.

19.—*Notice by an adjoining Owner to the Official Referees as to the Modification or Delay of intended Works of a Building Owner.*

I do hereby give you notice, that C.D., of \_\_\_\_\_ having specified in his notice of the \_\_\_\_\_ day of \_\_\_\_\_ certain works to be executed subsequent to the \_\_\_\_\_ day of \_\_\_\_\_ next; and I having served upon him a requisition in reference to the (3) of the works so intended by him, in consequence of the inconvenience and loss that would arise to me if the same were executed at the time proposed by him, and he not having attended thereto; it is my desire that a survey be made in pursuance of the statute, with reference to such works, and the notices referred to.

Dated this \_\_\_\_\_ day of \_\_\_\_\_  
(Signature and address.)

Note of Modifications.

METROPOLITAN BUILDINGS ACT, VICT., c. , s. 22, 23, 1844.

20.—*Notice by an adjoining Owner to a Building Owner as to Application to the Official Referees for Survey of intended Works with reference to the Modification or Delay thereof.*

I do hereby give you notice, that, in consequence of your not consenting to the (5) of the works intended by you, as specified in my requisition of the \_\_\_\_\_ day of \_\_\_\_\_ last, I have applied to the official referees for a survey of the premises, pursuant to the statute.

Dated this \_\_\_\_\_ day of (6) \_\_\_\_\_  
(Signature and address.)

- (1) Insert "party-wall," or "party-fence-wall," or "external wall," as the case may be.
- (2) Insert "modify as under-noted," or "delay until the \_\_\_\_\_ day of \_\_\_\_\_" as the case may be.
- (3) Insert "modification as under-noted," or "delay until the \_\_\_\_\_ day of \_\_\_\_\_" as the case may be.
- (4) Within seven days after the previous requisition.
- (5) Insert "modification," or "delay," as the case may be.
- (6) Within seven days after the previous requisition.

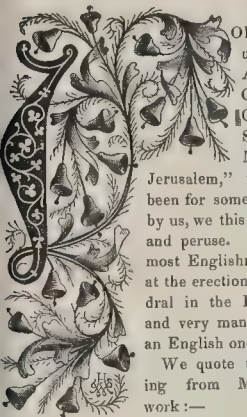
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# The Builder.

NO. LXXXIII.

SATURDAY, SEPTEMBER 7, 1844.



JOHNS' work upon "The Anglican Cathedral Church of Saint James, Mount Zion, Jerusalem," which has been for some time lying by us, we this week open and peruse. We believe most Englishmen rejoice at the erection of a cathedral in the Holy City; and very many that it is an English one.

We quote the following from Mr. Johns' work:—

"Jerusalem, or El Koods (the holy), naturally calls for some slight notice in a work like the present. The Psalmist David describes it thus—'beautiful for situation, the joy of the whole earth is Mount Zion, on the sides of the north the city of the great King.' Viewed from some points, on three sides (it approaching a quadrangular form), few cities present such a naturally picturesque appearance. The most remarkable points of view are from the east, the north, and the south; that affording the least interest is the one which the stranger first sees on his approach from Jaffa, from which place by far the larger number of pilgrims and others arrive, but the traveller who is fortunate enough to have his first glimpse of the Holy City from the north, on the Damascus or Nabulus road, the quotation already made from the Psalmist and King of Israel must be brought most vividly to his recollection; his attention is at first attracted by the higher parts of Mount Zion, the Castle of David, the small dome of the Church of St. James in the Armenian Convent, then the domes of the Churches of the Crucifixion and the Holy Sepulchre, and at last the Mosque of Omar breaks on his view, standing in a remarkably solitary position, with its distant minarets, unlike other mosques, in which the minarets aid in forming most picturesque groups. As this building is remarkable for its usurpation of such holy ground, I shall stop a few moments to describe it:—The building, in general form, differs much from other Moslem mosques, it is polygonal in its plan, is lighted principally by a clear-story of the same form as the mosque, and surmounted by a copped dome, which has never appeared to me in graceful and beautiful contour of outline, the very perfection of the 'swelling dome,' and surmounted by the sign of the Saracenic creed, the crescent. The whole building is coated externally with Arabesque tiles from Constantinople (in which green, purple, and white harmoniously blend), and has on the entablature numerous quotations from the Koran, in Turkish characters, which are continued entirely round the building; this mosque stands on the centre, or nearly so, of a large quadrangle, called the Haram Sherief, occupying, it is supposed, as near as possible, the court of the temple built by Solomon, and the mosque itself, the site of the Holy of Holies; within this quadrangle are numerous praying places and gateways, of beautifully proportioned Saracenic architecture.

"The view from the opposite direction, the south, must not pass unnoticed. On approaching from Hebron, Bethlehem, or the south, the great fall of the city eastward is very perceptible, as also the joining of the valleys of Hinnom and Jehoshaphat, and the bed of the brook Kidron: here you have a view of the city, apparently surrounded by a natural fosse,

and fully perceive the bold position of Mount Zion, and can easily imagine how splendid must have been the appearance of ancient Jerusalem, with the temple and its courts, the Tower of Antonia, the bridge (a portion of which still remains), which connected the upper and lower cities with the Castle of David, and Herod's gorgeous palace and towers crowning the heights of Zion.

"To the 'London Society for promoting Christianity amongst the Jews,' is the effort due, which has already made a considerable progress, towards erecting on Mount Zion a Church, in which may be carried out in the sight of the heathen—the Eastern, but sadly corrupt Christian Churches, and the avowed opposers of Christianity, the Jews—that pure and Apostolic faith and form of worship which has been handed down through all ages, and which retains, in our times, pure and untarnished, the faith 'once delivered to the saints.'

"So long ago as the early part of the year 1835," says the Report of this Society, 'the importance of making some more decided effort, in behalf of the ancient people of God at Jerusalem, was deeply felt by many friends of the Society throughout the country; and, in consequence of their urgent and repeated representations, the Committee were induced to make an appeal upon this subject, which was warmly responded to and encouraged.'

"A correspondence was immediately commenced with the Rev. J. Nicolayson, at Jerusalem, on the subject of the best means of realizing these intentions; but it was found that much time was lost and little advancement made in the formation of plans, owing to the want of local knowledge, the peculiar difficulties of the country, and the very great uncertainty of communication at that period between Jerusalem and this country.'

"The first movement in this matter, which I find recorded, was the return of Mr. Nicolayson, in November, 1836, to England, in consequence of the difficulties just mentioned, with a double object in view—that of receiving ordination, and having personal communication with the Society upon this important subject. Mr. N. having had several interviews with the Committee, during a residence in England of some months, returned to his sphere of labour; but, through various difficulties, ground was not purchased till late in the year 1838, when two adjoining premises were bought for the contemplated purpose.

"The Report of the Society before-named, in reference to the purchase, says, 'He' (Mr. N.) 'considers that it could not have been better situated; it is on Mount Zion, exactly opposite the Castle of David, near the gate of Jaffa, and on the very confines of the Jewish quarter; its dimensions are sufficient for the erection of a church, and the requisite dwelling houses for four Missionary families.' Its actual available dimensions I subsequently found to be 210 feet north and south, by an average of 120 feet east and west; the boundaries are very irregular, and only one of its many angles is rectangular; this might naturally be expected, as the Orientals rarely build on any premeditated plan. After the purchase of the land, Mr. N. proceeded, with the assistance of a native Greek, to collect materials for future buildings, to repair the old water tanks, and to dig and build another, in order to obtain an adequate supply of water for the contemplated erections, and also proceeded to erect the buildings one story high. This portion of the buildings was commenced on the 10th of February, 1840, and had just reached its present state when Mr. Hillier arrived in Jerusalem to take the charge and superintendence of the building department; he was not, however, permitted to even enter upon any active duties, being seized with fever (so common in that climate), and, in one short month from the time of his arrival, his labours ceased, and those who had hoped much from his assistance were again sorely disappointed. He (Mr. Hillier), however, reported in the only letter he wrote after his arrival, relative to the buildings before-named:—'I find,' says Mr. H., 'that the lower story of a portion of the Mission House has been nearly completed in the rude style of masonry generally adopted in the better class of Arab houses,—a style which consumes a very large quantity of materials, and which I conceive it will be

highly expedient to abandon (especially in the erection of the church), on the ground of economy, convenience, and lightliness, and with a view to meeting, so far as may be practicable, the expectations of contributors.'"

In March, 1841, Mr. Johns received his appointment of architect, and at the latter end of April in the same year left England for the scene of his intended operations. At Malta he engaged masons to perform the work.

The foundation of the church is carried down to the solid rock, at depths varying from 30 to 39 feet, for the accumulated ruins were loose and uncertain, and were untrustworthy even for concrete-work. In those ruins what antiquarian treasures lie! future researches may find even the sculptures of Solomon's Temple.

Mr. Johns' publication is, to use the vulgar phrase, very beautifully "got up;" but we wish the intended cathedral which it illustrates had been in size, form, and finish, more like the "Anglican Cathedrals" of England herself, for it is but a very small chapel with a stunted nave; the whole length not exceeding 110 feet, and the utmost transeptal extent only 64 feet. The style chosen is "early English;" the nave (which is not, however, internally separated as such) is 25 feet wide, and is illuminated on each side by three triple lancet windows, something like those at the Temple Church, London; the transepts extend the internal width of the church at that part to 42 feet—(St. Andrew's Parish Church, Holborn, is throughout 64 feet wide)—the chancel of the church is 16 feet wide, and has a semicircular apsidal eastern termination. At the transeptal crossing is a tower 34 feet square; but as this scarcely rises above the apex of the roof, an effect of remarkable squatness is produced—which, contrasted with the comparatively prodigious altitude to which the pinnacles surmounting the four turret-staircases at the angles of the tower are carried, has a most extraordinary effect. The transepts have, like the chancel, semicircular apsidal terminations, the roofs of which we think have an ugly effect, cutting against the blank arched-paneling which surrounds the exterior of the tower.

Freemasonry, in its stern truth, must condemn some parts of this church. The four pinnacles of the tower, run up like those of Worcester Cathedral, which, as a rudder turned to the extreme in the moment of need, has duty to perform instantly and effectually—have no office but the picturesque,—in which they fail. The roofing is open and without tie. That of the nave, which is 25 feet wide, is restrained by no buttresses, nor has its drift diverged inwardly by any pinnacles; while the choir, which is only 16 feet wide, has its roof, which would hardly move its walls (2 feet thick), restrained by buttresses projecting 2 feet 6 inches, and only 6 feet apart; and in one instance, where a passage has been formed through one of the transeptal buttresses, no additional projection has been consequently given, though it ought on that account to have had still more absolute solid. The angles of the building are well provided with far-projecting buttresses, pinnaced at top, although they have scarcely any force to diverge or restrain; they, however, will tend to render that part of the work more durable.

Of this cathedral we say, go on and prosper, and if its anomalies and construction can be remedied, so be it.

## NEW BUILDING-ACT.

Sir James Graham has appointed Messrs. Hosking and Higgins to be official referees under the new Metropolitan Building-Act.



## THE HOUSES OF PARLIAMENT.

THE following is the second report from the select committee appointed by the Lords' Committees, to inquire into the Progress of the Building of the Houses of Parliament, and to report to the House, and to whom leave was given to report from time to time to the House:—

"That the Committee have met, and considered the subject-matter to them referred, and examined witnesses in relation thereto; and it appears to the committee that an understanding was entered into, when the arrangement for the existing accommodation of the Houses of Parliament was determined upon, that the new House of Lords, with its necessary appurtenances, should be proceeded with more speedily than other parts of the building.

"That there is no record of any orders having been officially given, and no steps have been taken in accordance with such an understanding.

"That the Committee appointed last session, in their report to the House, recommended that the architect should so conduct his operations as to secure the occupation of the new House of Lords, with temporary fittings, at the commencement of the session of 1844; and that if he should find that more time would be required, he should report the same to the Commissioners of her Majesty's Woods and Forests, in order that such report might be communicated in due time to the House.

"That instead of the new House of Lords being covered in by Christmas last, as was stated to be practicable by Mr. Barry in his evidence last year, it is now only in course of erection.

"That Mr. Barry now states, that if great exertions are made, the House of Lords, the lobbies at each end of it, the corridors connecting the same with the front building and the libraries, the committee and other rooms belonging to the House of Lords, may be covered in before winter; and the committee having examined the building, with the clerk of the works and one of the contractors, are of opinion that the whole of these apartments may be prepared for the use of the Lords by April next.

"That the Committee do not recommend that any temporary fittings should be prepared, but that all the works connected with the buildings above mentioned should be advanced with the greatest possible speed.

"And the Committee have examined Mr. Barry with respect to the style of internal fitting and decoration, and he has distinguished those parts of the building to which he considers the more costly and elaborate style should be applied. In respect to the remaining portions of the internal arrangements, the Committee entertain the strongest opinion, both in reference to economy and despatch, that the committee-rooms and secondary apartments should be completed in the most simple and solid manner consistent with the character of the general building, but not involving any extraordinary expenditure.

"In respect to the deviations from the original plan, it has been satisfactory to learn that they have not been of a character to vary or affect the builder's contract; and that no future deviations are to be allowed, without the previous sanction and authority of the Commissioners of Woods and Forests.

"And the Committee have directed the minutes of evidence taken before them to be laid before your Lordships."

## IMPROVEMENTS IN WESTMINSTER.

THE Metropolitan Improvement Commissioners having decided on opening a direct communication from the new Houses of Parliament to the north-west district of London, various plans and estimates were sent in, the majority of which were rejected, in consideration of the large amount of compensation which would be demanded by the owners of household property in the respective localities. The line has, at length, been definitely marked out, and a contract concluded for two-thirds of the work. The new street will commence at the western extremity of the Houses of Parliament, running in an oblique line from Abingdon-street to Eaton-square, from which

point there is already a corresponding continuation to the Great Western Road. By the formation of this street, two very desirable objects will be attained. It will afford a nearer and more convenient approach to the Houses of Parliament, the law courts, and the Government offices; whilst the removal of the numerous obscure streets, courts, and alleys, in that part of Westminster, will serve to abate a nuisance which has become so intolerable as to call for legislative reprehension. A great number of these dilapidated tenements have for several years been inhabited by persons of the very worst class; the property belongs chiefly to the dean and chapter, who are naturally anxious to break up this "den of thieves," and as the existing leases are nearly run out, the compensation demanded cannot be considerable; it is assumed, at least, that it will be no impediment to the prosecution of a scheme which promises an ample return for the capital invested, and which is still further commended by utility, convenience, and decency. The new street is to be of the same width as Regent-street, and will be of nearly equal length. Great part of the line, which passes through Piccadilly, fronting Buckingham Palace stables, has been cleared already. In those streets which intersect the line through the other parts of Westminster, the workmen's operations are delayed only until the present occupants are expelled. Mr. Rigby Wason, late member for Ipswich, has contracted for two-thirds of the line, at a rate much below the Government surveyor's estimate. Connected with the above improvement another project has been revived with some prospect of ultimate adoption—namely, the erection of a bridge across the Thames, from the Horseferry-road to Lambeth-stairs, at the foot of Church-street, close to the Archbishop's Palace. This scheme was mooted nearly twenty years back; a prospectus was at that time issued, and a bill brought into Parliament with a view to the issue of shares for building a bridge by a joint-stock company. It met with so little support, that the Bill was rejected, and the project was consequently abandoned. However, it seems that it is now regarded with more favour; the Archbishop of Canterbury and the Marquis of Westminster having withdrawn their opposition, it is not improbable that the sanction of Parliament would now be obtained, should the application be renewed; more especially as a bridge at the point indicated would form an appropriate continuation of the new street, and facilitate communication between the northern and southern districts of the metropolis.—*Times*.

## MONUMENT TO THE LATE EARL OF DURHAM.

THE foundation-stone of the monument to be erected on Pensher-hill, in the county of Durham, to the memory of the late Earl of Durham, was laid on Wednesday, the 28th ult., with masonic honours, amidst an immense concourse of spectators, assembled from all parts of the adjoining district. Pensher-hill is the western extremity of a long range of lofty mountains, running, in a direction nearly east and west, from the sea-coast, a considerable distance into the county of Durham, and the elevation of it is such as to command an extensive view of the adjacent country. At the foot of this lofty mountain range the river Wear pursues its meandering course to the German Ocean, which is also visible from Pensher-hill. The locality of the monument is on the estate of the late Earl, in a neighbourhood full of romantic associations, and a more suitable spot for the erection of a monument to the late lamented Earl could not have been selected.

The proposed monument is already in a very forward state, the works having been in operation some months, so that the spectators could form a pretty accurate conception of what it will be when completed. The form approximates to that of the Temple of Theseus, with a rectangular basis of solid masonry 100 feet long by 54 feet in width. The foundation rests on the solid lime stone rock, 20 feet below the surface of the soil, and the base rises 10 feet above the platform of the hill. At the sides of this rectangle stand eighteen lofty open equidistant columns, 30 feet in height and 6½ feet in diameter, supporting at each end

a magnificent pediment, and at each side deep entablature, which will serve as a promenade when the building is complete. The promenade will be reached by spiral stairs to be formed within one of the pillars. From the ground to the upper point of the pediment will be about 70 feet. The structure stands nearly due east and west, and will form a prominent object to travellers on the line of the Great North of England Railway between Darlington and Newcastle, and will soon become a place of resort for parties of pleasure.

The stone for this magnificent edifice was presented to the building committee by the Marquis of Londonderry, and was obtained from his lordship's quarries at the village of New Pensher, distant about a mile from the top of the hill. The lime is from the Earl of Durham's kilns at Newbottle, about the same distance; and the sand from an excellent bed at the foot of the hill. The materials are conveyed up the hill by a temporary winding railway, the bed of which will form a permanent carriage drive when the building is complete.—*Times*.

## TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLSON.

(Continued from p. 428.)

75. POONA; otherwise Poor or Peon. This timber is superior to Mahogany and Riga Fir in the three primary requisites of strength, toughness, and stiffness; and it should, therefore, be well calculated for the heavier purposes of the house carpenter; it is employed in ship building, for decks, spars, &c. The appearance of the wood is that of a dusky mahogany, and it seems qualified for many of the uses to which that wood is usually applied; it is light and porous, but uniform in texture, the annual rings not very distinct, and there are no larger transverse septæ.

76. PLANE.—The species generally known of this large and handsome description of tree are the oriental and occidental; the former being a native of the East, and the latter of North America; although not indigenous to they are both grown in Britain; the occidental being the more common of the two. Their introduction has been ascribed to Lord Chancellor Bacon, who certainly brought them first into notice at Verulam; but other writers fix the period at a year previous to the birth of that eminent statesman, and which took place in 1560. Though so beautiful a tree and desirable as well for useful as ornamental purposes, it has not yet been cultivated in proportion to its merits.

77. The Oriental Plane is indigenous to Greece, in the earliest records of which it is mentioned; also to Persia, where from its pleasant shade which it diffuses, and tree generally being very uncommon, it is held in high estimation. It is one of those trees which attain the largest size, becoming lofty and wide spreading, with massive trunk and crooked branches; these, with the variegation produced by the peeling off, in large patches, of its smooth grey bark, imparting a striking and picturesque effect; in stateliness and beauty it is second to no tree of the East. The leaves are wedge formed at their base, palmate and cinque-lobed lanceolate and sinuated in the divisions; but in the spring the blossom-balls appear before the foliage. The seeds ripen late in autumn and should be sown immediately in the shade and in a moist, healthy loam; in a rich alluvial plain, adjacent to a stream, they attain their greatest magnitude. The wood of young trees is of a yellowish white colour; that of a more advanced age browner, and streaked with reddish veins, somewhat resembling walnut, or rather beech, but more finely figured. An impression exists that it is deficient in hardness, compared with the occidental; whilst in fact it is the harder of the two; and though regarded here little better than in the light of fuel, in Greece and Persia it is employed in carpentry doors, windows, furniture, and cabinet-work, and for which it is generally well calculated.

78. The Occidental Plane has been styled "the king of the western forests;" it is the largest tree of the American woods, rising to the most graceful forms, with vast spreading lateral branches, and covered with a bark of a brilliant white. In the Eastern states, it is called Button wood; in the western, Sycamore.\*

\* In the north of England the Sycamore or Great Maple is called the Plane tree.



It is also called by the Americans the Water Beech; the latter possibly from its durability in water, which property it possesses to an eminent degree. In the structure, colour, and other general particulars, the wood much resembles beech, but the larger transverse septa are more plentiful, and present very beautiful flowers when the wood is cut favourably for such development; it is harder than the oriental, but works easily and stands very well.

79. In both species, the tree appears to be exempt from the ravages of insects, which renders it the better adapted for purposes where beauty of foliage is desired.

80. **TEAK or Indian Oak.**—This tree is a native of mountainous parts in India; it grows with rapidity, to a great height, wide-spreading and erect, affording most useful timber, which requires but little seasoning, and has very little shrinkage; being light, strong, durable, and easily worked, it is well adapted for the purposes of both the house and ship carpenter. In strength and stiffness it excels our British Oak, and is said to have been known to last firm where even the latter has failed: it is oily in its nature, and yields tar of good quality. It is from both the Malabar and Coromandel coasts, but that from the former is the most highly esteemed, and at Bombay is much used for ship-building, for which it is well adapted. There is a kind, it is said, in Hindostan, of which the wood is of a more compact texture, and heavier than that of the common teak; being likewise beautifully veined, and altogether well suited for furniture. The Teak tree is, in the Birman empire, the lord of the forests (which are large and numerous), and is esteemed superior to European oak.

81. **TURTOSA or African Teak**, also sometimes called African Oak, is imported from Sierra Leone; it is a compact and hard but rather brittle wood, similar in colour to oak, but in grain [more] uniform. It has, no larger transverse septa, but the smaller are strong and abundant; the annual rings are visible but not distinct; it is more difficult, and consequently more expensive to work than British Oak, but nevertheless is used to a considerable extent; and is, indeed, thought suitable for those purposes to which that timber is usually applied, both as regards house and ship carpentry. The wood tastes bitter, but is inodorous when dry; it is disposed to split internally in the seasoning, and inclines also to shakiness.

82. **COWRIE.**—This timber is from a large cone-bearing tree of the pine species, and is imported from New Zealand. The wood is in colour somewhat similar to cedar, with some of that silky lustre which is observable in several of the pines: it has no large transverse septa, is straight and fine in the grain, and uniform and close in texture. The annual rings consist of two parts, light and soft, and a harder and darker, with resin in considerable abundance; it is not much liable to shrink, holds very well with glue, and seems to stand the weather tolerably. It is used by ship-builders for masts and spars, and, is excellently suited for internal joinery.

(To be continued.)

#### ON THE CONDUCTING AND ABSORBING POWERS OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 429.)

THE processes of Nature, by which concrete masses of rock are produced, furnish many valuable hints to the builder, not only for making the most durable cements, but also for remedying the defects of those concrete masses which are most generally employed for building purposes, but which, from their porosity, or from the preponderance of lime, are apt, when they come in contact with atmospheric air, to fall into rapid decay. In the organic kingdom, as is palpably manifest to all men, the most solid portions of the animal frame, as shells, bones, and horns have a cementing base of gelatinous matter; and the more intimate the union of this matter with the earths and other substances, the harder, the more compact, and consequently the more durable, are the members of the organic body. The coral tribes which pass into limestone from the living state have all of them this gelatinous or

mucilaginous base, which is analogous to, and passes into the state of silica; many of them have also peculiar oils, which are compounds of carbon and hydrogen, and these components also enter into and become identified with the solid ponderable rock; the presence of iron, magnesia, excess of animal oils, &c. gives characteristic quality to the rock: thus we have magnesian limestones, bituminous limestones, ironstone, &c. On the other hand, when rocks are formed by the concretion of sedimentary deposits, the cementing material of the various masses is ever varying in its nature, being carbon, silica, or alumine, as the case may be, but under all circumstances it is mineralized organic matter. The shell of the oyster is chiefly composed of phosphate and carbonates of lime, every atomic part of which is surrounded by a firm membranous matter, which constitutes the strength of the shell, for mere compact solutions of calcareous matter and water would embrace neither strength nor durability. All cements must, therefore, have some common basis, possessing adhesive qualities, and conforming in character to the objects which they embrace, otherwise the atmospheric or aqueous power acting upon them must inevitably decompose their masses.

All rock which is simply concrete, and not crystalline, is none other than a natural cement; and the uncertainty of its composition, and character for durability, attest the accident of circumstances which brought its material together. Take for instance Portland stone: under this name we have a variety of material, the nature of each being determined by the predominating material, which is either lime or alumine, or an union of these with silica; the first, a mere agglutinated mass of calcareous *vermes* and other lime secreting species, with chalky deposits, and having little cohesion of its parts, like ill-mixed mortar, soon falls to pieces; the second being calcareous matter blended with argillaceous earth, has a better cement or base, and is more durable; but under atmospheric influences this also readily parts with its lime, and consequently disintegrates: the third quality produces stone at all times better than the other two, and increasing in value, so far as regards durability, as silica becomes its most prevalent material.

The more siliceous there is in concrete masses, the more siliceous there is used in making artificial cements, the more durable is the material. Siliceous is almost indestructible, air makes no change in it; by absorbing water, it sometimes assumes the crystalline state, but it cannot be dissolved in water by chemical methods; the acids to which it may be exposed have no effect on it, and uniting with alumine, it renders the latter harder and more durable. Buildings built of flints, if the cement were equally durable, would be indestructible in this climate, for contrary to other earths they love a moist climate, and more tenaciously retain the bodies with which they are mechanically united in temperate and cold, than in tropic regions. Formed by atmospheric influences, they are by nature calculated to resist them.

The durable quality of concrete bodies having a siliceous base is palpably manifest in the basalts, porphyries, clinkstone, and other varieties common to this country, and would have the effect of bringing them more universally into use, were it not for the vast expense of preparing them; in many of the crystalline varieties of rock, their durability is less sensibly exhibited, in consequence of the slight cohesion of the crystalline particles.

Natural concretes almost always attain greater cohesion and solidity of parts than artificial cements; but still there are many exceptions to this rule, and I have seen cements in India having a gem-like hardness. I remember in particular witnessing the pulling down of an old fortress in the southern part of

[\* The kinds containing oyster and other shells are frequently found the most durable, a small portion only of the cement disappearing while the shells remain sharp and slightly prominent, as may be seen down the weather-line of the columns of St. Paul's Cathedral, the stone of which was selected with such admirable care that the greater portion of its masonry remains exhibiting the finest marks of the tools used from 140 to 170 years ago. On its northern and eastern sides hardly a time-speck is to be observed upon its delicate and extraordinary carvings.—Ed.]

the Deccan, where the cement was so exceedingly hard as to turn the points of the iron implements, and it was found much easier to break the stones to pieces. A great deal, it is true, depends upon climate, but much is really due to the care and attention bestowed in making these cements. The very best shell lime is used, and this shell lime contains a great deal of siliceous matter; equal quantities of this and the very fine sand of the country is used, the lime being first slaked with water; they are then left for three days. A liquid is then made of 2 lb. sugar (goor) to one gallon of water, and this is sometimes boiled with vegetables of a gelatinous nature; to the lime and sand is added chopped hemp, and the whole mixture is then well stirred together into a very fluid state; some add milk to this mixture, and others increase the quantity of sand. When used, the bricks or stones are bedded in layers of it, as thin as possible, and if the material is of a spongy nature, it is saturated with the mixing fluid.

This is following Nature in her course, the natural cements or concrete rocks being of analogous composition; the carbonaceous matter and the silica conjointly forming in union the cementing base, and in both the natural and artificial product, enveloping, as in the shell of the fish, every atomic particle of the lime. In Persia, most of the concrete rocks abound with bitumen, and it is here, therefore, that bitumen is employed in making cement, and we frequently read of the bitumen being employed in ancient structures in this and also all the surrounding countries, being built of brick, stone, or marble, and cemented with bitumen. But this must not be taken literally, for bitumen alone in these hot dry countries would be of little real use, but when it forms the cementing base of the lime, it then becomes exceedingly hard and durable.

I have already stated that rose jasper, and many other conglomerate masses present, in the first instance, the appearance of a simple conglomerate mass of siliceous pebbles held together by a natural cement, bearing great resemblance to that made by artificial means; at first very slightly adhesive, but gradually becoming indurated, and finally silicifying, and thus becoming one and inseparable from the general mass; in fact, when the change is perfected, it appears but as one variegated stone. To effect this change, time and intense atmospheric heat are necessary, but simple silicification, or, as it is wrongly termed, petrification, takes place in every part of the world; and in this country, in particular, we find Nature incessantly occupied in forming conglomerate masses from the commingled masses of matter constituting strata, or in changing the isolated bodies and fragments of bodies of animals and vegetables into stone. If, then, Nature can cement chalk, or a bone, or a tree, into flint, securing it, by this means, against the future ravages of time; why should not men, by studiously following Nature in her operations, attain the same power, and by the same means? Were Bath stone saturated with liquid silica, or with alumine and iron instead of with water, it would speedily be changed into an indestructible body, resisting alike the atmosphere and the waters; and there is not the least reason, other than the present ignorance of man, why the quarried and sculptured stone should not be saturated with a fluid compound which would at once alter its very nature and qualities.

Man has much to learn concerning the earth on which he treads; his imitations of nature are too often feeble and imperfect; he beholds the fluid droop converted into a stone; he finds the common earth alumine converted into topaz, ruby, and emerald; carbon converted into coal and into diamond; he beholds silica congealed in a thousand forms, as agate, crystal, quartz, and crystalline, and amorphous rock: but of the origin of silica he knows nothing, although it is the most abundant material of the earth; the processes of nature are continually liquifying it for the uses of the vegetable kingdom; and that its elements are abundantly diffused in liquids, is evidenced by the enormous processes of congelation and concretion continually taking place.

It is evident that there is no other cementing base so capable of resisting the action of the atmosphere or of water, as silica; of the carbonates and sulphates of lime, including the



immense varieties of limestone, there are none capable of withstanding the corroding hand of Time in this country over a few centuries, and most of them rapidly disappear; it is only when carbon is in excess, that the stone is marked with a lengthened durability. Still it is to be observed that, while they continue in their natural and undisturbed state, they appear to be indestructible, presenting their vast precipitous fronts even to the storm and the tempest for ages, ere they yield inch by inch to its fury; the causes of which are, the apparent state of rest in which they exist; their absorbing pores are ever filled with moisture, which is the clue by which heat finds its way into their remotest parts, and the medium by which uniformity of temperature is preserved. But when quarried, the stone becomes the subject of incessant action and reaction; it is affected by heat and cold; its moisture is continually received, and as continually withdrawn; and its spongy texture is free to admit elastic fluid bodies inimical to its compound structure. It is the same with the common cements of the day, they are acted upon in the same manner, and too often by soluble salts, with which they are unthinkingly united, and the inevitable consequences are rapid and uniform decay.

Chemists unhesitatingly affirm that the induration of cements is caused by the absorption of carbonic acid; but, although I stand alone in this respect, I most decidedly differ with them in an opinion which is contradictory to existing phenomena; for the supply derivable from the atmosphere must, in many cases, be infinitely short of the demand. On the other hand it is evident that, on the introduction of water, chemical action is generated, and a general interchange of bodies takes place; internal action continuing until the carbon, the lime, and the silica acquire a reciprocal relationship to each other. I should be far more inclined to believe that, on the decomposition of the water, while the oxygen is absorbed by the lime, the hydrogen attacks the gelatinous and siliceous matter, causes it to expand, and becomes in this state firmly united with the lime by the force of affinity.

In tropical countries the most agreeable habitations are those which are built of very thick massive stones, the least so are those built of wood; the black basalts in particular being non-conductors of heat, absorbing very little moisture, and exceedingly durable, are universally employed by the natives in the construction of their temples; and the massive structures still existing in Egypt, demonstrate that the ancients were well acquainted with the nature of building-material, always choosing that which possessed the least absorbing power, or otherwise employing much larger blocks of the lighter and more spongy material. In this country the latter is most desirable, because it preserves a more even temperature throughout the year.

(To be continued.)

#### THE NATURE OF DESIGN.

*A Paper read at the meetings of the Decorative Art Society, March 13th and 27th.*

BY MR. CRABB, V.P., MEMBER OF THE INSTITUTE OF FINE ARTS.

(Continued from p. 430.)

With a few exceptions our pattern drawers or designers have not been educated, nor have they taken any comprehensive view of Art. Design has, in fact, been understood neither by the manufacturer, the public, nor the designer himself, and the extent of our national as well as individual deficiencies, in every thing approaching to systematic information or education in Art, subsequently to be applied to manufacture, can at present alone be understood by comparison with the continental nations. The steady but constant improvement and extension of their manufactures will be found to be progressive with their schools of Design.

The increase of our population causes a greater competition for employment, rendering it every man's business to consider by what means additional trade can be obtained; bearing in mind the alterations which have

taken place abroad, it would be exceedingly interesting to consider the probable extension of the present, and what additional occupations would arise in our own country, were the *entire people, wealthy and poor*, as familiar with Fine Art, as they are upon the Continent. Our present improvements are chiefly those of actual utility, taste being secondary. The application of geometrical design has greatly added to the beauty, while it has also effected a great saving of material in the frame-work of our engines and machinery generally. Without doubt, elaborate work in beautiful design might be added to all our manufactured metallic and other substances, which would cause an immense increase of employment. We possess knowledge, and specimens of very fine examples in wrought iron work and brass screen work, as Henry Seventh's tomb. We could consume brass furniture mountings to a great extent; bronze architectural ornaments, tazzas, vases, figures, &c., for the production of which the French are so justly famous; fine iron castings, as of Prussia, France, or Belgium. Our wood carving is very deficient, and our decorative painting has now passed into the hands of foreign artisans. Nothing would prevent our silk manufacture equalling the finest efforts of Lyons, were our weavers and artists educated. Carpets the same, together with an immense list of products from the loom, tapestries, &c. Why could not we, instead of importing, make watches as Geneva? and also watch-glasses? Their great skill and beautifully applied design originates but in a practical school of design. A similar source supplies the French with their superior distemper printing colours, by which, and their botanical knowledge, they wholly eclipse our paper-hangings. Scientific knowledge of colouring is as visible in the work-room of their milliners as in their manufactures. Are we not as capable of transplanting to our land the light and easily followed trade of artificial flower-making as the French, who took it from Italy? Only instruct our people in botany as they did. Consider the immense field that is open for lace-work; I know of nothing upon which such distinctive varieties of magnificent design have in olden time been lavished, and never was there a better opening for its reproduction than at the present time. Foreign jewellery, and goldsmith's work (often enriched by enamels), is daily growing in fashion. Abroad, you will see females employed in gem engraving, and other light works of fine art. Look to the thousands of cameos brought from Italy; can it be said we are unequal to their production?

The continental cabinet-work is inferior in quality, but its ornaments display all the taste resulting from educated design; and the elegant arrangements of French upholstery have become almost proverbial. These examples might be extended, but my purpose is answered when I draw attention to the advantages of fixing upon our already substantial manufactures, the profitable intimacy of the entire nation with fine art.

Superior elegance of form is perfectly reconcilable with bare utility, and is exemplified in numerous instances; from the most refined works of the antique designing, down to their commonest domestic utensils and implements.

When a people become familiar with the exceeding beauty of Art, they require its application to every article of general use, whether for elegant luxury, or simple utility. This causes an application of elaborate workmanship, creating innumerable trades. Art is cheap, all can enjoy it, and while it affords pleasure to all, supports by its lighter employments thousands who might otherwise be in indigence.

Practical institutions for instruction are the first grand and special object; give the people opportunities of seeing the most beautiful objects of art in the particular branch they may follow—gradually form collections of models of the best styles of furniture, and every other requisite manufacture—and have able instructors to teach the principles by which they are produced. This, in addition to accessible collections of celebrated buildings, is the obvious and certain mode of universally extending taste and a knowledge of the arts among the people, and of causing their application to manufactures.

With such statements, coupled with a foreign rivalry, in active operation, immedi-

ately and particularly affecting those who may be expected to become members of this society, I submit we are entitled rigidly to inquire into the measures lately pursued for educating or diffusing a knowledge of design and its purposes among our own people.

Since the School of Design was established eight years ago, I have had frequent opportunities of being acquainted with its management, and at various intervals have been in communication with members of the council. I have, throughout, taken a different view of the plan desirable to be pursued, from that of those gentlemen, or rather of the majority, for the council has been divided in opinion upon the point. The school has had ample time to produce designers of its own formation, and to have laid a solid foundation for a well-digested plan of education; but that the various plans successively adopted have failed, none can deny—and persons capable of forming a sound judgment consider the system unsuited to produce efficient draughtsmen—and I take the liberty of challenging the school to produce one real designer of its own education. Is it not, therefore, fair to ask the reason?

I attribute no blame to the gentlemen of the council; they have acted to the best of their judgment, and encountered many inconveniences, for which we are greatly their debtors; but these gentlemen being only theoretically and limitedly acquainted with design, its practical diversified requirements cannot possibly be known to them. They therefore commit the first grand error in choosing an artist, portrait or landscape painter, as the sole director, a class of gentlemen confessedly not men of business, and certainly not familiar with practical design. It is a separate question whether an artist should or should not be at the head of the institution, but I am perfectly certain that unless talented designers of varied experience, and familiar with trade and foreign manufactures consumed in England, be associated with the institution, it is impossible for the council to confer the benefits they propose.

My own business is wholly with design, and I have allowed no opportunity to escape for discussing this topic with gentlemen and with manufacturers, and each, without exception, has admitted the plain common sense of my position.

There are persons who have a management in the first class cabinet, upholstery, and decorative houses of London, who know more about the practical requisites for teaching design than all the school put together. These persons are few in number, and possess advantages no other class of men can possess; it is their immediate business to examine thousands of designs that are constantly recurring, for their decorations and furnishings, in ornamental works, in chintzes and silks, carpets, floor cloths, furniture, iron, brass and marble, &c.; every description of design, foreign and English, is constantly requiring their notice, and it is not unusual for noblemen to take their opinion upon a choice of lamps, bronzes, plate, and various et ceteras.

When I am called upon to decorate an furnish, say an entrance vestibule, dining room and drawing room, observe the information upon design requisite:—The general plan has first to be determined; it may be a modern built London house, capable of receiving the Greek, Roman, Italian, French, or even Elizabethan styles—an intimate knowledge of each style, its leading characteristics and treatment, the ornaments and furniture of the respective period is perfectly essential, otherwise I cannot successfully direct my customer's choice; and when determined, there remains the practical acquaintance with home and foreign manufactures, my immediate province being to point out superior products of either. The floor of the hall may be laid in plain or patterned marbles, with tiles or tesserae, plain oak or inlaid woods. The walls and ceiling are to receive due and respective embellishment; and though little furniture is required, it varies from the Roman eagle and slab to the bracket. The dining room, even if plain, can have a distinctive character marked in its frieze, cornice and ceiling, its chimney grate and leading pieces of furniture, the carpet, and the mode of fitting up the windows, in which the wide diversity of materials for curtains, resulting from the efforts of many manufactures, present me with every quality of design. The drawing room usually demands



the chief attention, its decorations admitting of greater variety; walls, ceilings, and chimney-pieces being determined, there remain the form and ornaments of furniture; consoles, cabinets and glasses, carpets and curtains, all may be British or foreign, and all come under my direction or notice; but now observe, if skill and education in the application of colour is not matured, there is certain failure in producing ultimate unity and harmony of effect; the key note, as my friend Mr. D. R. Hay would express it, will be wanting.

Thus, the designer in a large establishment is a person of importance, in connection with this subject; he submits, recommends, or influences a vast amount of money to be expended upon English or Foreign manufactured design; he passes all his time in connection with it, and in the mansions of the nobility he has opportunities to observe the finest works of great masters in design. I have often had occasion to thank the liberality of gentlemen in displaying to me choice specimens or books, and to regret that circumstances and opportunities did not permit my giving to the public the results of experience in applied design, so much required by manufacturers. I have referred to my own particular business, because from that source, aided by observation and peculiar facilities, is derived whatever information I possess, and because I consider the School of Design may there find the most valuable practical intelligence, not to be obtained elsewhere, and with which, to judge by their practice, they appear wholly unacquainted.

Design is perfectly simple, and its principles are easy of communication by proper persons; let it be divested of the mystery at present allowed to surround it, and teaching the great principles of design will be found more than sufficient to occupy the attention of our school; those are what the manufacturers require to be cultivated, not *fresco painting* or *wood engraving*, which may be safely left to their own circle of clever artists. In consequence of an absence of practical information, *copying* is made the fundamental practice, as also drawing from the human figure; this instruction chiefly tends to prepare pupils for the Royal Academy, and not to produce manufacturing designers. Copies after Raffaele's works make the school look pretty, and assist the decorative painter; but they may mislead the uninformed and confuse the manufacturer. I should prefer their place being occupied by geometrical principles of design, examples of form and the theory of colouring, *executed by the masters themselves*; by them frequently explained as the source of Raffaele's excellencies, and with detailed principles of application to manufacturing design. Teaching drawing forms but one link in the chain of teaching for manufacturing design, and it is difficult to make the uninitiated comprehend the full extent of the mischief, in rendering *fine art* the principal aim of the school, when it ought to be *industrial art*. I admire fine art, and advocate its indissoluble connection with manufacturing design; but let us have practical utility first, the necessities of the manufacture require it. Fine art will assuredly follow, and with increased success; but practical men can alone achieve this successful issue, and the school does not possess them! If a physician were appointed operating surgeon to an hospital, his failure would excite no surprise, though both are doctors; so between the artist, painter, sculptor, and designer, there is even a wider difference of acquirement and purpose. Five years since, I recommended to the council, that existing designers should be induced to attend the school for a more complete instruction, by which, important benefits would be exchanged; but a theoretical course of their own was preferred—let us judge of its success by their recent appointments of *masters to schools* at Birmingham, Newcastle, and other places. The one sent to Birmingham, described as an intelligent pupil of the school;—a leading manufacturer tells me they are exceedingly dissatisfied, and very likely, for I have long known him to be a person without pretension, and he acknowledges himself to be unacquainted with manufacturing design. A worthy man, a *wood engraver*, has been sent to Newcastle; he neither pretends to, nor possesses the slightest manufacturing knowledge. There must be some serious misapprehension among the council to suppose that men of such

acquirements can teach what they know not—*manufacturing design*. I do assure them, they are extending an evil that will provoke the contempt of the manufacturers; if men of ability were sent, manufacturers would soon see their interests in subscribing handsomely for their support, and incalculable benefits must arise; in three years, or less, they might have designers and modellers trained to their own peculiar requirements upon the spot.

Freely admitting the Foreign designer's superiority, I insist upon the Englishman's capability of equalling him (with similar advantages), and thus hold it to be a matter of high moment, that the gentlemen of the council be made sensible of the insufficiency of their present arrangements. Certainly, the school in London should not be suffered to remain a perversion of its title, a mere *cheap drawing school*, made to look inviting by some extra attention paid to a few scholars, intended as decorative painters; there is every opportunity for rendering the most important service to the arts of design by *educating those who can already draw well*, and who would eagerly attend the school, and pay a portion of its expenses also, provided practical men were there to direct the studies and communicate that information which no other artist, painter, sculptor, or architect can possess. Let the subject be treated with energy and liberality, and there is no difficulty in doing this, nor in widely diffusing a popular knowledge of the nature and purposes of design to the public at large. I do not speak theoretically, but with ample knowledge of the difficulties, and with my opinions sanctioned by gentlemen, whose names are an honour to our country.

(To be continued.)

#### A GLANCE AT THE INTERIOR OF THE CHURCHES IN THE DEANERY OF SPARKHAM, IN NORFOLK.—NO. IV.

WITH NOTICES OF THEIR ACTUAL CONDITION.  
(Continued from p. 407.)

*Lyng*.—"Tu, ne lividus et mordax videare, caveto."—There is generally some point of interest about each of our old churches, some beauty of architecture, a porch, a window, a font, a monument: the Lord's house at Lyng, dedicated to St. Clement, has charms for the ecclesiastical antiquary in more than one of these particulars. It consists—or rather consisted once—of a nave with south porch and a chancel, the latter feature wretchedly shorn of its fair proportions.

Notice will readily be drawn to the porch; its existing state affords sad token of the neglect and spoliation to which the entire edifice has been subjected. We enter by passing under a very obtuse Tudor arch, inserted within a square compartment with enriched spandrels: the archivolt springs from short semi-circular pillars, with stilted bases. A niche for the benetura, or holy-water stoup, appears in the outer wall to the right;—the cause of this peculiarity will be seen presently. Two fine windows in the perpendicular style have been bricked up below, and above, over the entrance, a square-headed window of three "days" lighted an upper chamber or parvise: it was reached by a narrow winding staircase, the doorway, now closed, being still perceptible on your right within the church. The great or south door has its surface elaborately carved with perpendicular panels and tracery, the whole inclosed within a wide bordure of quatrefoils. The ancient key, we were informed, was unfortunately destroyed some years since, having burst while being employed on *fusil* after a wedding.

In ancient times the towers of churches, it is thought, were not unfrequently used as fortresses, to which the parishioners retreated on occasion of danger. The peculiarly massive character of this steeple, with narrow lancet-shaped windows, the lowest at considerable height from the ground, as well as the only access to it being through the church, may strengthen this view. On the other hand, the lower portion having a lantern—that is, being

pierced by a lofty belfry-arch,\* now partially closed by an unsightly "scaffolding,"—may weigh in the balance of opinions. There can be but one regarding the elegant windows of the nave, the perpendicular crockets of which are intersected by embattled transoms, the central at a higher elevation than the rest. The pointed dripstones or hood-mouldings of these windows are boldly projected, and canopy the lofty jambs and mullions with fine effect. Many good specimens of painted glass, happily free from the lime-wash so plentifully applied elsewhere, yet further embellish the masonry. The walls, we regret to say, are in a state that augurs ill for the endurance of these beauties, although braced by iron girders within, and propped externally with massive buttresses of the most debased character.

This church, according to Parkin, has "two aisles and a chancel:" a spacious nave, covered by an exceedingly mean roof of no late date, and a recess in lieu of the chancel, already noticed as dilapidated, come much nearer the reality. How far this last has been despoiled of its ancient honours, indications are not wanting to shew. A low door on the north side afforded access probably to a chantry-chapel; some incline to the notion of a chancel once existing there. A spiral staircase of stone leading to the roof-loft might be traced within memory of the present generation. The lower or inclosed portion of the chancel-screen, *cancelli*, yet exists, but in a very mutilated state. Panelled arches, embellished with decorated tracery, and having spandrels enriched by trefoils and figures of animals, the whole supported on buttresses of the most chaste design—put on the wanton devastators that have so marred them! An ancient altarcloth of purple velvet, having the crucifixion and effigies of the saints, &c., wrought on it in needle-work and gilt tinsel, claims notice here. Not so the pulpit and reading-desk, of which we know not whether they offend most in design or position—both in the highest degree exceptionable.

To what other cause than that of violence—the authorized mutilations of fanatics—may we attribute the injuries sustained by so many of our ancient fonts? That at Lyng, a capacious octagon, leaded and originally provided with a drain, stands on a tasteless modern pedestal of brick-work; it has a conical oaken cover, in the early English style, surmounted by a finial. Those which crest what remain of the ancient seat-ends are of rather inferior handicraft: too many of them have been discarded to make room for the "earthly state and vain distinction" of unseemly pews. The steeple boasts of six bells.

We were pleased to encounter an article of church furniture unhappily of rare occurrence; a date on it informs us that *tem. Cur. 11*, poor's boxes, and consequently works of charity, were held as now essential to the worship of Him, the source of every blessing. A large antique chest or locker, with semi-circular top and giant iron bands, has been thrust aside as useless, under the gallery. An ancient grave-stone, adjoining the font on the south side, has been 'disrobed' of its brass, and by some further mischance the position has become reversed.

This church shews that some regard is had to its cleanliness, but the pavement generally is in very damp condition. The site, well high adjoining the river Wensum, here artificially raised to form a mill-head, doubtless promotes the evil; but the surface of the grave-yard—particularly on the south side, where tombstones crowd upon the very foundations—sadly overtops the interior level. We sought in vain for any indications of a pure and chastened taste in the monuments, although numerous epitaphs stand about to proclaim how closely

"Our little life

Is rounded with a sleep."

"He is highly pleased," says the Homilist, "with those that diligently go about to amend and restore such places as are appointed for the congregation of God's people to resort unto." Were it not better that such a visitant—long to be waited for, we fear,—should to the credit of all parties, be anticipated at Lyng?

The reader will be invited in our next to accompany us to Elsing.

\* We are by no means assured of this being an original feature.





INTERIOR VIEW OF THE REFECTORY OF ST. MARTIN'S PRIORY, DOVER.

TO THE EDITOR OF THE BUILDER.

SIR,—I beg to send you the accompanying sketch, and the following particulars:—

This building, now used as a store-house or barn, is situated within a short distance of the Maison-Dieu. The priory has been long famous for the gateway, which still retains much of its original beauty, and leads to the residence of its worthy possessor, John Coleman,

Esq., in whose family this farm has been for a long series of years.

The exterior of the building offers little worthy of observation, but internally it bears considerable evidence of antiquity. The priory-buildings were begun by Archbishop Corboyl, in the reign of Henry I., and were finished by his successor Theobald, who filled it with Benedictine monks; and king Henry

II. decreed, that no religious order, other than that of St. Benedict, should reside there.

The farm-buildings stand in a very pleasant situation, near the commencement of the Folkestone road, and the whole precinct is still surrounded by a stone-wall, within the boundaries of which many a mass has been sung, and offering made to St. Martin.

Popular.

EDWARD STOCK.

#### THE ELEMENTS OF ARCHITECTURE.

COLLECTED BY SIR HENRY WOTTON, KNIGHT,  
From the best Authors and Examples.

(Continued from p. 423.)

##### OF CHIMNIES.

In the present Business, *Italians* (who make very frugal Fires), are perchance not the best Counsellors. Therefore from them we may better learn both how to raise fair *Mantels* within the Rooms, and how to disguise gracefully the Shafts of Chimnies abroad (as they use) in sundry Forms (which I shall handle in the latter Part of my Labour), and the rest I will extract from Philippe de l'Orme, in this Part of his Work more diligent than in any other, or, to do him right, than any Man else.

First, He observeth very soberly, that who in the Disposition of any Building will consider the Nature of the Region, and the Winds that ordinarily blow from this or that Quarter, might so cast the Rooms which shall most need Fire, that he should little fear the Inconvenience of Smoak; and therefore he thinks that Inconvenience for the most Part to proceed from some inconsiderate Beginning. Or if the Error lay not in the Disposition, but in the Structure itself, then he makes a Logical Enquiry, That either the Wind is too much let in above, at the Mouth of the Shaft, or the Smoak stifled below: If none of these, then there is a Repulsion of the Fume by some

higher Hill or Fabrick, that shall over-top the Chimney, and work the former Effect: If likewise not this, then he concludes, That the room which is infested, must be necessarily both little and close, so as the Smoak cannot issue by a natural Principle, wanting a Succession and Supply of new Air.

Now, in these Cases he suggesteth diverse artificial Remedies, of which I will allow one a little Description, because it savoureth of Philosophy, and was touched by Vitruvius himself, (Lib. 1. Cap. 6.) but by this Man ingeniously applied to the present Use: He will have us provide two hollow Brass Balls of reasonable Capacity, with little Holes open in both for Reception of Water, when the Air shall be first sucked out: One of these we must place with the Hole upwards, upon an Iron Wire, that shall traverse the Chimney a little above the *Mantel*, at the ordinary height of the sharpest Heat or Flames, whereof the Water within being rarified, and by rarification resolved into Wind, will break out, and so force up the Smoak, which otherwise might linger in the Tunnel by the Way, and oftentimes revert: With the other (*said he*) we may supply the Place of the former, when it is exhausted, or for a need, below the Fire in the mean while; which Invention I have interposed for some little Entertainment of the Reader. I will conclude with a Note from

Palladio, who observeth, that the Ancients did warm their Rooms with certain secret Pipes, that came through the Walls, transporting Heat (as I conceive it) to sundry Parts of the House, from one common Furnace; I am ready to baptize them *Caliducts*, as well as they are termed *Ventiducts* and *Aqueducts*, that convey Wind and Water; which whether it were a Custom or a Delicacy, was surely both for Thrift and for Use, far beyond the *German* Stoves; and I should prefer it likewise before our own Fashion, if the very Sight of a Fire did not add to the Room a kind of Reputation, as old \* Homer doth teach us in a Verse, sufficient to prove that himself was not blind, as some would lay to his Charge.

Touching Conducts for the Suillage, and other Necessities of the House (which how base soever in Use, yet for Health of the Inhabitants are as considerable, and perhaps more than the rest) I find in our Authors this Counsel, That Art should imitate Nature in those ignoble Conveyances, and separate them from sight (where their wants a running Water) into the most remote, and lowest, and thickest Part of the Foundation, with secret Vents passing up through the Walls like a Tunnel to the wild Air aloft, which all *Italian*

\* Αἰδομένα καὶ πύργος θερμώτερος οἴκος ἰδῆσθαι.  
—Hom. Epig.



Artizans commend for the Discharge of noisome Vapours, though elsewhere, to my knowledge, little practised.

Thus having considered the precedent Appertions, or Overtures, in Severality, according to their particular Requisites, I am now come to the Casting and Contexture of the whole Work, comprehended under the Term of Compartition; into which (being the mainest Piece) I cannot enter without a few general Precautions, as I have done in other Parts.

First, Therefore, let no Man that intendeth to build, settle his Fancy upon a Draught of the Work in Paper, how exactly soever measured, or neatly set off in Perspective; and much less upon a bare Plant thereof, as they call the *Schiographia*, or Ground-Lines, without a Model or Type of the whole Structure, and of every Parcel and Partition in Pastboard or Wood.

Next, that the said Model be as plain as may be, without Colours or other Beautifying, lest the Pleasure of the Eye preoccupate the Judgment; which advice, omitted by the *Italian Architects*, I find in Philippe de l'Orme, and therefore (though France be not the Theatre of best Buildings) it did merit some mention of his Name.

Lastly, The bigger that this Type be, it is still the better; not that I will persuade a Man to such an Enormity, as that Model made by Antonio Labaco, of *St. Peter's Church in Rome*, containing twenty-two Foot in Length, Sixteen in Breadth, and Thirteen in Height, and costing four Thousand one Hundred and eighty four Crowns, the Price in truth of a reasonable Chapel. Yet in a Fabrick of some forty or fifty Thousand Pounds Charge, I wish thirty Pounds at least laid out before-hand in an exact Model; for a little Misery in the Premises, may easily breed some Absurdity of greater Charge in the Conclusion.

Now, after these Premonishments, I will come to the Compartition itself, by which the Authors of this Art (as hath been touched before) do understand a graceful and useful Distribution of the whole Ground-Plot, both for Rooms of Office, and of Reception or Entertainment, as far as the Capacity thereof, and the Nature of the Country will comport. Which Circumstances in the present Subject, are all of main Consideration, and might yield more Discourse than an elemental Rhapsody will permit. Therefore (to anatomize briefly this Definition) the Gracefulness, whereof we speak, will consist in double Analogy or Correspondency. First, between the Parts and the Whole, whereby a great Fabrick should have great Partitions, great Lights, great Entrances, great Pillars or Pilasters; in sum, all the Members great. The next, between the Parts themselves, not only considering their Breadths and Lengths, as before, when we speak of Doors and Windows; but here likewise enters a third respect of Height, a Point (I must confess) hardly reducible to any general Precept.

True it is, that the Ancients did determine the Longitude of all Rooms which were longer than broad, by the Double of their Latitude. Vitruvius (Lib. 6. Cap. 5.) And the Height by the half of the Breadth and Length summed together. But when the Room was precisely Square, they made the Height half as much more as the Latitude; which Dimensions the modern Architects have taken leave to vary upon Discretion; sometimes squaring the Latitude, and then making the *Diagonal*, or overthwart Line, from Angle to Angle, of the said Square, the Measure of the Height, sometimes more, but seldom lower than the full Breadth itself; which Boldness of quitting the old Proportions, some attribute first to Michael Angelo da Buonaroti, perchance upon the Credit he had before gotten in two other Arts.

The second Point is Usefulness, which will consist in a sufficient Number of Rooms of all Sorts, and in their apt Coherence, without Distraction, without Confusion; so as the Beholder may not only call it *Una Fabrica ben raccolta*, as *Italians* use to speak of well-united Works, but likewise that it may appear airy and spirituous, and fit for the Welcome of cheerful Guests; about which the principal Difficulty will be in contriving the Lights and Stair-Cases, whereof I will touch a Note or two: For the First, I observe, that the ancient Architects were at much Ease; for both the *Greeks* and *Romans* (of whose private

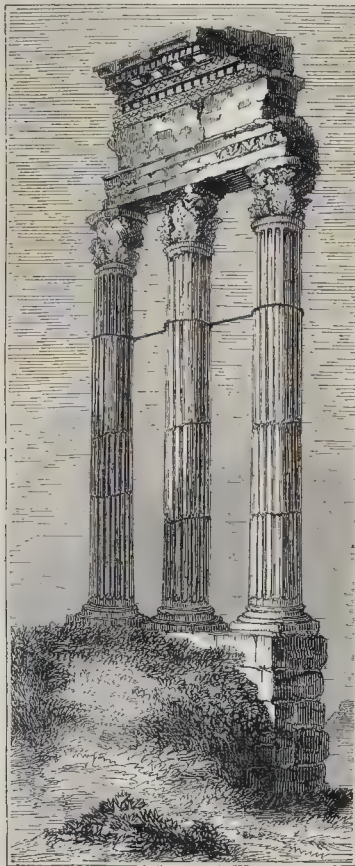
Dwellings Vitruvius hath left us some Description) had commonly two cloistered open Courts, one serving for the Womens Side, and the other for the Men; who yet, perchance, now-a-days would take so much Separation unkindly. Howsoever, by this Means the Reception of Light into the Body of the Building was very prompt, both from without and from within; which we must now supply, either by some open Form of the Fabrick, or among graceful Refuges, by Tarrassing any Story which is in danger of Darkness; or lastly, by perpendicular Lights from the Roof, of all other the most natural, as shall be shewed anon. For the second Difficulty, which is casting of the Stair-Cases, that being in itself no hard Point, but only as they are Incumbrances of Room for other Use (which Lights were not) I am therefore aptly moved here to speak of them. And first of Offices.

I have marked a Willingness in the *Italian* Artizans to distribute the Kitchen, Pantry, Bakehouse, Washing-Rooms, and even the Buttery likewise, under Ground, next above the Foundation, and sometimes level with the Plain or Floor of the Cellar, raising the first Ascent into the House fifteen Foot or more for that End, which, besides the Benefit of removing such Annoys out of Sight, and the gaining of so much more Room above, doth also, by Elevation of the Front, add Majesty

to the whole Aspect. And with such a Disposition of the principal Stair-Case, which commonly doth deliver us into the Plain of the second Story, there may be Wonders done with a little Room, whereof I could alledge brave Examples Abroad, and none more artificial and delicious than a House built by Daniel Barbaro, Patriarch of *Aquileia*, before-mentioned, among the memorable Commentators upon Vitruvius. But the Definition (above-determined) doth call us to some Consideration of our own Country, where, though all the other Petty-Offices (before rehearsed) may well enough be so remote, yet by the natural Hospitality of *England*, the Buttery must be more visible, and we need, perchance, for our Ranges, a more spacious and luminous Kitchen than the foresaid Compartition will bear, with a more competent nearness likewise to the Dining-Room; or else, besides other Inconveniencies, perhaps some of the Dishes may straggle by the Way. Here let me note a common Defect that we have of a very useful Room, called by the *Italians*, *Il Tinello*; and familiar, nay, almost essential, in all their great Families: It is a Place properly appointed to conserve the Meat that is taken from the Table, 'till the Waiters eat, which with us, by an old Fashion, is more unseemly set by in the mean while.

(To be continued.)

#### LECTURES ON ARCHITECTURE AND ANTIQUITIES.\*



REMAINS OF CORINTHIAN ARCHITECTURE ON THE CAMPO-VACCINO AT ROME, Sometimes called the "Temple of the Three Columns," but more commonly the "Temple of Jupiter-Stator."†

##### Lecture IV.

##### ROMAN ARCHITECTURE.

ON the other side of the Sacred Way, and nearly opposite to the temple last described, stands the Temple of ANTONINUS and FAUSTINA, of the Corinthian order. This building

was erected by the Roman Senate in honour of the Emperor Antoninus Pius and his wife Faustina, although by some writers the latter has been confounded with her daughter of the same name, who was the wife of Marcus Aurelius, the adopted son and successor of Antoninus Pius; whence therefore the credit of

\* Continued from p. 398.

† Described in p. 398.



having erected this temple to the memory of Antoninus has been ascribed to his successor in the empire. The inscription on the front of the portico is *DIVO ANTONINO ET DIVÆ FAVSTINÆ, EX. S. C.* Six columns formed the portico in front, with two more on each side; all of which remain, though much decayed. Each column has its shaft, 38 feet 3 inches in height, and 4 feet 10 inches in diameter, of one block of "cippolino" marble, so called from the resemblance of its layers to the green and white shades of the leek (*cippola*, *It. an onion*). By some writers the columns are said to be of Phrygian marble.

This marble is supposed to have been brought from Carysta, one of the Cyclades in the *Ægean sea*,\* alluded to for its rocky nature by Statius, "Non te, saxosa Caryste" (Theb. vii. v. 370); and also by Lucan, "Qua maris angustat fauces saxosa Carystos" (De Bell. Civ. l. v. 232); and the green layers of which the marble is composed are compared by Statius to the waves of the sea, "Et Chios, et gaudens fluctus æquore Carystos" (Syl. l. 11). Valadier mentions that the introduction of such marble for columns was ascribed to Augustus, and that the marble was called by his name.

The whole of the cornice and pediment of the front is destroyed, though much of the former remains on the flanks, well executed, but having neither dentils nor modillions, the only instance, I believe, of their omission in a Corinthian example.† In the frieze, on the sides, is an enrichment composed of griffins, vases, and candelabra. Within the walls of the ancient temple a modern church is formed, dedicated to S. Lorenzo.

The Temple of *MARS ULTOR* is supposed to have been erected by Augustus in his Forum on the occasion of his going against Brutus and Cassius, and to have been dedicated by him on their defeat to Mars the *Avenger* (Ultror). Other writers assert that it was built by Augustus on the occasion of his recovering from Phraates the eagles of the legions under Crassus and Antony, which had been defeated by the Parthians. Some critics, from a passage in Ovid, contend that this temple should be called that of Mars Bisultor, i. e. Twice-avenger:

"Parthe refers aquilas: victosque porrigis armis.  
Pignora jam nostri nulla pudoris habes  
Rite Deo templamque datum nomenque Bisultor."  
Fast. l. v. v. 933.

Yet it is not impossible that two temples were dedicated by Augustus to Mars as the avenger, and that the recovered Roman standards were placed in one, which, from ancient medals of Augustus, must have been circular, and which is believed to have been the temple under the hill of the Capitol, alluded to by Dion Cassius in his mention of the dedication of the eagles. The temple which we have been considering formed part of the Forum of Augustus, the two being often spoken of together, as "Forum Augusti cum sede Martis Ultoris." Of this once magnificent temple only three columns and a pilaster of the flank of the Corinthian order remain. On the walls of the cell is erected the campanile of the convent of nuns, called the Annunziata, whose buildings occupy the site of the ancient temple. Augustus ordered that the Senate should always hold in this temple their consultations on affairs of war.‡ The original structure, of white marble, as ascertained from the plans of Labacco and Palladio, consisted of a noble portico of eight columns in front, having four behind them, there were eight columns on each flank, in the interior were two rows of six columns each. The proportions are very large, the diameter of the columns being 6 feet, and their height 58 feet, consequently they are nearly ten diameters high, and the loftiest in Rome. The details of this building are very rich, and afford a good example for

\* "Il marmo di queste colonne è l'antico Caristo, marmo che si trae dall'isola di Caristo, una della Cicladi, detta par tal ragione da Stazio, e da Luciano Sassosa." (Valadier.)

† The example of the Temple of Vesta, at Tivoli, is without modillions and dentils, although it has the undivided member denominated "dentella."—Ed.]

‡ Fallor? an arma sonant? non fallimur, arma sonabant: Mars venit; et veniens bellica signa dedit: Ultror: ad ipse suos cæcis descendit honoris, Templum in angusto conspiciens foro, Et Deus est ingens, et opus; debeat in Urbe Non aliter nati Mars habitare soli, &c.  
OVID, Fast. v. 649.

imitation. It is highly probable that the architect of this temple was Hermodorus, the same who designed the temple of Jupiter Stator, and he is recorded to have built a temple in honour of Mars. Augustus, who prided himself that having found Rome of wood, he would leave it of marble,\* erected many stately buildings in that city; and his example was followed by his friends and relations, but by none more than by Marcus Agrippa, his son-in-law. Of the numerous public works built by him, the most celebrated is that which is one of the greatest ornaments of Rome, the temple of Agrippa, or, as it is most commonly called, the *PANTHEON*,†

"To art a model."

Michael Angelo considered that the portico, the interior, and the attic were erected at three different epochs.‡ Pliny speaks of it (Book 3) as if the portico was built by Agrippa, and says that he dedicated it to Jupiter the Avenger. The inscription on the frieze records that Agrippa built, at all events, the portico: "M. AGRIPPA L.F. COS. TERTIUM FECIT." He wished to place a statue of Augustus within the temple, which that emperor would not permit, but allowed him to set it up in one of the niches under the portico (Dion. b. liii.); Agrippa therefore determined to make the portico worthy of its destined inhabitant, and the result is the splendid composition so well described by Lord Byron:—

"Simple, erect, severe, austere, sublime—  
Shrine of all saints, and temple of all gods,  
From Jove to Jesus—spared and blest by Time,  
Looking tranquillity, while falls or nods  
Arch, empire, each thing round thee, and man  
plods  
His way through thorns to ashes—Glorious dome!  
Shalt thou not last? Time's scythe and tyrant's  
rods  
Shiver upon thee—sanctuary and home  
Of art and piety—Pantheon! pride of Rome!"  
CHILDE HAROLD, Canto iv. 140.

The portico, which is of the Corinthian order, consists of eight unfluted columns in front, having eight more behind, disposed in two rows (i. e. two behind each angle column, and two behind the second columns from the angles). The diameter of the columns measures 5 feet, and each shaft is 38 feet 8 inches high, is in one block, weighing 45 tons. The front columns are of grey granite, the inner ones of red oriental granite, the capitals and bases are of white marble; the architrave and frieze are in single blocks, extending from centre to centre of the columns, and weighing 36 tons, each block being 15 feet long, 6 feet 8 inches high, and originally 6 feet thick; the cornice is 4 feet 3 inches in height. The pediment is generally considered too high (at least, according to the proportions in Greek temples), and its effect is much injured by the second pediment rising above it. Pliny states that this temple was adorned with statues, the work of Diogenes, the Athenian, and which were, no doubt, placed at the angles and summit of the pediment, and the tympanum was also probably enriched with figures in relief, as shewn by Palladio. In the niche corresponding to that in which the statue of Augustus was placed, was the statue of Agrippa (of the "heroic" size, and now in the Palazzo Grimani, at Venice), and his ashes were preserved in a beautiful porphyry sarcophagus, now containing those of Pope Corsini, and placed in the church of Saint John Lateran. The walls of the Pantheon, constructed chiefly

\* A modern Pasquin has contrasted, with as much truth as bitterness, the imperial boast with the practice of a modern architect, to whom we owe the perishable splendour of Regent-street:—

"Our Naah has prov'd himself a much greater master,  
He found London brick, and will leave it of PLASTER."

Cordially agreeing with Mr. Bartholomew (Specifications for Practical Architecture, ch. 32, &c.) in his denunciation of external stucco, and in his conviction that its use has tended to degrade architecture, I believe that we cannot expect to have good street architecture so long as stone is limited, in some composition, whether mastic, patent cement, stucco, aut quocunque uito nomine gaudet. Let any one compare the south and east sides of Fitzroy-square, which are faced entirely with Portland stone, with the north and west sides, which are built with "composed" fronts, and the difference will be seen at once; and it is probable that the latter, with their constantly recurring patchings, stoppings, and colourings, have already cost more than the opposite fronts.

† The western portico of the New Royal Exchange, London, is partly copied from the Pantheon; it does not, however, project so much as its prototype by an intercolumniation, and consequently has fewer columns within the portico.  
‡ Mr. Gwilt thinks the circular part was built in the time of the Republic, with the simple large niches in the interior, and that Agrippa added the portico at 14 A.D. But he died before that date, viz. 12 A.C.

of brick, are 23 feet in thickness, having at every 3 feet in height a layer of tiles, the weight over each opening being discharged by arches also formed of tiles; the dome is constructed in a similar manner, diminishing by degrees to the thickness of 3 feet at top, with an opening of 30 feet diameter, the sole aperture by which the vast building is lighted. The great doorway is 39 feet high and 19 feet wide, having folding doors of bronze, through which is entered the Rotunda, which is 142 feet in diameter,\* the height of this immense circle is the same. The interior circumference is ornamented with eight recesses (of which the doorway is one) converted into chapels; they are adorned with columns and pilasters, 34 feet high, of yellow antique marble. These columns are fluted with cablings one-third of their height. Agrippa decorated the interior with statues of bronze and silver, among which that of Julius Cæsar occupied the most conspicuous station, and he dedicated it to *all the gods*, whence its name of the Pantheon. The continued entablature over the interior columns is of white marble, except the frieze, which is of porphyry, and the dome is divided into panels or caissons in five stages. Pancirolo says that the temple was covered with silver tiles, which were destroyed by lightning, and that the emperor Hadrian, in the year A.D. 130, covered it with bronze. Pomponius Leto and Prospero Parisio add that the interior was covered with plates of silver, which were taken away by Heraculus, the nephew of Constantine, in the year A.D. 636, together with the statues and other decorations, to adorn the new city of Constantinople. The pavement is set in patterns alternately of porphyry and granite. The effect of the light pouring into this mighty fabric through its single "eye," is truly wonderful. "The flood of light, which once fell through the large orb above on the whole circle of divinities, now shines on a numerous assemblage of mortals, some one or two of whom have been almost deified by the veneration of their countrymen." (Note to Childs Harold, canto iv. 147.) Among the mighty dead, lies the great master, Raffaello, whose bust adorns the interior, with many effigies of the illustrious departed, some by the hand of the modern Phidias, Canova. This building, of which the architect was Valerius, a Roman, born at Ostia, was in 609, A.D., converted into a church by Pope Boniface IV., and dedicated by him to the service of the Virgin and the holy martyrs. Various alterations were made by the Popes; in the interior, by Benedict XIV.; Alexander VII. restored three columns of the portico; Clement IX. added the heavy railing between the columns of the portico; and under Urban VIII., Bernini erected the campanile towers behind the pediment, whilst the same pope carried away the bronze covering of the dome, which he cast into cannon, and out of which he also made the four colossal twisted columns (they are 120 feet high), supporting the canopy of the high altar of St. Peter's, a robbery which drew down upon him the bitter pasquades—

Quod non fecerunt Barbari Romæ, fecit Barbarini.†

Our notions of the extraordinary taste of the Romans for magnificent buildings must be heightened, when it is considered that the superb edifice under review was probably only a saloon to the baths of Agrippa, erected by that great patron of art,‡ and plans of which have been given by Palladio and others, on a scale of great splendour. It is also the opinion of some antiquaries, that the original floor of the Pantheon was considerably below the pavement of the portico, and that the interior could be completely flooded by water being let through it, so as to form one vast swimming-bath. The Therme, or baths of the Romans, formed a remarkable feature

\* The diameter of the dome of St. Peter's is 139 feet, of St. Paul's 118 feet, of St. Sophia 115 feet, of St. Maria delle Fiore (Florence) 130 feet.

† "That which Barbarians left undone at Rome, the Barbarini did;" in allusion to the family name of the pope, who scrupled not to despoil the ancient temple of those riches which even the Barbarian Goths had respected.

‡ Agrippa alone constructed 170 public baths at his own expense. He is introduced by our Shakespeare among the dramatical personæ in "Anthony and Cleopatra," as one of the chief captains of Cæsar (Augustus), who there bids him "Go forth, Agrippa, and begin the fight." He did good service at Philippi and at Actium, and had defeated Sextus Pompey in a naval engagement; and for which he had the first naval garland ever decreed on such occasions. He was one of the greatest men of the Augustan age, and his generosity was only equalled by his modesty; he refused a triumph for his many victories.



among their public buildings; there were 800 at one time for the use of the public, under the emperors, who vied with each other in the splendour of these useful and truly liberal institutions; and which contained not only the various apartments necessary for ablutions of all kinds, but also places for recreation and amusement, libraries, porticos, terraces, crowded with columns, and enriched with precious works of art. In the ruins of the bath of Titus was found the Laocoon; in those of Caracalla were found the Toro Farnese, the Hercules of Glycon, and the Flora (now at Naples); and many fine statues have been discovered in the other baths.

G. R. F.

(To be continued.)

#### CHURCH-BUILDING INTELLIGENCE, &c.

**New Church at Seasalter.**—On Monday, the 19th ult., the first stone of this edifice was laid by Sir Brook W. Bridges, Bart., in the presence of a numerous and highly respectable body of spectators, comprising many of the clergy from this district, and the gentry of the surrounding country. Accommodation having been afforded by the Canterbury and Whitstable Railway Company, a great number of persons went from this city to witness the interesting ceremony. Divine service was performed by the Rev. G. T. Dawson, the incumbent; and after the 100th Psalm was sung, the laying of the foundation stone took place. Sir Brook Bridges addressed the large assemblage, congratulating them upon the gratifying event, and was listened to with marked attention and respect. The following is the inscription on the plate of the stone:—"Glory to God in the highest, and on earth peace; good will towards men." This foundation stone of the new church, Seasalter, was laid on the 19th of August, in the year of our Lord, 1844, and in the 8th year of the reign of her most gracious Majesty, Queen Victoria, by Sir Brook William Bridges, Bart., of Goodnesstone Park. H. Marshall, architect." At the back of the plate are cast the names of the tradespeople employed in the undertaking, as follows:—"W. Knowler, bricklayer; W. Wilson, joiner; J. Marshall, carpenter; J. Bligh, plasterer; H. Jones, mason; G. Homersham, plumber." This church is designed to afford accommodation to 950 persons in the body; the seats are to be unappropriated, and thrown indiscriminately open to the inhabitants of either Seasalter or Whitstable. The cost of the erection is set at 2,751*l*.

**New Church near Colchester.**—On Tuesday the 27th ult. the first stone of All Saints' Church, for the district of Lexden and Staneway, near Colchester, was laid by Mrs. Papillon, of Lexden House, in the presence of a numerous assemblage of the gentry and parishioners of Lexden and Stanway, and several of the neighbouring clergy; service being performed by the Rev. John Papillon and the Rev. Henry Jenkins, the rectors of the two parishes. The church, which will be built of dark red bricks with stone dressings, in the late Decorated style, consists of a nave 60 feet by 24 feet 6 inches, a chancel 25 feet by 14 feet, a belfry tower, organ transept, vestry, &c., and will accommodate nearly 300 persons, two-thirds of the sittings being free and unappropriated. The architect is Mr. George Russell French, of London, and the builders are Messrs. Fisher and Son, of Stratford and Plaistow, Essex.

**Princely Donation.**—A short time since an anonymous letter was forwarded to the Bishop of London with the princely sum of 5,000*l*., and a request to apply the amount "for the erection of a church in the metropolis." Since the receipt, an eligible site for the erection of a sacred edifice has been purchased by some charitable individuals, in Charlotte-street, Fitzroy-square, at a cost of nearly 5,500*l*., upon which a church will be built for a district which contains a population of more than 16,000 persons.

The Bishop of Gloucester has presented the handsome donation of 100*l*. to St. Andrew's Church, Bristol. The right rev. prelate has forwarded a liberal sum to defray the expenses contingent to the repairs of St. John's Church in that city, and within the last few days his lordship has sent a donation of 25*l*. towards the erection of a parsonage-house to St. John the Evangelist, Clifton.

The Marquis of Lansdowne has presented 20*l*. to the fund for the restoration of St. Mary Redcliffe church, Bristol, which fund now amounts to 5,200*l*.

The first stone of a new church, at Bednall, Staffordshire, was laid last Week, by Lady Margaret Littleton.

#### RAILWAY INTELLIGENCE.

**Norwich and Brandon Railway.**—The terminus for this line at Norwich is now in course of erection, and the permanent rails have been laid as far as Carrow-road bridge. The rails will diverge from the Yarmouth line, just above this bridge, crossing Mr. Kerrison's meadows. Men are at work, driving iron piles of great strength for the bridge across the river. A number of men are also at work near Hartford bridges. The line is to pass over two bridges here, one 20 feet and the other 30 feet wide. The road has been diverted for a short distance, and men are cutting through the turnpike, to the depth of 18 feet, where the first bridge is to pass over. To the right of the turnpike, piles have been driven for the second bridge crossing the river. The cuttings here extend through Mr. Thurtell's land to the river, for about 88 feet in length. The works are going on rapidly near Ketteringham, where part of the permanent line has been laid. More than 1,000 men are employed at various points for the whole length of the line to Brandon end, and a great many at Ketteringham, Hathersett, Wymondham, Spooner Row, &c. Before Christmas, 3,000 men will be employed on this line, including mechanics, bricklayers, &c. A large proportion of the workmen belong to Norfolk, and their wages average 2*s*. 9*d*. per day. Mr. Merritt, under Messrs. Grissell and Peto, is the general contractor for the works. Under him, the sub-contractors for various parts of the line are, Messrs. Weaver, at Trowse; Farrall, at Hartford Bridges; Kershaw and Scrivener, at Ketteringham; Durham, at Wymondham; Mackenzie and Jardine, between Thetford and Brandon. The labourers are employed by these sub-contractors either by the piece or the day.

**Northumberland Railway from Newcastle to Berwick-on-Tweed.**—A prospectus of another important railway, projected from Newcastle to Berwick-upon-Tweed, has just been issued. The proposed capital is 1,000,000*l*., the line to be about 60 miles in length, and to be constructed upon the atmospheric principle. The intended route of the line, throughout its entire length, is as nearly as possible in the general direction of the present main turnpike road from Newcastle to Edinburgh, passing by Morpeth and Alnwick, and the populous eastern district of the county. Amongst the provisional committee are Lord Morpeth, Lord Howick, M.P., and Lord Ossulston, M.P., and several other members of Parliament. Should this project obtain the sanction of the legislature, in preference to that proposed by Mr. Hudson, an uninterrupted railway communication will still be effected between London and Edinburgh by the construction of this railway and the North British line, the latter of which has already received the sanction of Parliament. J. K. Brunel, Esq., is the engineer of the line.

**Eastern Union Railway.**—The works of this railway have now fairly commenced at Brantham and across the valley of the Stour. The house lately occupied by W. Dean, Esq., Brook-street, has been hired for the term of two years as offices for the clerks and others employed in getting out the necessary plans and sections, and carrying on other business connected with the railway. It is intended to carry the line from Ipswich to Norwich in a direct route. The proprietors of the Brandon line are most desirous to obtain a branch from Attleburgh to Diss, and the survey is now being made under the directions of J. Locke, Esq., engineer.

George Hudson, Esq., has purchased the Branding Junction Railway, which runs from Newcastle to Shields and Sunderland, and is, we believe, about 28 miles in length. It is expected that the purchase is on behalf of the Newcastle and Darlington Railway Company.

**New Locomotive Power.**—A first trial of M. Andrau's new locomotive power, by means of compressed air, was made on Monday, on the Versailles Railroad (left bank), in the presence of Messrs. Bineau and Baude, commissioners appointed by the government of the engineers of the railroad, and a great number of spectators. Although the locomotive was charged upon the low pressure system, because there was not a sufficient power to compress the air to a greater extent, the experiment perfectly succeeded. In extending two or three atmospheres, the locomotive ran a quarter of a league with great rapidity and regularity. The trial is to be repeated in the course of the next month. M. Andrau has for the last four years been engaged in experiments with compressed air.

**Blackburn and Preston Railway.**—The cutting on this line was commenced on Tuesday, the 20th, near Houghton Tower, in the neighbourhood of which there will be the heaviest cutting on the whole line. The railway runs through the noble woods which surround the tower, almost on a level with the highest point of King's Hill, which adjoins the hill on which the tower stands. At the south-east side, where the Darwen flows between the two hills, the ravine will be crossed by a viaduct entirely constructed of ashlar masonry, standing 108 feet high, and of three arches of 65 feet span each.

**Lynn and Leicester Railway.**—After many changes, the proposed line, which was brought forward under this title (afterwards altered to "Midland and Eastern Junction Railway," is withdrawn as an independent project. It is to form part of the contemplated extension lines of the Midland Company, with whom the promoters have entered into arrangements.—*Railway Record*.

**New Railway.**—A line of railway from the Lancaster and Carlisle Railway at Kendal to the head of Lake Windermere is projected, thus affording an uninterrupted railway communication from London to the Lake district. This branch line will also give the benefit of a convenient station to the town of Kendal, which the levels of the Lancaster and Carlisle line would not allow.

**North British Railway.**—Tenders for the formation of twenty miles by this line of railway, commencing at Berwick, were on Wednesday received by the directors at their office in Edinburgh. They were very numerous, and the successful competitors are Messrs. Thompson, of Darlington. Their estimate was 35,000*l*. Operations will be commenced immediately.

**London and York Railway.**—Mr. Astell, M.P. for Bedfordshire, the chairman of this company, and Mr. E. Beckett Denison, M.P. for Yorkshire, the vice-chairman, with Mr. Locke, the engineer and others, on Wednesday week, had an interview with the Board of Trade.

**Extension of the South-Western Railway.**—At the close of the meeting on Friday, the directors of the South-Western Company took active steps in respect of an extension of their line to Waterloo-bridge.—*Railway Record*.

A plan for the formation of a railway to connect the metropolis with Richmond has been announced.

**More Railways.**—A special general meeting of the proprietors of the Preston and Wyre Railway company is convened for the 13th of September, to determine on the propriety of applying to Parliament for powers to make branch railways from Poulton to Blackpool, and from Kirkham to Lytham. It is expected that both these lines will be constructed.

**STATUE OF GOETHE.**—The colossal bronze statue, from the model of Schwanthaler, intended to ornament one of the squares of Frankfurt-on-the-Main, his native place, has been completed. Goethe is represented clad in a mantle, but having his hands free. He wears the simple costume of the present period. His right arm is resting on the trunk of an oak tree, and in his left he holds a laurel crown. His eyes are turned towards heaven. The subjects of the bas reliefs on the pedestal are borrowed from the works of Goethe,



## Correspondence.

## THE NEW BUILDING-ACT.

SIR,—On looking over the new Building-Act, I find that the thicknesses of the walls to the different rates of building are thus described to be, viz.—8½ in. 13 in. 17½ in. 21½ in. and 26 in. I have before me some stock bricks from the fields belonging to the Messrs. Rhodes and Messrs. Webb, two brickmakers in the vicinity of London, and also some from the fields of Messrs. Herron and Rutter of Cowley, who make a great number annually. I find in the sizes of the bricks from the before-mentioned field, an almost imperceptible variation, if any; they are as near as possible 9 in. long and 4½ in. wide. Now, Sir, how is it possible (I speak as a bricklayer) to keep to the thickness of the walls in the new Act, without cropping the bricks? If you work the bricks without a cross-joint, you cannot do it; and if you crop the brick, you never will make sound work, besides the extra labour.

How is this difficulty to be got over? You can perhaps point out a remedy.

Stoke Newington,  
August 28.

CHARLES EVE.

[The intention is that the thicknesses shall not be less than those stated; which might be the case if bricks somewhat smaller than ordinary were used; the precaution is observed in the old Act, which will next year be superseded by the new one.—Ed.]

SIR,—In glancing over the Building-Act, contained in your excellent journal of this week, I am glad to find that the clause appointing the institute of the B. A. as examiners of the new district surveyors has been struck out, and a clause inserted instead, nearly in accordance with my suggestions contained in a letter in "The Builder," No. 72, with one exception, I do not see any provision made for the payment of the examiners. B.

## MEASURING WORK.

SIR,—I am a small builder, and I have frequently to measure work performed by myself; I have experienced on more than one occasion an objection on the part of the surveyor, employed by the party for whom I have done the work, to measure with me, on the ground that I was not a regular surveyor; in other cases, where there has been some difference in the quantity, they have refused to refer the matter to another surveyor, unless I had previously had my work measured by a surveyor. What I wish to know is this—is it requisite that I should become a regular surveyor? If so, how am I to proceed to obtain that distinction? Is any licence required? If so, what would be the expense? "Tyro."

[We think nothing could be more ridiculous than for any surveyor to refuse to measure the work of any building with the master tradesman who has executed it, and is respectable and capable of measuring his own work, and either has time for it, or chooses to do so: we venture to say the surveyor who assumes such airs, will be found to rank with the "queer ones." The licence is a common appraiser's one of 10s. To become a regular surveyor, requires a regular tuition, ten years' study, in fact; the fee for tuition may range from 50l. to 200l., according to the rank, repute, ability, and practice of the master.—Ed.]

## PRACTICAL DRAWING FOR ARCHITECTURE AND BUILDING.

SIR,—The beauty and advantages of drawing will, I am sure, have manifested themselves to every person connected with the building-craft, and especially to the steady industrious working-man, who has seen others convey their ideas so clearly by it, to whom I now particularly refer. I have on many occasions seen clever workmen, who have laboured under difficulties in the performance of their work from drawings, through not being able to associate correct ideas relative to the drawings and the work to be done; and again I have seen good workmen labour under alike difficulties consequent upon a bad education, in explaining their ideas of work that was doing, and that had to be done; whereas if a knowledge of drawing were inculcated, the pencil could be employed with ease and satisfaction.

Feeling assured that great numbers, who

industriously employ their time in the workshop, and who enjoy the fireside of the cottage, reading your valuable magazine, will labour under the difficulties I have above mentioned, to remedy this, I offer the hint that a column in "The Builder" be devoted for a short time to the laying of the fundamental principles of the different kinds of drawing suited to practical purposes, of which you will know much better than I can say. This would have its good effects in various ways:—First, it would be of great practical use to the possessor. Secondly, improve the taste and enlarge the ideas connected with the craft. And thirdly, be an endless source of improvement and amusement during the winter months, when many of the artisans have to be at home. It would, I feel confident, cause many to make their cottage their studio, instead of seeking amusement at the tavern.

August 27th.

J. F.

## CRACK HOUSES.

SIR,—The object of THE BUILDER is, I presume, not only to represent the interest of this numerous and influential body, and the several trades and professions connected therewith, conveying to them all possible information, but also occasionally to admonish those who, not having the fear of loss of reputation before their eyes, and greedy of gain, 'put up houses,' which not only compromise the whole class of builders, but also, besides clearing out the pockets of ignorant purchasers, endanger the lives of individuals. We all know what a put up house means, but I am sure respectable builders are not wholly aware to what an extent the system goes. I was walking about the vicinity of High-street, Camden Town, a few weeks since, and was more surprised than amused to see a whole row of buildings springing up as mushrooms in a meadow, and nearly as frail in fabric. The bricks, were they worthy of that name, were not only old material, but such as I observe dug out of the foundations of the old buildings now disappearing from Bloomsbury, literally rotten, and scarcely an entire one to be seen among them: nor was there a redeeming quality in the mortar, which was as black as bitumen, without any of its adhesive qualities: the timber of the beams and joists was of the same quality, and appeared to be derived from the same source, having all the venerable marks of antiquity about it. On the other hand, the floors were young sucklings, such as will soon shrink before the hand of Time, leaving large chasms between each other, to the endangerment of children's legs and the loss of their playthings. The exterior of these sepulchres of decayed brick was then handsomely covered with stucco and whitewash, the doors and shop-fronts were prettily painted, and in the lower windows might be seen sundry bills, on which was written in a fair legible hand, "This house to be let or sold!"

Your readers may smile, Mr. Editor, but I positively see nothing to laugh at; the man who buys such a bargain buys it very often with his little all. In the large neighbourhood in the rear of St. Pancras Workhouse, there are numbers of this kind of tenements already put together, or still perpetrating; but here we sometimes find an excuse, for the experiment of residing therein is first made by the builders themselves, who, like Birmingham gunsmiths, prove them first ere they go off in the market.

A friend of mine lately purchased a house near the Regent's-park for 800l., as valued by a surveyor; on re-valuing six months afterwards, it was found to be worth less than 480l.; and in less than one twelvemonth, a general rebellion had taken place of the members of the house, every board in the establishment separating from its fellow, the handsome paper had separated from the damp walls, and hung in festoons in the upper part of the house; the house itself had settled down on one side, the windows chattered at every footfall, and nothing short of 100l. could repair the dilapidations.

I could multiply instances of like putting up without number; but this is sufficient to shew that the system, if not checked, will very soon close the business of the builders: for every one thus taken in, imbues fifty small or large capitalists with a sense of his wrongs. And it would be highly impolitic to check the present prevailing spirit of investing capital in houses, one of the very best by-the-by which can be

made in the present day, if the capitalist be treated with any degree of fairness. There never was a better time for builders to rise a step or two in their trade, and to strengthen their hands by moderate profits; and I do think that all who have their credit at stake should unite to put down practices which bring the whole of them into disrepute.

W. T. B.

## ADULTERATION OF WHITE LEAD.

SIR,—Permit me through your very valuable journal to direct public attention to the enormous adulterations of white lead now taking place in various parts of the outskirts of the metropolis. This trade of adulteration is openly carried on, and is thus managed:—A quantity of whitening is put into a tub, in which there is a machine similar to that used in mixing the clay for bricks; to this is added linseed oil, in certain proportions, and the whole is intimately mixed by the revolving knives. For the second process it passes between two mill-stones, and on being ejected has even then a very striking resemblance to white lead: this, I believe, is all the preparation required for mixing, and in this state it is applied for the purposes of adulteration: paints of every description being mixed with this valueless commodity for the consumer, the extent of adulteration being guided by the conscience of the manufacturer, or the carelessness or inattention of the tradesman who purchases the rubbish. I have often wondered why it was that white lead paints were marked up at a much less price than the wholesale cost of this material. The enigma is now solved; but the wonder still remains how large consumers of various coloured paints should have shut their eyes to this self-evident fact, consenting to pay the reduced price of white lead for common chalk. It is said by those who manufacture the spurious commodity that the paint is actually improved by the mixing, that it dries better, has a better appearance, and is more durable. If such be the fact, and I readily conceive such may be the case, it is certainly a singular exception to an universal rule; but even supposing this to be the case, would it not be more to the interest of the painters, &c., to mix for themselves?

The extensive adulteration of an article so extensively used in the building-trade demands the serious consideration of every person victimized by the process.

Sept. 1st.

VERAN.

## WORKS ON PRACTICE.

SIR,—I have taken in "The Builder" from the commencement; will you, therefore, be kind enough to inform me in your next number the best work published as a guide to surveyors and appraisers, and where it can be purchased? Y. Z.

[The Student's Guide for Measuring, 7s. 6d.; Gibbons on Dilapidations, 9s. 0d.; Ditto on Fixtures, 3s. 6d.; and Inwood's Tables for purchasing Estates, are books of the required kind, and may be obtained of Weale, Holborn.—Ed.]

A MONUMENT TO THE LATE DR. DALTON.—On Monday week, the members of various literary and scientific societies in Manchester, held a preliminary meeting, with the object of considering what steps should be taken towards erecting a monument in memory of the late Dr. Dalton. Many gentlemen addressed the meeting, among whom was Mr. S. E. Cottam, who suggested that the most honourable memorial would be the erection of some edifice to be called the "Daltonian Institution," where the scientific discoveries of the philosopher might be promulgated from generation to generation. The meeting concluded by adopting the following resolution:—"That a requisition should be presented to the mayor, to convene a public meeting to determine what steps should be taken to secure the erection of such monument; and also to consider as to the propriety of testifying in any further, and in what manner, the sense entertained by this community of the invaluable services rendered to science by the late illustrious philosopher."

The noble Border Castle of Naworth is in course of being rebuilt under the instructions and taste of Lord Morpeth.



## Miscellaneous.

**PUBLIC WORKS AT AND NEAR LIVERPOOL.**—Probably there are no places in the kingdom, not even excepting the metropolis, where a larger amount of money is in process of expenditure in the construction of public works than there is at this moment in Liverpool and Birkenhead. Assize Courts (corporation), cost 80,000*l.*; New Gaol (corporation), cost 100,000*l.*; Albert Dock and Warehouses (dock committee), 600,000*l.*; New North Dock Works, including land and junction with Leeds Canal (dock committee), 1,500,000*l.*; Reservoirs, Green-lane, and corresponding works (high-way commissioners), 50,000*l.*; Industrial Schools at Kirkdale (select vestry), 30,000*l.*; Gas Extension (New Gas Company), 140,000*l.*; Shaw-street Park (private shareholders), 2,500*l.*; making a gross total of 2,500,000*l.* All this is, of course, independent of many other works, some in progress and others in contemplation, with prospects of almost immediate commencement, which will probably absorb not less than another million. So that, in the whole, between three and four millions of money will have to be raised and expended before the various present designs for the promotion of charity, the convenience of commerce, and the improvement of the town, are completed. But, if much is going on in Liverpool in this way, more, in proportion to population and means, is doing on the Cheshire side of the water, at Birkenhead. The magnitude of the public works in progress at Birkenhead may be inferred from the following abstract, which is taken from the estimates:—New Market (commissioners), 20,000*l.*; Town Hall (commissioners), 10,000*l.*; Park (commissioners), 25,000*l.*; Docks in Wallasea Pool (commissioners, as trustees), 400,000*l.*; Dock Warehouses on the margin of Wallasea Pool (private company), 600,000*l.*; Tunnel from Monk's Ferry to Grange-lane (Chester and Birkenhead Railway), 20,000*l.*; making a gross total of 1,075,000*l.* After these statements, it will be admitted, we think, that there are very few, if any, places where the progression of works of a public nature is greater than in Liverpool and Birkenhead; and that, if there is any rivalry between them, it should only be as to which shall best accommodate the public.—*Manchester Guardian.*

**THE HOUSE OF COMMONS.**—The speaker's house, with several other apartments connected with the House of Commons adjoining St. Stephen's cloister, have been disposed of by auction by Mr. Horne, in order to be taken down for the formation of the entrance-hall to the centre hall of Westminster Palace. The sale took place in the smoking-room, and there was a numerous attendance of purchasers of building materials. Besides the speaker's house (which was but slightly injured at the conflagration of the Houses of Parliament) to be sold, there were the two refreshment rooms, the kitchen, and the smoking and coffee rooms, which had been built since the fire for the convenience of members of parliament. The whole were divided into 46 lots, and one of the conditions of the purchase was that the entire building should be removed within eighteen days. Some parts of the premises were erected in the Gothic style, and the floorings of some of the rooms were laid with oak, and were in good condition. The several lots went for about 437*l.* The brick-work, which was put up at 26*l.*, was knocked down for 149*l.* It was considered by the trade, in general, they fetched high prices.

**THE NEW ROYAL EXCHANGE.**—In the course of last week, workmen have been employed in putting up the bells in the belfry of the tower, under the direction of the contractors, Messrs. Mears, High-street, Whitechapel. The statue of Charles II., which was in the merchants' walk of the late building, will be placed in a niche at the east end on the south side. It is composed of statuary marble, but in such a decayed state that the sculptor has not been able to restore it to its original appearance. The flagstones are laid down in the merchants' colonnade, but it will be some time yet before the encaustic painting will be finished. The tessellated pavement has not been commenced around the base of the Wellington statue; the area is being laid with large square stones, which will be continued along the whole exterior of the building.

**IRON MANUFACTURE.**—We learn, from an official return, that the iron trade on the continent has been rapidly extending, and that the following is very nearly the relative proportion of the pig and bar iron manufactured in different states.—Prussia, 199 furnaces, worked with charcoal, employ 8,674 workmen, and produce about 120,000 tons of cast iron, equal in value to 730,000*l.* Wrought iron, in bar and plate, is made at 538 forges, employing 6,049 workmen, and producing 73,000 tons, of the value of 230,000*l.* Bavaria, 44 furnaces producing 9,000 tons of cast iron, and 141 forges, producing 5,750 tons of wrought iron. Wurtemberg, 6,409 tons of cast, and 2,500 tons of wrought iron.—Grand Duchy of Baden, 7,000 tons of cast, and 4,750 tons of malleable iron. Saxony, 7,500 tons of cast, and 4,650 tons of wrought iron. Electorate of Hesse, 4,150 tons of cast, and 900 tons of malleable. Grand Duchy of Hesse, 7,150 tons of cast, and 2,400 tons of malleable. Duchy of Nassau, 14,330 tons of cast, and 1,300 tons of bar iron, and 2,375 tons of different other sorts of iron, in bars, cast and wrought iron work. Duchy of Brunswick, 2,150 tons of cast, and 7,180 tons of wrought, iron, or works in cast iron. United States of Saxe-Weimar-Eisenach, Saxe-Meiningen, Anhalt, Schwarzburg-Hohezhollern-Siegmaringen, Reuss, Waldeck, produce 4,035 tons of cast, and 2,240 tons of bar iron, or works in cast iron. German Luxembourg, 7,700 tons of cast iron. Total production of the States of the Zollverein, cast iron 191,156; wrought iron, or works in cast and wrought iron, 107,324 tons. In proportion to the population these quantities are not great, since it only amounts to about 15*lb.* for each person throughout the Confederation. In France, where this manufacture is even yet but imperfectly developed, it amounts to above 22*lbs.*; in Belgium it is about 36*lbs.*; while in England it is as high as 55*lbs.* to 56*lbs.* for each person. All, or nearly all, the Zollverein States are engaged in the iron manufacture.—*Railway Chronicle.*

**FALL OF TWO HOUSES NEAR EUSTON-SQUARE.**—At one o'clock on Wednesday morning much alarm was created in the neighbourhood by the fall of two unfinished houses in Seymour-place, North, Euston-square. They were erected on the site of a garden belonging to the corner house in the square, and were nearly completed so far as relates to the building, but little progress had been made in the completion of the interior. There is little doubt, from the total destruction which has ensued, that the foundations of both houses must have given way—one, probably, in consequence of the shock incurred in the fall of the other. Each fell outward—not towards the street, but against the backs of other houses, from which the distance was small. Of these, the one on the east side has sustained considerable injury, the whole of the drawing-room windows being dashed in, and apparently great damage done in the basement story. The only part of this construction which seems to have been adequately secured is the party-wall, which stands perfectly erect, bearing a row of chimneys, although entirely stripped on one side, and nearly detached on the other. Providentially, no person received any injury; the new buildings were of course empty, and although the inmates of the one in such dangerous proximity were much frightened, no one personally suffered. An inquiry into the responsibility for such a defective construction is imperatively required.—*Times.*

**CARISBROOK CASTLE.**—A letter from Newport, dated Tuesday week, contains the following:—"The desecration of this great and beautiful attraction to the thousands of persons who annually visit this island, by the sale by auction, for building purposes, of the plantations and meadows which surround Carisbrook Castle, is happily prevented. Government has acceded to the loudly-expressed and unanimous petition of the islanders, by becoming the purchasers of the property. In addition to the pleasure of being enabled both to preserve the hanging woods from the pollution of brick and mortar, and of thus complying with the wishes of the petitioners, they will have the satisfaction of knowing that the favour will occasion little if any loss. The rentals of the meadows will nearly pay the interest of the purchase-money.—*Ipswich Journal.*

## Current Prices of Metals.

<b>COPPER</b> —Brit. Cake, p. ton	0	0	0	—84	0	0
Tile .....	82	0	0	—83	0	0
Sheet, p. lb.	0	0	0	—0	0	2½
Bottoms ..	0	0	0	—0	0	0
Old .....	0	0	0	—0	0	8½
South Amer., ton	72	0	0	—73	0	0
Foreign Cake ..	0	0	0	—0	0	0
Tile ..	0	0	0	—0	0	0
<b>IRON, British</b> .....	0	0	0	—0	0	0
Bars .....	0	0	0	—6	0	0
Rods .....	6	15	0	—7	0	0
Hoops .....	8	0	0	—8	5	0
Sheets .....	8	15	0	—9	0	0
Cargo in Wales, Bars	0	0	0	—5	0	0
<b>IRON, Figs No. 1, Wales</b> ..	3	10	0	—4	0	0
No. 1, Clyde ..	0	0	0	—2	11	0
Russian, c&nd .....	0	0	0	—16	10	0
PSI .....	0	0	0	—0	0	0
Archangel .....	0	0	0	—0	0	0
Swedish .....	9	10	0	—9	15	0
Gouffier's .....	0	0	0	—0	0	0
<b>LEAD</b> —British, Fig. p. ton	16	10	0	—17	0	0
Sheet, milled .....	0	0	0	—17	15	0
Bars .....	0	0	0	—0	0	0
Shot, patent .....	0	0	0	—19	15	0
Red or Minium ..	0	0	0	—21	10	0
White .....	0	0	0	—23	10	0
Litharge .....	0	0	0	—20	0	0
Fig, Spanish .....	16	0	0	—16	10	0
American .....	0	0	0	—16	0	0
<b>STEEL</b> —English .....	0	0	0	—0	0	0
Swedish Keg .....	16	0	0	—16	10	0
Faggot .....	0	0	0	—17	10	0
<b>TIN</b> —In blocks, p. cwt.	3	12	0	—3	13	0
Ingots .....	3	12	0	—3	13	0
In Bars .....	0	0	0	—3	13	6
Banca .....	3	5	6	—3	6	0
Straits .....	3	5	6	—3	4	0
Peruvian .....	0	0	0	—2	17	0
Plates, p. box, 22½ shts.—						
No. I. C. 13½ by 10 in.	1	7	0	—1	13	0
I. X. ....	1	13	0	—1	19	0
I. XX. ....	0	0	0	—0	0	0
IXXX. ....	182	lb.	0	—0	0	0
IXXXX. ....	203	0	—0	0	0	0
No. II. C. 13½ by 9½ in.	105	0	—0	0	0	0
II. X. ....	133	0	—0	0	0	0
III. C. 12½ by 9½ in.	98	0	—0	0	0	0
III. X. ....	126	0	—0	0	0	0
Small { SDC } 200 shts. 167 0 0						
Double { SDX } 15 by 11 188 0 0						
{ SDXX } 209 0 0						
{ SDXXX } 230 0 0						
{ SDXXXX } 251 0 0						
{ C. 16½ by 12½ in. 98 0 0						
{ X. ... 100 sheets 126 0 0						
{ XX ... 147 0 0						
{ XXX ... 168 0 0						
{ XXXX ... 189 0 0						
Jaggars, 14 by 10 in. — 0 0						
<b>SPELTER</b> —On the spot, ton	0	0	0	—21	0	0
Delivery .....	0	0	0	—21	5	0
<b>ZINC</b> , English Sheet .....	0	0	0	—30	0	0
<b>PLATINA ORE</b> .....	0	0	0	—0	0	0
<b>ORSEIDEV</b> .....	0	0	0	—0	3	0
<b>QUICKSILVER</b> .....	0	0	0	—0	4	6

## Tenders.

**TENDERS** delivered for building two School-Rooms, &c., at Northampton. The style English of the 17th century.—Mr. E. F. Law, Architect. Aug. 29.

Jeffrey .....	£1,465	0
Whiting .....	1,398	0
Smith .....	1,259	7
Jreson .....	1,254	0
Cave .....	1,236	0
Masters .....	1,197	0
Fisher .....	1,148	0

**TENDERS** delivered for general Repairs to be done at No. 24, Bedford-square, under the directions of Messrs. Wigg and Pownall, Architects, No. 7, Bedford-square.

Winsland .....	£347	0
Locke and Nesham .....	293	0
Battam and Craske .....	281	9
Thomas .....	185	15

Mr. Thomas was allowed to withdraw his tender, and Battam and Craske's was accepted.

**TENDERS** delivered for erecting Wesleyan Chapel at Dalston, in the parish of Hackney.—Mr. John Parkinson, Architect.

Hort .....	£925	
Smith .....	890	
Ashby, Bishopsgate-street .....	874	
Morris, Hackney .....	847	
Elston .....	797	
Hayworth, Kingsland .....	749	



## NOTICES OF CONTRACTS.

For the Execution of the various Works in the formation, ballasting and laying the permanent way of the Canterbury, Ramsgate, and Margate Branch Railway.—Plans and specifications at the office of Mr. Joseph Cubitt, Civil Engineer, 12, Manchester-buildings, Westminster; Mr. J. Whitehead, Secretary, South-Eastern Railway, London-bridge. September 24.

For sundry Alterations and Repairs at Swift's House, Cranbrook, Kent.—Plans, &c., to be seen at the House; Mr. Wilson, Solicitor, Cranbrook. Sept. 13.

For Paving, Pitching, Cleansing, and Lighting the City of Bristol for three years, commencing September 29.—Commissioners' Offices, 44, Queen-square, Bristol. Sept. 16.

For the Repairs and Alterations of the roof of the Workhouse of the parish of Lambeth.—Plans and Specification, Mr. Rogers, Architect, Palace-chambers, Lambeth. 10th September.

For the building of the new church at Lynn.—Plans, &c. Mr. Thew, Bookseller, High-street, Lynn. 1st October.

For 16,000 Larch or Baltic Sleepers of various dimensions, for the Ashton, Staleybridge, and Liverpool Junction Railway.—Secretary at the Manchester and Leeds Railway Office, Palatine-buildings, Hunt's-bank, Manchester. October 8.

For the erection of three Lodges in Birkenhead-park.—Drawings and Specifications at the office of Mr. Hornblower, Architect, Hamilton-buildings, Chairman of the Improvement Committee, Town Hall, Birkenhead. September 11.

For the addition to one of the Wings of the Union Workhouse, Newbury.—Union Workhouse, Newbury. September 11.

For the Mason's, Carpenter's, Plumber's, Slater's, Plasterer's, and Smith's Work in the erection of a Lock-up House at Dewsbury.—Bridge Surveyor's Office, in Milnthorpe. September 9.

For Building a New Church at King's Cross, Halifax.—Plans and Specifications at the Offices of Messrs. Craven and Ranken, Solicitors, Halifax, until the 14th September. September 16.

For Pitching the Banks of two large Lakes and making about two miles and a half of Walks in the Birkenhead-park.—Chairman of the Improvement Committee, Town Hall, Birkenhead. September 11.

For constructing a Water-tank at the Ardwick Station, near Manchester.—Plans and Specifications at the Company's Offices, Store-street Station, Manchester. September 10.

## TO CORRESPONDENTS.

A correspondent wishes to be furnished with a list, or any number of the pitches, of Cathedral, Collegiate, or other Gothic roofs or gables of different styles.

We have transmitted to the party alluded to the letter relative to the prices of metals.

The view and description of Gillespie's Monument will be inserted upon receipt of them.

There would be many difficulties in the way of accomplishing 'W. B.'s' proposal. It shall, however, have our serious attention, and if practicable, and consistent with our other arrangements, shall be adopted.

Moving the gallery in our next.

## ADVERTISEMENTS.

**COMPOSITION FOR WRITING WITH STEELPENS.**—STEPHEN'S WRITING FLUIDS comprise the most splendid and durable colours, and the most indelible compositions, which art can produce; they consist of—

- A Blue Fluid, changing into an intense black colour.
- A Patent Unchangeable Blue Fluid, remaining a deep blue colour. Two sorts are prepared, a Light and Dark Blue.
- A superior Black Ink, of the common character, but more fluid.
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**CAUTION.**—The Unchangeable Blue Fluids are patent articles; the public are therefore cautioned against imitations, which are infringeable; to sell or use which is illegal. Also purchasers should see that they are not served with the Blue Black instead of the Unchangeable Blue, as these articles are often confounded.

N.B.—Black Ink, and imitations of the above articles, are constantly being announced as new discoveries, but on examination, they will be found to have some new name only.

## HOLBORN AND FINSBURY SEWERS, MIDDLESEX.

**THE COMMISSIONERS OF SEWERS.** For these LIMITS give NOTICE, that their Office, Hatton Garden, is open daily between the hours of Ten and Four, where information can be obtained (gratis) by persons about to Purchase or Rent Houses or Property, or take Land for Building purposes, of the situation and level of the public Sewers, capable of affording sufficient Drainage, and which they recommend all such Persons to apply for at the above Office.

By the Court,  
STABLE and LUSH, Clerks.

**COURT OF SEWERS FOR WESTMINSTER, AND PART OF MIDDLESEX, No. 1, Greek-street, Soho-square.**

**TO BUILDERS AND Others interested in** buildings or in ground for building upon, within the district under the jurisdiction of this Court, drained by water-courses falling into the river Thames, between the city of London and the parish of Fulham.

The Commissioners hereby give notice, that by an Act of the 47th Geo. III. (chap. 7, local) it is required that, previously to the making of any new sewer in any street, lane, or public way, or in any part intended to become a street, lane, or public way, or to carry off or drain water from any house, building, yard, or ground, into any sewer under their management or within their jurisdiction, a notice in writing shall be given to them, or to their clerk at their office, and that such new sewer or sewers shall be constructed and made in such manner and form as shall be directed by the said Commissioners, and not otherwise.

And, in order to prevent the serious evils and inconveniences that must arise from ground proposed to be built upon being excavated to too great a depth, the Commissioners have directed that, upon application being made at this office previous to the excavation of such ground, information shall be given as to the lowest depth at which the same can be drained.

And the Commissioners do also give notice that, whenever the lower floors or pavements of buildings shall have been laid so low as not to admit of their being drained with a proper current, they will not allow any sewer, or drain into sewers, to be made for the service of such buildings.

It is recommended to all persons about to purchase or take houses, or other premises, to ascertain whether such premises have separate and distinct drains into common sewers.

All petitions must be delivered at this office at least three clear days before they are presented to the Commissioners; and all such petitions will be called on in the order of their presentation, and the name of any party not present when called on to support the application will be struck out, and the proceedings must in consequence be commenced de novo.

All communications made with any sewer without leave of the Commissioners, will be cut off, and the parties making the same will subject themselves to a fine.

By order of the Court,  
LEWIS C. HERTSFLET, Clerk.

## TO BUILDERS, CABINET-MAKERS, AND OTHERS.

**SALISBURY GLUE 60s. per Cwt.; fine** Scotch do. 50s.; Tann 45s.; 44s.; and 42s.; Best Glass Paper 10d.; Second do. 9d.; French Polish and Spirit Varnishes 10s. per gallon; Naphtha do. 10s.; Genuine White Lead 25s.; Second do. 24s.; and 22s.; Improved Stucco Paint 28s.; Invisible Green and Chocolate Colours 28s.; and all Colours used in House Painting, prepared by a new process to dry in six hours, 6d. per lb.; Turpentine 21. 6d. per gallon; Linseed Oil 2s. 6d.; Fine Copal Varnish 20s. per gallon; Drying Carriage 14s.; Oak do. 15s. and 10s.; Paper 14s., 10s., and 6s.; Turpentine Varnish 3s.; Dry Brunswick Green 3d., 4d., and 6d. per lb.; Lamp Black 3d.; Emerald Green 1s. and 1s. 3d.; White Lead 1s. 6d. per cwt.; Stockholm Tar 18s. per barrel; Pitch 10s. per cwt.; Gilder's Materials, Lackers, Bronze, Dutch Metal, Patent Gold Paint, Dyes and Die-woods, Acids, Alkali, Gums, and Salts of every kind and description at equally low prices. W. NIXEY'S Old-Established Warehouse, 22, MOOR-STREET, SEVEN-DIALS, LONDON.

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TURPS, per gallon .. .. . 2s. 6d.  
LINED OIL, ditto .. .. . 2s. 6d.  
SHEET LEAD, in sheets, per cwt. .. 28. 6d.  
Ditto, cut to sizes and PIPE .. .. 19s. 6d.

WHITE LEAD (Genuine) per cwt. .. 26s. 0d.  
Colours, Pipe, Brushes, &c. &c. of the best quality warranted. Complete Lists, prices may be had gratis. Stock-holm Tar 18s. per barrel; Pitch 10s. per cwt.; Gilder's Materials, Lackers, Bronze, Dutch Metal, Patent Gold Paint, Dyes and Die-woods, Acids, Alkali, Gums, and Salts of every kind and description at equally low prices. W. NIXEY'S Old-Established Warehouse, 22, MOOR-STREET, SEVEN-DIALS, LONDON.

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**COMMON SHEET AND CYLINDER.** The advantages of Common Sheet over Crown Glass for Glazing, are decidedly great, and is generally used where strength or superior appearance is required; a light 6 feet 6 in. long, with openings of any width, needs only one lap. This Glass is considerably stouter than Crown, and may be had from 1s. 3d. per foot.

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## KING'S COLLEGE, London.—GENERAL INSTRUCTION IN THE APPLIED SCIENCES.

—THE CLASSES in this Department (the object of which is to provide a thoroughly practical education for those who are afterwards to be engaged in the business pursuits of active life), will OPEN on TUESDAY, the 1st of October next.

This Department provides also (in addition to the general course) a complete system of Elementary Instruction in Engineering and Architecture.

Detailed information may be obtained of the Secretary.  
July 31, 1844. R. W. JELF, D.D., Principal.

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Major Wilcock, K.L.S., (Director H. E. I. C.)

ENDOWMENTS FOR FUTURE CHILDREN.  
TO SOLICITORS, PARENTS AND GUARDIANS.—By this mode of Insurance, the advantages are obtained in securing provisions for Children. By the plan adopted in other offices there is a separate Endowment upon each child after its birth, and a separate Premium upon each Endowment, the Premiums increasing as the children increase. This Office for a Premium fixed at the time of Insurance, and not liable to further increase, will ensure the same Endowment to every after-born child—namely, which every child will have the same provision, the Parent will not be subject to the burden of increasing Premiums. This mode of Endowment has been sanctioned by the Court of Chancery, upon the marriage of a young Lady, a Ward of Court, and Forms will be supplied by the Office.

The following are extracts from the Society's Tables, which have been calculated expressly for this Office:—

For assuring to each future Child 100l. on completing its twenty-first year, by the payment of a single Sum or Twenty-two Annual Premiums.

Age of Single Sum. Twenty-two Annual Premiums. Amount of Endowment. Payable at the age of

18 142 12 2 9 10 2 100 21  
21 134 1 8 8 18 6 21  
24 119 6 8 7 3 21  
26 119 12 7 19 6 21

Four-fifths of the Profits are divided periodically among the assured. Annuities of all kinds are granted by this Office.

**LIFE ASSURANCE.**  
The Society undertakes Insurance against all the ordinary contingencies affecting human life, at Premiums as low as is consistent with security; for example,

ANNUAL PREMIUM PER CENT. FOR THE WHOLE OF LIFE.

Age. With Profits. Without Profits.

25 2 3 1 1 19 1  
30 2 3 1 1 19 1  
35 2 15 2 1 11 1  
40 3 5 3 3 3 3  
45 3 16 2 3 9 10  
50 4 10 6

\* \* Liberal Commission allowed to Solicitors and Agents.  
JOHN CAZENOVE, Secretary.



We have in hand, as we have already intimated, and hope to commence next week, the publication of an ALPHABETICAL DIGEST of the whole of the contents of the NEW BUILDING ACT. This will be in minuteness far beyond those hitherto issued. The great public attention which this statute has excited is proved by the fact of the whole of a large extra edition of the number of THE BUILDER containing the Act being entirely sold. It is our intention to publish almost immediately the whole of the Building Act, with Mr. Bartholomew's Digest, in a pocket form, much smaller and more portable than any hitherto published.

## The Builder.

NO. LXXXIV.

SATURDAY, SEPTEMBER 14, 1844.



**COMPETITION** in architectural design, like that of competition in operative building, is a subject which has so often occupied both public and professional attention, that we need no apology for saying a few words upon it. We are indeed led to do so upon the present occasion by the following advertisement:—

"TO ARCHITECTS.—It has been resolved to build a new Church for the united parishes of St. Thomas and St. Clement, Winchester. Architects are invited to send in Plans, Elevations, Sections, &c., on or before October 16, 1844, for a plain and substantial Church, to hold about 1,000 persons on the floor. Cost, independent of the old material, not exceeding 4,000*l*. As the site is peculiar, personal inspection is absolutely necessary, when further information can be obtained from the rector and churchwardens. No remuneration will be given for any plan except that chosen, for which the committee will pay 20*l*."

A PRIZE OF £20 for designing a church to cost 4,000*l*., besides the old materials, with the privilege of a gratis journey to Winchester, and the pleasure of returning, if not more light-hearted, at least more light-pursed.

These men of St. Thomas are truly most element to the portion of the architectural profession possessed of aspiring genius, and cannot be ended with the incredulity of St. Thomas, or perhaps they would not believe the expense of their advertisement would be returned by any array of talent thence invoked. As far as we remember, not less than two-thirds the cost of the tickets in a state lottery were given in prizes to the adventurers. Now let us calculate this church-lottery. Suppose for a moment only twenty young men, as little "up to snuff" as any young tradeless adventurer, who, gazing at a recruiting bill, smeared with red, blue, and yellow, and headed "Glory," "Promotion," "Victories in Afghanistan," feels his heart tickled to enlist: suppose twenty such raw recruits in architecture take the journey, expend thereon five pounds each, make each a design, work themselves, pay only 5*l*. each for assistance, five shillings for paper

and carriage, and three guineas each for landscapes to tickle the speculative eyes of the clement St. Thomasites; and suppose only five of them spend three pounds each more in going to Winchester, to see that all is fair, or to canvass the powers in the business: this will sum up to two hundred and eighty-three pounds, to be clemently expended in that of the utility of which experienced practitioners will have more than the doubt of St. Thomas, and thus not less than fourteen blanks will turn up to one prize. The public-house "Derby Stakes" are sound, safe, and sacred, compared with this.

But now let us see the probable result of this impudent advertisement. A church is to be built—no doubt the parties advertising have already designs—perhaps they are too expensive; and perhaps two practitioners in the neighbourhood are rivals, and the friends of neither will give way, and they will not join interests and build jointly, or dividing the architect's pay into three, set one apart for expenses, share between them the remainder, and one be virtually the architect. Half the pretences for choosing designs in competition result from the cause just mentioned.

But suppose the advertisement meet, as no doubt it will, the eye of some unlicensed architectural hawker, travelling like a Birmingham agent "in the button line," some representative of the architectural firm of Mufti and "Stratch," or any other victimizers who tout about the country, lying like "Stratch" himself; these twenty-pound-mongers will be sure themselves to be taken in—the old story will as assuredly occur like the Arabian Nights' tale of the ladies, the year of happiness, the over curiosity, and the result. The "plain church" will have a high steeple, rich tracery, profuse work; as usual, under such circumstances, a couple of thousand pounds-worth of work will be directed to be cut out, and, as usual, the actual cost will, after this retrenchment, be a couple of thousand pounds (if not double that) more than the first estimate. Fifty such instances have, we know, occurred. These scoundrels spreading ruin, unhappiness, law, and squabbling wherever their impudence carries them. We know one instance where their four thousand became twelve; another, where their twenty thousand was forty; and we believe these touters never yet completed a business without deceit and trickery;—and so deserve to be dealt with all who encourage such conduct.

But now let us examine the benefit in design and construction resulting from these pultry competitions. Not one of the twenty young men whom we have instanced above should be the man to design and execute a church; all the old churches are designed with the most mature talent—no tyro ever touched one; no man, the extent of whose Free-masonic knowledge lies in an erudite exactness of knack in the sticking of pigs or the slaying of lambs ever ventured of old to determine whether the voids and masses of a church were properly apportioned; none whose technical lore consists in knowing the temperature at which honey and spices may be kept without pecuniary loss ever ventured to say whether window-tracery or mouldings were correctly plotted; nor did any baker, the most learned in the setting of his leaven, then ever trouble himself about the exact rise of an arch, or the proper use of roll-mouldings.

No—churches were alone designed by the persons in the world the most learned in architecture, the best constructors, the most experienced, the shrewdest, the wisest economists;

the still existing consequence is, the meanest village church outlives, by the art of its construction (however mean and perishable its materials), generations of costly mansions; however simple its architecture, its taste and picturesque quality invite, though it be old and patched, and surface worn, the admiration of the antiquary and the artist. It was made as it is, because those who built it required it to be so. It lasts, because it was put together scientifically; every part useful was made ornamental, and every part ornamental was made useful.

### THE NEW HOUSES OF PARLIAMENT.

SINCE the last notice of this important work which appeared in this journal, very considerable progress has been made in every department, and the whole structure now presents that tangible and substantial appearance which enables the visitor to form a tolerably adequate idea of its magnitude, and of the accommodation it is calculated to afford. In order more distinctly to describe the present state of the works it should be premised that the general design of the whole construction embraces the following main features—1st. The river front, consisting principally of apartments to be devoted to the use of committees, meetings for conference, &c. 2nd. A parallel and corresponding front, facing the west and fronting the Abbey. 3rd. The clock-tower, situate at the north end of the building, to be appropriated to the residence of the Speaker. 4th. The Victoria Tower, at the other or south end of the building. 5th. The central tower, designed for the purposes of ventilation. And lastly, the quadrangular space enclosed by the exterior structure just described, containing the Houses of Lords and Commons. The works already executed, and now in progress, have been divided into five contracts. The 1st, the formation of the cofferdam and of the artificial embankment, extending along the river front. 2. The foundation of the river front of the building; both of which were let by tender to the Messrs. Lee, and have been long since completed. 3. The erection of the river front. 4. The foundations of the Houses of Lords and Commons, and other buildings in the quadrangle. And 5, the erection of those buildings; all of which were let to Messrs. Grissell and Peto, by whom the 4th has been completed, whilst the 3rd and 5th are in active progress. The river front has been carried up to its full height, and the greater part of the roof is completed. The exterior of this portion of the building presents a rich display of graceful mouldings, tracery, carvings, and decorations, with innumerable shields and heraldic devices, which, whilst they strike astonishment to the beholder, must raise in his heart a high admiration for native genius, which from the solid rock of massive limestone could, with an iron chisel and a wooden mallet, produce forms so beautiful and so intricate. The Victoria, clock, and central towers have each been carried to the height of about 33 feet, and have yet to be built considerably higher. These towers are equally rich in decorations with the river front, and are now being proceeded with very rapidly. The western front, which is to correspond with the river front, has not yet been commenced. Within the quadrangle, the exterior walls of the House of Lords have been built to their full height, and the roofing is nearly completed, the whole being expected to be covered in in the course of a few weeks, whilst very little progress above the surface of the ground has yet been made with the lower house.

It is hardly necessary to mention that the whole of the stone employed for the exterior work belongs to the magnesian limestone formation. For the interior work several varieties of the native oolite were originally employed, more especially that from Painswick, in Gloucestershire; these, however, have been now entirely superseded by a remarkably fine description of oolite imported into this country from Caen, in Normandy. This French stone has for centuries enjoyed a very high reputation for the fineness of its texture, the beauty and smoothness of its surface, and the ease with which, under the chisels and graving tools of the mason, it can be fashioned into the most intricate forms; it was the favourite stone of the priest-architects, who reared most



of the English ecclesiastical structures in the middle ages, and must have been extensively imported into this country at a time when our own stone-quarries were little worked, and the mineral resources of England but imperfectly understood.

The colour of the magnesian limestone formed one of its recommendations to the commission of geologists and architects by whom it was selected. When first quarried, and for some time afterwards, whilst it retains its native moisture, the colour is not unlike that of brown sugar; when dry, the shade becomes much improved, being that of a delicate cream, and such is the condition of many blocks now to be seen in the walls; those composing the earlier portions of the building, however, have already assumed the dull, dingy, sooty appearance, which is common to all the buildings of the metropolis, and which will ultimately even reduce to an uniform shade every variety of colouring that can be introduced into the external walls of her buildings.

In examining a work of this vast magnitude, employing in its execution about 700 artificers, it is impossible not to be struck with the regularity and precision which prevail in every department, and with the numerous novel and ingenious devices had recourse to with the view of shortening the labour and perfecting the construction of the undertaking. Mr. Allan, the able foreman of the contractors, is entitled to much credit upon these points: the practical operations are for the most part confided to his care, and to him the constructive professions are indebted, amongst other matters, for great improvements in the system of scaffolding, for the introduction of zinc plates or moulds in lieu of the old wooden templets, and for improvements in the application of the travelling crane, a machine capable of far greater range, and therefore of more extensive utility, than the ordinary fixed swing crane. Besides these improvements of Mr. Allan, we notice the application of Dr. Spurgin's patent machine for hoisting bricks and mortar, thus dispensing with mortar-carriers, a class so well-known by the designation of "hod-men," and so exclusively composed of emigrants from the sister island (another grievance for Ireland!)—the employment of iron-girders and binders instead of wooden beams for all the principal floors, and of the patent galvanized iron instead of slates for covering the roofs.

The extensive use of iron, and the consequent exclusion of wood from all the main portions of the building, afford a very satisfactory security against fire, and we may therefore rejoice in the extreme improbability of the recurrence of such a catastrophe as that which destroyed its predecessor.

In concluding these brief remarks, we cannot refrain from paying a just and well-merited tribute to the genius of the able architect who designed this building, and under whose direction it is now rapidly advancing to conclusion. Not alone does the design as a whole command respect and admiration for its noble and lofty proportions, its vast magnitude and the scale of luxurious amplitude which everywhere distinguish it; but, looking further into the structure, examining it piece by piece, and feature by feature, we are everywhere struck by new instances of ingenuity, skill, and talent, which are everywhere multiplied around, even down to the most insignificant details of secondary decoration.—*Times.*

#### MINERALOGY.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 399.)

**CALCAREOUS EARTHS** are those loose or concrete masses of earth which have a basis almost wholly consisting of the earth of lime, embracing the carbonates, sulphates, phosphates, muriates, &c., all of which bear the same relationship to the animal, as vegetable earth or *humus* does to the vegetable kingdom, being the distinguishing characteristic of animals; for although the earth of lime is sometimes found in vegetable species, still physiology teaches us, that its presence in these merely proceeds from accident of absorption from the soil or from the waters in which the plant is disposed.

Calcareous polypes, crustacea, and mollusca are the chief elaborators of this peculiar earth, and numerous fanciful imaginings are promulgated by modern geologists in order to account for its vast local accumulations. The calcareous polypes, and the more numerous and varying species of lime-secreting animals, occupy the hot and temperate zones of the earth as far as latitude 30° north and south, and they are in some measure governed in this geographical distribution by the general motion of the waters, which between these latitudes is from east to west. When carried beyond these zones many species wholly disappear; others, divested of their earthy covering, become naked polypes, and are known under other names; others again pass into varieties, in which their origin becomes obscured or wholly lost.

As the vast accumulated beds of earth demonstrate the present or previous existence of vegetation from whence they derive their origin, so it is with the vast beds of calcareous earth and limestone, which still more clearly manifest their origin, by preserving their organic forms through all the changes and vicissitudes which, of necessity, connect them with the fossil and mineral kingdoms; and the coral groups, of which a great portion of the British strata is composed, speak precisely the same language as the coral groups now filling up the Pacific, Southern, and Indian Oceans. Within those latitudes in which only they can exist, the like causes produce the like effects; but in the one and the other is infinite variety; in both, organic identity is lost for ever in the succession of changes to which the organic body is subject after the cessation of vital action.

The most common form of this earth is *carbonate of lime*—crystalline, as marble—amorphous, as limestone—farinaceous, as chalk—each of which presents numberless varieties. Of limestone I have already spoken in my previous papers. Let us now examine the other two. **CHALK** consists of carbonate of lime, and carbonic acid gas, and a few extraneous substances; it effervesces in, and is almost wholly soluble in acids, calcines in the fire, but does not vitrify in the strongest heat. The most common carbonates are shell-lime, testaceous lime being the comminuted particles of animals, common shama earth or silvery chalk, arenaceous limestone, coral rag, agarie, scaly lime, &c.

Farinaceous chalk forms a vast proportion of the superficial covering of the earth, embracing hill and even mountain ranges, and descending to still unascertained depths into the lower beds, and in whatever state of combination this substance may be found, it almost invariably presents evidence of organic origin. The form presented to us in the fossil and mineral kingdom is variable and uncertain, depending entirely upon the contingencies of climate, association, and accident of union; thus even in the same region, we have a variety of aspect and union: one solitary bed, or a succession of elevations, sometimes consists almost entirely of one family, another group of several families, another is a confused mass of animal bodies and reliques of bodies. Sometimes the entire masses are in the farinaceous state, at other times they abound with nodules, and again, they assume the plastic or crystalline state. In general they present the phenomena of a series of deposits periodically disposed in succession upon each other, denoting a sequence of events unbroken for a long succession of ages, being alternations of generation and destruction.

This regularity of layers, so analogous to the phenomena of formed and forming beds now progressing in tropical seas, is strikingly manifest in the British strata, and much wonder is elicited even by men of science, as well as by the unlearned, when they behold the regularity of layers of flint and layers of chalk, not considering, that this regularity is common to all the stratified beds, and is still more extensively developed in the mining districts. Thus we sometimes observe a succession of oceanic and land deposits, the former being periodically covered in by the intrusion of the latter. Rivers at the period of flood bring down their deposits which are spread over the ocean bed; the causes of effects having ceased, these river deposits are in turn covered in, the fabric gradually rising by this conjoint action to the surface of the waters: beds of pearl oyster, of the common oyster, of corals, sponges, ecrinites, &c., are

gradually formed; an eruption of matter in its disintegrated state takes place in the locality of the bed, and deposition takes place upon the bed; and in a few short hours generations are destroyed. The destroying cause ceasing, new orders, genera, and species spring forth, to be in turn overwhelmed by a similar catastrophe. Some of these disturbing causes are periodical, others result from the accident of disturbing causes, of flood, fire, or tempest. The after changes of strata thus composed depend entirely upon local influences for the form or forms they may assume.

In whatever part of the world these chalk formations are disposed, we observe similar causes effecting varying results: in the ocean is the gradual formation of the aggregate; on the earth and in the earth the after changes are carried on: both prove the source and origin of the bodies of which the aggregate is composed. However distant from the sea, however high its elevation above the sea, its organic bodies in their fossilized state and every varied appearance, prove their oceanic origin: there the layer of organic bodies still remains unchanged in its disposition and quantities, however it may have changed in its qualities, the one generation upon another exhibiting the progressive stages of life; the sponges, corals, and beds of mollusca still maintain their natural position, and the age of some of the mollusca evidencing a long succession of years, nay of ages, ere the bed could have been disturbed by the overlying matter. All extensive chalk formations are also undoubted evidence of oceanic origin.

The chalk formations are generally stratified, the thickness of the strata and its nature depending upon the chance of climate and association, and of disturbing causes. The peculiarity of the chalk deposit depends, first, upon the nature and qualities of the organic bodies of which it is composed, and the nature and qualities of bodies by which its changes are influenced. The thickness of the strata is generally the thickness of the living bed and the generations which precede it, being sometimes two or three inches, and sometimes many hundred feet. The deposited matter is at all times variably disposed in its quantities and in its qualities, being diffused throughout all kinds of strata as carbonate of lime, sand, clays, marles, and admixtures of two or more of these compounds.

It is evident also that the periods of disturbance by which the groups and families of oceanic orders, genera, and species were simultaneously destroyed by the sudden irruption of foreign matter have ever been, as they are now, inconstant and irregular; and the causes of disturbance have been, and still are, the exposure of the aggregate mass (produced beneath the ocean waters, principally of tropical seas), to terrestrial influences, or to the intrusion of foreign matters by local disturbances or general or local catastrophes. The material of the unstratified aggregates is at all times of similar composition and character to the material of the stratified masses; the only difference being—the one is formed by the comminuted particles of bodies or of polypi separated in death; the other is formed by polypi now in their state of degradation, or of depositions of carbonate of lime, and by the fossil bodies of mollusca, sponges, fish, sharks' teeth, bones, &c., the layers alternating.

In the formation termed by geologists *oolite*, and which is very abundant in this country, the shells in the hills are generally changed into cube spar, their cavities being lined with crystal; the corals have also undergone a similar transformation. The ammonites and nautili have frequently their chambers filled with spar of various colours, sometimes with clay, and commonly in the coal measures with liquid bitumen; in some the delicate partitions are converted in pyrites, and the cells are filled with white calcareous spar; but the modifications of change, and sometimes entire change, of these and other organic are far beyond enumeration, the body acted upon being the passive subject of surrounding influences.

The general character of the *oolite* and chalk is that of a system of ocean deposits, the progressive accumulations of years, nay of ages, beneath the waters, and occasionally or regularly interrupted by matter varying from the bulk of aggregate. Again, we distinctly see, in the orders, genera, and species, the inhabitants of quiet seas and tropical heat; deposited



in families, generation upon generation, according to the laws of nature which govern the disposition of those bodies, or a chaotic mixture of reliques of numerous species, but all inhabitants of the same climate. Sometimes the aggregate consists of lacustrine and oceanic reliques; at other times with these we find terrestrial organic remains: in all, we find the operation of ages, and the forming effects of climate.

The term chalk is applied to a group of deposits very dissimilar in their lithological composition, but agreeing in their character of oceanic organic bodies. In Europe the chalk formation extends over a great portion of the British Isles, Northern France, Germany, Denmark, Sweden, and Russia; there are also extensive formations in North America. In the United States there is very little chalk: in India the chalk is generally converted into marble in its varieties, jasper, porphyritic and other rocks: in China its constituents form the basis of marles and clays.

In England, much of the chalk strata exhibits alternate layers of flints and chalk, or otherwise the flints are generally but irregularly diffused throughout the aggregate mass. The hills which form the boundaries of Upper Egypt are of similar composition and character, although of much more recent origin; these, and other ranges extending through various parts of the Egyptian and Nubian deserts, are in general the work of madrepores, millepores, and other oceanic species, presenting various aspects of change, some of them being consolidated, as limestone; others, where removed from the influence of the atmosphere, in the soft state denominated chalk, the latter indurating when exposed to the action of the sun and air. The catacombs running into the very heart of these hills afford the lover of research into Nature a noble opportunity of witnessing her protean powers. Upon entering into one or more of these catacombs, the first chamber, if for some time exposed to the atmospheric influence, presents the appearance of progressive change in the unity of parts and quantities, the matrix is carbonate of lime variably indurated, and some portions of which are beautifully encrusted with a pure quartz formed by the exuding silica; irregularly disposed throughout are fossil mollusca, and other fish and reliques, gradually converting, or entirely converted into chalk, and generally retaining throughout their several stages of change their primary form; but on breaking a nodule, we can discover no trace of their organic arrangement. The fossils which are thus transmuted into chalk are generally those of the more bituminous animals, the silica and calcium of the animal being retained, but the ammonia being replaced or changed by carbon.

The protean powers of Nature are still more beautifully developed in the changes these bodies undergo. Thus, if one of these chalk nodules be accidentally disengaged from its matrix by the falling of a portion of the hill or otherwise, and become exposed to the intense heat of the valleys, it gradually indurates, becoming, in the early state of change, what is termed a petrification, but eventually it is converted into the precious and beautiful stone termed EGYPTIAN JASPER. Nor is this all; for as a chalk nodule, its internal configuration is obliterated; but in the perfect state, its whole interior economy is once more displaced, and generally sufficiently so as to distinguish the genera to which it belongs, and sometimes the cryptogamic plant attached to the animal in its living state. Yet let not the reader suppose that this alone is the cause of effects produced, as Egyptian jasper; in this, as in all things else, Nature has many ways of effecting the end desired. The valleys of those localities of which I am now speaking are covered with fossil bodies, preserved in the first instance from decomposition of parts by certain elementary proximate principles or compound bodies, with which they were primarily united; it is not at all necessary that the organic body should in the first instance become converted into chalk, for the tendency of all animal matter in these localities, and in all tropical climates, is to become mineralized, as agate, jasper, or some other calcaceous substance; the nature of the change and the ultimate result depending on the nature and qualities of the material with which they become accidentally united, and of the elements to which they are exposed. Animal matter is

the basis of all the rocks termed primary, and in most of them it forms the chief constituent; in like manner vegetable matter is the basis of most of the earths, marles, and clays.

As an illustration of this, I notice the giant balani; these animals aggregate together in families, and are the living architects of immense edifices, building after the manner of the more minute polypi; these animals contain a great portion of animal matter. On the Arabian shores of the Indian Ocean there are vast aggregates of this genera changing or changed into *Rock Jasper*. Even in the bosom of the mountains running along this coast, two hundred feet above the present level of those waters, the same phenomena is exhibited; sometimes these animal rocks being in the first instance converted into chalk; at other times, in union with other marine animals, they become bituminized, the dark liquid sometimes escaping from its bed and running down the mountain sides; in some parts of the deserts, particularly near Egypt, there are entire hills wholly composed of particular genera of balani converted and converting into carbonate of lime. In some parts of Upper India they become converted into siderous rock, exceedingly hard, iron being the chief constituent.

In England the deposits are of the like primary nature, but the results proceeding from the influence of climate are remarkably different. Here the matrix originally formed by polypi is entirely decomposed, and having a strong affinity to carbon, which it rapidly absorbs, and which is rapidly developed in this moist country, where vegetation is so abundant, the whole mass becomes chalk, and the excess of silica falling on the bituminous animal bodies and aggregates, converts them ultimately into flint. The alternate layers of this material with chalk shew the primary disposition of the organic bodies, and mark the course of deposition in the ocean, and also the causes of effects thus produced as a stratum. There is an era of life, the genera and species being madrepores, millepores, corals, sponges, radiari, echinites, and other animals, of necessity when in the living state, the inhabitants of warm and tranquil seas; a periodical deposition of atomic particles of organic animals and vegetables, exclusively the creatures and plants of the ocean formed upon this stratum, and thus the fabric arises, death upon life, life upon death. The difference of the siliceous bed and the chalk bed is, that in chalk, the basis has an affinity to silica, and under favourable circumstances becomes silica; whereas in flint, the siliceous base is developed. In the flint, the internal and external organical structure of the animal is often manifest through all the changes it has undergone; in chalk, the organic structure is to all appearance entirely obliterated in the decomposition of parts.

The chalk formations are invariably the products of organic orders, genera, and species of the ocean, and such as of necessity exist only in warm and tranquil seas; all chalk formations originate in and by the operations of life, the elementary principles and compounds of which chalk is composed being secreted by life. The modifications and changes of organic matter depend upon local association, or local action and reaction of matter with matter, or upon the accidents of union, separation, degradation, and other causes. In this country the softer madrepores are, in general, silicified; but this is the final result, the intermediate changes varying from each other, being chalk, simple carbonate of lime, and sometimes the change is effected by transition direct from the animal matter.

When chalk nodules are exposed to the sun and atmosphere on rich black vegetable soils in Upper India, the nodule, in the course of time, becomes gradually transformed into chalcodony, generally laminated, semi-transparent, and having strong bands delineated: receiving into its composition alumina, it becomes converted into another kind of precious stone.

As in the times of flood, the great rivers of the earth force their passage through the ocean waters, and finally deposit therein the numerous proximate principles and compounds held in suspension by the freshes: so when these floods take place periodically, depositions upon oceanic matter, collected within those periods, take place in like manner: again, during the dry season of the year in tropical countries,

the large rivers losing their force and volume, the ocean waters, overcoming the force of resistance, pass up the mouths of the rivers for many miles, and there deposit matters, held in suspension by them, upon the bed of terrestrial matters; thus the TERTIARY STRATA originates. The like result is produced when the sea occasionally inundates the whole of an extensive tract lying below its level.

Lieutenant Nelson observes that the soft white calcareous mud of the Bermudas, distributed over the bottoms of the lagoons, is formed by the decomposition of eschara, flustra, cellepore, &c.; and when dried, it is not to be distinguished from common chalk. Darwin makes the same observation, accompanied with the erroneous idea that they have passed through the body of worms.

The chalk formations, as Dr. Mantel observes, attest the high antiquity of the strata in Europe, because the period of their formation, and the ages which of necessity must have passed away in their gradual developments, goes far beyond the earliest records of man; they prove also that this earth has repeatedly changed in its orb of revolution; that life is the generator of substance as life, and ultimately of mineral bodies; that the earth increases by and in the operations of life, and that the waters diminish in the like degree, the elementary constituents of the waters undergoing a change and modifications of change, as they are received or absorbed within the living system, and also in mineral bodies; that as life is the generator of substance, and as life is of necessity locally disposed in its orders, genera, and species, so must the earth of necessity locally accumulate; and also that as matter is the passive subject of moving powers, so must it of necessity form local accretions, in or beyond the sphere of action; that the causes of effects produced, as chalk, are various, but that the primary cause being life, is one and the same; but that as life is divisible in its orders and genera, so the primary causes are many.

In the extensive valley of the Mississippi, the cretaceous formation is acknowledged by its fossils, but the rock does not assume the form of chalk.

(To be continued.)

## RETROSPECTIVE ARCHITECTURAL LITERATURE.

### THE ELEMENTS OF ARCHITECTURE.

COLLECTED BY SIR HENRY WOTTON, KNIGHT,

From the best Authors and Examples.

(Continued from p. 458.)

Now touching the Distribution of Lodging-Chambers; I must here take leave to reprove a Fashion, which I know not how hath prevailed through Italy, though without ancient Examples, as far as I can perceive by Vitruvius. The Thing I mean, is, that they so cast their Partitions, as when all Doors are open, a Man may see through the whole House; which doth necessarily put an intolerable Servitude upon all the Chambers, save the inmost, where none can arrive but through the rest; or else the Walls must be extream thick for secret Passages. And yet this also will not serve the Turn, without at least three Doors to every Room; a Thing most insufferable in cold and windy Regions, and every where no small weakening to the whole Work: Therefore with us, that want no cooling, I cannot commend the direct Opposition of such Overtures, being indeed meerly grounded upon the fond Ambition of displaying to a Stranger all our Furniture at one Sight, which therefore is most maintained by them that mean to harbour but a few; whereby they make only advantage of the Vanity, and seldom prove the Inconvenience. There is likewise another Defect (as Absurdities are seldom solitary) which will necessarily follow upon such a servile disposing of inward Chambers, that they must be forced to make as many common great Rooms as there shall be several Stories; which (besides that they are usually dark, a Point hardly



avoided, running as they do, through the middle of the whole House) do likewise devour so much Place, that thereby they want other Galleries and Rooms of Retreat, which I have often considered among them (I must confess) with no small Wonder; for I observe no Nation in the World by Nature more private and reserved than the *Italian*, and on the other side, in no Habitations less Privacy; so as there is a kind of Conflict between their Dwelling and their Being. It might here perchance be expected, that I should at least describe (which others have done in Draughts and Designs) diverse Forms of Plants and Partitions, and Varieties of Inventions. But speculative Writers, as I am, are not bound to comprise all particular Cases within the Latitude of the Subject which they handle, general Lights and Directions, and Pointings at some Faults is sufficient: The rest must be committed to the Sagacity of the *Architect*, who will be often put to diverse ingenious Shifts, when he is to wrestle with Scarcity of Ground: As sometimes\* to damn one Room (though of special Use) for the Benefit and Beauty of all the rest; another while, to make those fairest, which are most in Sight; and to leave the other (like a cunning Painter) in Shadow, *cum multis aliis*, which it were infinite to pursue. I will therefore close this Part, touching Comparition, as cheerfully as I can, with a short Description of a Feasting or Entertaining Room, after the *Egyptian* Manner, who seem, at the least 'till the Time of *Vitruvius*, from the ancient *Hebrews* and *Phœnicians* (whence all Knowledge did flow) to have retained with other Sciences, in a high Degree, also the Principles and Practice of this magnificent Art. For as far as I may conjecture by our Master's Text, (Lib. 6. Cap. 5.) where (as in many other Places he hath tortured his Interpreters) there could no Form, for such a Royal Use, be comparably imagined, like that of the aforesaid Nation, which I shall adventure to explain.

Let us conceive a Floor or *Area* of goodly Length (for Example, at least of One hundred and twenty Foot) with the Breadth somewhat more than the half of the Longitude, whereof the Reason shall be afterwards rendered. About the two longest Sides, and Head of the said Room, shall run an Order of Pillars, which *Palladio* doth suppose *Corinthian* (as I see by his Design) supplying that Point out of *Greece*, because we know no Order proper to *Egypt*. The fourth Side I will leave free for the Entrance. On the aforesaid Pillars was laid an Architrave, which *Vitruvius* mentioneth alone: *Palladio* adds thereunto (and with Reason) both Freeze and Cornice, over which went up a continued Wall, and therein half or three quarter Pillars, answering directly to the Order below, but a fourth Part less, and between these half Columns above, the whole Room was Windowed round about.

Now, from the lowest Pillars there was laid over a Contiguation or Floor, born upon the outward Wall, and the Head of the Columns with Terrass and Pavement, *sub dio* (saith our Master) and so indeed he might safely determine the matter in *Egypt*, where they fear no Clouds: Therefore *Palladio* (who leaveth this Terrass uncovered in the Middle, and ballised about) did perchance construe him rightly, though therein discording from others: Always we must understand a sufficient Breadth of Pavement left between the open Part and the Windows, for some Delight of Spectators that might look down into the Room: The Lat-

tude I have supposed contrary to some former Positions, a little more than the half of the Length; because the Pillars standing at a competent Distance from the outmost Wall, will, by Interception of the Sight, somewhat in Appearance diminish the Breadth; in which Cases, as I have touched once or twice before, Discretion may be more licentious than Art. This is the Description of an *Egyptian* Room, for Feasts and other Jollities. About the Walls whereof we must imagine entire Statues, placed below, and illuminated by the descending Light from the Terrass, as likewise from the Windows between the half Pillars above: So as this Room had abundant and advantageous Light; and besides other Garnishing must needs receive much State by the very Height of the Roof, that lay over two Orders of Columns. And so having run through the four Parts of my first general Division, namely, *Foundation*, *Walls*, *Appertions*, and *Comparition*, the House may now have leave to put on his Hat, having hitherto been uncovered itself, and consequently unfit to cover others. Which Point, though it be the last of this Art in Execution, yet it is always in Intention the first, for who would build, but for Shelter? Therefore obtaining both the Place and the Dignity of a final Cause, it hath been diligently handled by diverse, but by none more learnedly than *Bernardino Baldi*, Abbot of *Gauisalla* (before cited upon other Occasion) who doth fundamentally and mathematically demonstrate the firmest Knittings of the upper Timbers which make the Roof. But it hath been rather my Scope, in these *Elements*, to fetch the Ground of all from Nature herself, which indeed is the simplest Mother of Art. Therefore I will now only deliver a few of the properest, and, as I may say, of the most natural Considerations that belong to this remaining Piece.

There are two Extremities to be avoided in the Cover or Roof; that it be not too heavy, nor too light. The first will suffer a vulgar Objection of pressing too much the under Work. The other containeth a more secret Inconvenience; for the Cover is not only a bare Defence, but likewise a kind of Band or Ligature to the whole Fabrick, and therefore would require some reasonable Weight. But of the two Extremes, a House top-heavy is the worst. Next there must be a Care of Equality, that the Edifice be not pressed on the one Side more than on the other: And here *Palladio* doth wish (like a cautious Artizan) that the inward Walls might bear some good Share in the Burthen, and the outward be the less charged.

Thirdly, The *Italians* are very precise in giving the Cover a graceful Pendence or Slope-ness, dividing the whole Breadth into nine Parts; whereof two shall serve for the Elevation of the highest Top or Ridge from the lowest. But in this Point the Quality of the Region is considerable; For (as our *Vitruvius* insinuateth) those climes that fear the falling and lying of much Snow, ought to provide more inclining *Pentices*; and Comliness must yield to Necessity.

These are the usefulest Cautions which I find in Authors, touching the last Head of our Division, wherewith I will conclude the first Part of my present Travail. The second remaineth, concerning Ornaments within, or without the Fabrick; a Piece not so dry as the meer Contemplation of Proportions: And therefore I hope therein somewhat to refresh both the Reader and myself.

PART II.—Every Man's proper Mansion-House and Home being the Theatre of his Hospitality, the Seat of Self-Fruition, the comfortablest Part of his own Life, the noblest of his Son's Inheritance, a kind of private Princedom, nay to the Possessors thereof, an Epitomy of the whole World, may well deserve by these Attributes, according to the Degree of the Master, to be decently and delightfully adorned. For which End there are two Arts attending on *Architecture*, like two of her principal Gentlewomen to dress and trim their Mistress, *Picture* and *Sculpture*; between whom, before I proceed any farther, I will venture to determine an ancient Quarrel about their Precedency, with this Distinction, that in the Garnishing of Fabricks, *Sculpture* no

doubt must have the Pre-eminence, as being indeed of nearer Affinity to *Architecture* itself, and consequently the more natural and more suitable Ornament. But on the other Side (to consider these two Arts, as I shall do, philosophically, and not mechanically) an excellent Piece of Painting is, to my Judgment, the more admirable Object, because it comes near an artificial Miracle, to make diverse distinct Eminencies appear upon a Flat by force of Shadows, and yet the Shadows themselves not to appear; which I conceive to be the uttermost Value and Vertue of a Painter, and to which very few have arrived in all Ages.

In these two Arts (as they are applicable to the Subject which I handle) it shall be fit, first, to consider how to choose them; and next, how to dispose them. To guide us in the Choice, we have a Rule somewhere (I well remember) in *Pliny*, and it is a pretty Observation. That they do mutually help to censure one another. For *Picture* is best, when it standeth off, as if it were carved; and *Sculpture* is best, when it appeareth so tender, as if it were painted, I mean, when there is such a seeming Softness in the Limbs, as if not a Chisel had hewed them out of Stone, or other Material, but a Pencil had drawn and stroked them in Oil, which the judicious Poet took well to his Fancy:

Excudent alij spirantia mollius æra.

But this Generality is not sufficient to make a good chooser, without a more particular contraction of his Judgment. Therefore, when a Piece of Art is set before us, let the first Caution be, not to ask who made it, lest the Fame of the Author do captivate the Fancy of the Buyer: For, that excellent Men do always excellently, is a false Conclusion; whereupon I observe among *Italian* Artizans three notable Phrases, which well decipher the Degrees of their Works.

They will tell you that a thing was done *Con diligenza*, *Con studio*, and *Con amore*: The first is but a bare and ordinary Diligence; the second is a learned Diligence; the third is much more, even a loving Diligence; they mean not with Love to the Bespeaker of the Work, but with a Love and Delight in the Work itself, upon some special Fancy to this or that Story; and when all these concur (particularly the last) in an eminent Author, then perchance *Titianus Fecit*, or *ôpιδιὰς ἐποίησε*, will serve the turn, without farther Inquisition: Otherwise, Artizans have not only their Growths and Perfections, but likewise their Vains and Times.

The next Caution must be (to proceed logically) that in judging of the work itself we be not distracted with too many Things at once: Therefore first (to begin with Picture) we are to observe whether it be well drawn (or as more elegant Artizans term it) well design'd; then whether it be well coloured, which be the two general Heads; and each of them hath two principal Requisites; for in well Designing there must be Truth and Grace; in well Colouring, Force and Affection: all other Praises are but Consequences of these.

Truth (as we metaphorically take it in this Art) is a just and natural Proportion in every Part of the determined Figure. Grace is a certain free Disposition in the whole Draught, answerable to that unaffected Frankness of Fashion in a living Body, Man or Woman, which doth animate Beauty where it is, and supply it where it is not.

Force consisteth in the Roundings and Raisings of the Work, according as the Limbs do more or less require it; so as the Beholder shall spy no Sharpness in the bordering Lines; as when *Taylors* cut out a suit, which *Italians* do aptly term, according to that Comparison, *Contorni taglianti*; nor any Flatness within the Body of the Figure, which how it is done, we must fetch from a higher Discipline; for the Opticks teach us, that a Plane will appear prominent, and, as it were, embossed, if the Parts farthest from the Axletree, or middle Beam of the Eye, shall be the most shadowed; because in all Darkness there is a kind of deepness. But as in the Art of Persuasion, one of the most fundamental Precepts is, the Concealment of Art, so here likewise the Sight must be sweetly deceived by an insensible Passage, from brighter Colours to dimmer, which *Italian* Artizans call the middle Tinctures, that is not

\* The *Italians* call it *Una stanza dannata*, as when a Buttery is cast under a Stair-Case or the like.



as the Whites and Yolks of Eggs lie in the Shell, with visible Distinction, but as when they are beaten and blended in a Dish; which is the nearest Comparison that I can suddenly conceive.

Lastly, Affection is the lively Representment of any Passion whatsoever, as if the Figures stood not upon a Cloth or Board, but as if they were acting upon a Stage: And here I must remember, in truth, with much marvel, a Note which I have received from excellent Artizans, that though Gladness and Grief be opposites in Nature, yet they are such Neighbours and Confiners in Art, that the least Touch of a Pencil will translate a Crying into a Laughing Face; which Instance, besides diverse others, doth often reduce unto my Memory, that ingenious Speculation of the Cardinal Cusanus, extant in his Works, touching the Coincidence of Extremes. And thus much of the four *Requisites and Perfections in Picture*.

In *Sculpture* likewise, the two first are absolutely necessary, the third impertinent; for Solid Figures need no Elevation by Force of Lights or Shadows; therefore in the Room of this, we may put (as hath been before touched) a kind of Tenderness, by the Italians termed *Morbidezza*, wherein the Chisel, I must confess, hath more Glory than the Pencil, that being so hard an Instrument, and working upon so unpliant Stuff, can yet leave Strokes of so gentle Appearance.

The fourth, which is the expressing of Affection (as far as it doth depend upon the Activity and Gesture of the Figure) is as proper to the Carver as to the Painter, though Colours, no doubt, have therein the greatest Power; whereupon, perchance, did first grow with us the Fashion of Colouring even Regal Statues, which I must take leave to call an English Barbarism.

Now in these four Requisites already rehearsed, it is strange to note, that no Artizan, having ever been blamed for Excess in any of the three last, only *Truth* (which should seem the most innocent) hath suffered some Objection, and all Ages have yielded some one or two Artificers so prodigiously exquisite, that they have been reputed too natural in their Draughts; which will well appear by a famous Passage in Quintilian, touching the Characters of the ancient Artizans, falling now so apply into my Memory, that I must needs translate it, as in truth it may well deserve.

The Place which I intend, is extant in the last Chapter save one of his whole Work, beginning thus in *Latin*:

*Primi, quorum quidem opera non vetustates modo gratia visenda sunt clari Pictores fuisse dicuntur, Polygnotus atque Aglaophon, &c.*

The whole Passage in *English* standeth thus:

THE first Painters of Name, whose Works be considerable for any thing more than only Antiquity, are said to have been Polygnotus and Aglaophon, whose bare Colourings (he means I think in White and Black) hath even yet so many Followers, that those rude and first Elements, as it were of that which within a while became an Art, are preferred before the greatest Painters that have been extant after them, out of a certain Competition (as I conceive it) in point of Judgment. After these, Zeuxes and Parasius, not far distant in Age, both about the Time of the *Peloponnesian War* (for in *Xenophon* we have a Dialogue between Parasius and Socrates) did add much to this Art: Of which the first is said to have invented the due Disposition of Lights and Shadows; the second, to have more subtly examined the Truth of Lines in the Draught; for Zeuxes did make Limbs bigger than the Life, deeming his figures thereby the more stately and majestic, and therein (as some think) imitating Homer, whom the stoutest Form doth please, even in Women. On the other side Parasius did exactly limit all the Proportions so, as they call him the Law-giver, because in the Images of the Gods, and of Heroical Personages, others have followed his Patterns like a Decree; but *Picture* did

most flourish about the days of Philip, and even to the successors of Alexander, yet by sundry Habilities; for Protagenes did excel in Diligence; Pamphilus and Melanthius in due Proportion; Antiphilus, in a frank facility; Theon of Samos, in Strength of Fantasie and conceiving of Passions; Apelles, in Invention and Grace, whereof he doth himself most vaunt: Euphranor deserves Admiration, that being in other excellent Studies a principal Man, he was likewise a wondrous Artizan both in *Painting* and *Sculpture*. The like Difference we may observe among the Statuaries; for the Works of Calon and Egesias were somewhat stiff, like the Tuscan Manner; those of Calamis, not done with so bold Strokes; and Myron, more tender than the former; a diligent Decency in Polycleus above others, to whom though the highest Praise be attributed by the most, yet least he should go free from Exception, some think he wanted Solemnity; for as he may perchance be said to have added a comely Dimension to humane Shape somewhat above the Truth, so, on the other Side he seemed not to have fully expressed the Majesty of the Gods; moreover, he is said not to have meddled willingly with the graver Age, as not adventuring beyond smooth Cheeks: But these Vertues that were wanting in Polycleus were supplied by Phidias and Alcmeneas; yet Phidias was a better Artizan in the representing of Gods than of Men; and in his Works of Ivory beyond all Emulation, even though he had left nothing behind him but his *Minerva at Athens*, or the *Olympian Jupiter in Elis*, whose Beauty seems to have added somewhat even to the received Religion, the Majesty of the Work as it were equalling the Deity. To Truth they affirm Lysippus and Praxiteles to have made the nearest approach; for Demetrius is therein reprehended, as rather exceeding than deficient, having been a greater Aimer at Likeness than at Loveliness.

This is that witty Censure of the ancient Artizans, which Quintilian hath left us, where the last Character of Demetrius doth require a little Philosophical Examination, how an Artificer, whose end is the Imitation of Nature, can be too natural; which likewise in our Days was either the Fault, or (to speak more gently) the too much perfection of Albert Durer, and perhaps also of Michael Angelo de Buonarroti, between whom I have heard noted by an ingenious Artizan, a pretty nice Difference, that the German did too much express that which was, and the Italian, that which should be: Which severe Observation of Nature, by the one in her commonest, and by the other in her absolute Forms, must needs produce in both a kind of Rigidity, and consequently more Naturalness than Gracelness. This is the clearest Reason, why some exact Symmetrists have been blamed for being too true, as near as I can deliver my Conceit. And so much touching the Choice of Picture and Sculpture; The next is, the Application of both to the beautifying of Fabricks.

(To be continued.)

#### THE NATURE OF DESIGN.

*A Paper read at the meetings of the Decorative Art Society, March 13th and 27th.*

BY MR. CRABE, V. P., MEMBER OF THE INSTITUTE OF FINE ARTS.

(Continued from p. 457.)

THE manufacturers have the matter in their own hands; let them visit the schools as men of business, and, as such, judge of the arrangements, of the instruction given, and should it continue unsatisfactory, let them, in any one district open a separate school, subscribe sufficient to remunerate a man of talent, and select him themselves, as they would one for their private business; no doubt the object could be best attained through the government school, but it can also be done by a few spirited manufacturers.

I should be proud if our efforts aroused the attention of a few gentlemen of the council, Mr. Cockerell for instance, whose valuable and instructive lectures at the Royal Academy, conducted with the greatest liberality and

listened to in admiration by a crowded auditory, form a fitting prototype for lectures that should originate with Professor Dyce. The subject cannot rest where it is; let us widely circulate what might be quickly done under proper management, and depend upon it the manufacturers who are feeling the inconveniences of a dearth of designers will come forward. The rapid success of our society at once marks the importance and attention design is now receiving; half a dozen meetings have not taken place, yet under all sorts of disadvantages, and crippled through want of leisure to mature the requisite arrangements and prepare our papers, we have not only interested the members, but our proceedings have caused the attendance of numerous visitors. The powerful incentives of zeal and a knowledge of our deficiencies will, under judicious direction, be of the utmost importance. We must keep before us the remembrance that the principles of art, of true taste and sound design are those of nature, and equally fixed and immutable; that the philosophy of art is its free interchange with every people, open and careful communication with the mighty works of past ages, produced when the refined powers of man were presented with unequalled opportunities; and that the great end and purpose of fine art, in whatever form presented, is to please and delight the understanding, and to extend that delightful region of mental enjoyment which is of the most refined and ennobling character. Those who love the results of elegant art, will avoid all excess, for the beautiful must be cultivated in their own minds ere it can be either enjoyed or imparted. This consideration will be found to greatly extend a people's happiness; it was the principle pre-eminently valued in the best period of art, courted at the revival, and now again fostered in Germany; there, in the real and true spirit, we find the monarch diffusing the rich treasures of knowledge to his people without distinction, creating a genuine love of art, and an eager desire to apply elegant design throughout their manufactures.

If we Englishmen desire similar results, we must cultivate the same spirit and adopt similar means.

#### MOVING A CHAPEL GALLERY.

This gallery was moved "bodily," on account of an enlargement of the Wesleyan Chapel, in the Liverpool-road, Islington, where it exists; in doing which, the front wall, to which the gallery is attached, had to be carried out 12 feet further. The idea was first broached by Mr. Roberts, the foreman of Messrs. Elston and Co., of Wormwood-street, the contractors for the work; and the execution of it was performed under his immediate direction, in the presence of Messrs. Chubb (of St. Paul's Church-yard), Smith, Lewis, Jupp, and many others.

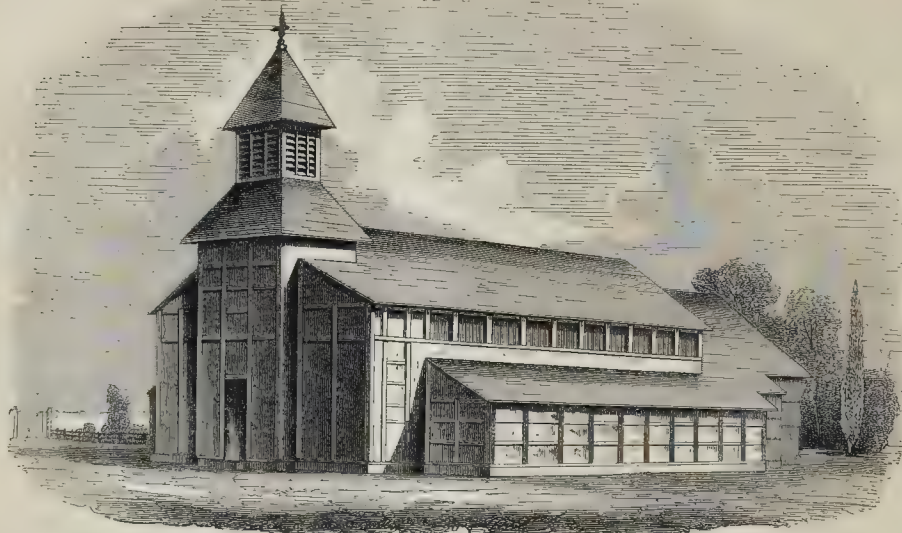
Some cradles were framed to the rake of the ceiling of the gallery, which formed a carriage; trucks or wheels were morticed into the timber forming the carriage, which was bolted to the breast-summer; of those there were five, three for the ends, and two for the wings or sides; these had five pieces of timber, 8 in. by 8 in., with one side straitened, and bar-iron, 2½ in. by ½ in., fastened thereon, which formed railroad; those were supported by uprights, properly braced; and after the carriages were bolted to the timbers of the gallery, and properly leveled, the other timbers and uprights forming the railroad were well wedged up, so as to ease the weight from the iron columns, which were taken away, and the gallery stood on the railroad, ready to start as soon as the gallery-timbers, floors, and every thing else could be properly braced and secured, which required a great deal of thought and attention, so as to keep every thing in its place during the removal; for, the removal of a thing extending over a surface of 50 ft. by 30 ft., and put together in a thousand different pieces, is not so easy to remove safely as a solid mass of the same weight. When the above had been completed, two crabs were attached to it by means of chains; this being done, it was cut away at the spring of the circular part, and the word of command being given, it glided to its destination without a single accident.

Ι Α Ι Α Δ Δ Ζ.

Ὡς ἐπὶν ἀλόχοιο φίλης ἐν χέρσιν ἔθηκε,  
Παιδίον, ᾧ δὲ ἄρα μὴ κρύβει ὀκασὸν κόλπῳ  
Ἀκρῶν γενέσασα. — That is,  
She took her Son into her Arms, weepingly laughing.



## TEMPORARY CHURCHES.

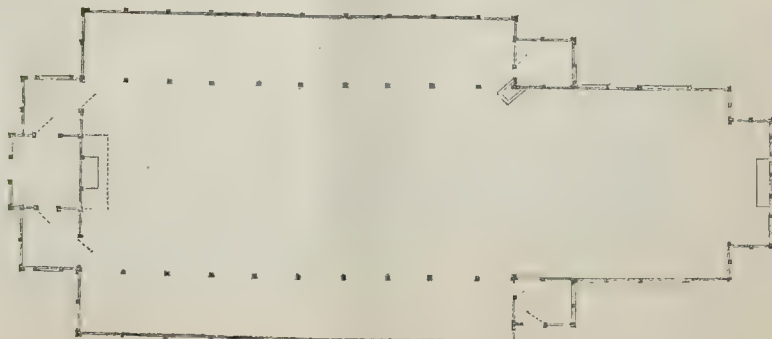


PERSPECTIVE VIEW.



SECTIONAL INTERNAL VIEW.

SCALE. 1" = 10 FEET.



GROUND PLAN.

SCALE. 1" = 10 FEET.



## TEMPORARY CHURCHES.

TO THE EDITOR OF THE BUILDER.

SIR,—I have, within these few days, designed and erected a "Temporary Church" at Kentish Town, particulars of which may be interesting (economically) to your readers. The plan consists of a tower 10 feet square, forming the entrance to two lobbies, each 9 feet by 8 feet, communicating with the nave or choir 60 feet by 30 feet, divided from the side aisle by a range of columns that support an open-framed roof; the side aisles are each 60 feet by 9 feet, thus making the whole width 48 feet. At the end of the nave is the chancel, 30 feet long by 28 feet wide, and terminating with a recessed communion, 15 feet wide by 6 feet deep, the floor of which is raised 18 inches. At the end of one of the aisles is a vestry 8 feet by 6 feet; at the end of the other aisle is the robing-room of the same dimensions, from whence are the steps to the pulpit.

The body of the church receives its light from sixteen clerestory windows of "Vitreous Cloth," the light from which, although subdued in tone, is very brilliant and equally diffused. The walls are formed in compartments, the inside finished with neat oak paper in panels, and presents a quiet appearance well adapted for its intended purpose. The outside panels and the entire of the roof are covered with *Crogon's Patent Asphalted Felt*, being the best non-conductor of heat and cold. The entire of the felt to the roofs, and all the outside wood-work, and the open-framed roof inside are covered with *Jeffery's Patent Marine Glue*, the colour of which, in the wood, has a fine rich effect, and is the most perfect non-absorbent of moisture and non-conductor of the electric fluid.

The church contains sittings for 800 persons, all open seats. The erection of this church will shew, with limited funds, how readily a congregation can be neatly and comfortably accommodated with a suitable place of worship. Buildings of this description can be erected at a cost of about 10s. per sitting.

I am, Sir, &amp;c.,

PETER THOMPSON.

Commercial-road, Limehouse, Sept. 1844.

[We trust that all in districts where church accommodation is required, willing benefactors will be found to aid in providing the same; it must be highly advantageous to the *Church Pastoral Aid Society* to call into requisition the services of the builder of this church, who has shewn in the plan all the essentials requisite in the arrangement of Christian worship. We are pleased to see this example, which may be the precursor of many being built in wood, and might call into requisition skilled workmen as framers and carvers, similar to what has been done in the middle-ages.—Ed.]

## TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLLSON.

(Continued from p. 455.)

83. *BEXON*.—This tree, although yielding to the oak in grandeur, dignity, and the picturesque, is nevertheless of other all forest trees the most beautiful, frequently emulating the oak in magnitude, and being a very desirable ornament to demesne lands, and a striking object in distant scenery: it is stately, round-headed, and thick-spreading, affording a very pleasant and refreshing shade, and place of repose for cattle, with graceful pendulous branches, a smooth rind, glossy foliage, and a stem of massive proportions, frequently attaining a hundred feet in height, and the trunk from ten to fifteen in girth: the sorts are the black or brown, and the white; there are also mentioned the white-American, the dark purple, and that of the iron-coloured leaf, all ornamental, and propagated by grafting on the common sorts: the leaves when mature are of a bright green, ovate in form and thin in texture.

84. It is found native throughout the greater part of Europe, though not extending so far north as Sweden; is abundant in Great Britain, and principally indigenous to the central portion of it, the best being such as have sprung from a chalky, rather rich, and not very damp soil, and a genial southern and sloping situation: it is not, however, fastidious as to soil or situation; and in those parts where the western winds blow keenly, in Devonshire for example,

it appears to excel in withstanding their severity: if there be but some portion of calcareous matter present it seems to suffice; and where there is a subsoil of chalk or limestone, similar to the dry calcareous hilly ridges of the central counties, it frequently forms extensive forests. In Hampshire, the covert of Hangerwood consists altogether of it; in Buckinghamshire, in the southern parts, it is particularly abundant; and in Sussex, in the southern range of chalk hills, near Walberton, it is very fine; in Morayshire and Cromarty, large plantations have been made; in Belgium it is employed for fences, being planted young with that view. With respect to the soil for its growth, it is said by some that that which is of a hard and stony nature is more congenial than the richer chalky ground above described; however this may be, it appears that the difference produces such a characteristic variety in the appearance and quality of the wood, as to obtain for it the distinctive appellations above stated, and to lead many to consider them as distinct species; the latter of the two is such as has been grown in a damp situation, and though the tougher, is the inferior and less hard wood, since it loses much of its toughness and strength with the seasoning: it has, however, been stated to be the most durable.

85. The Beech does not reach maturity till from 70 to 100 years old; it then retains its perfection for a similar period, after which it soon goes into rapid decay, rarely reaching the age of 500 years. It is very fruitful, its mast or nuts, which ripen in autumn, having a sweet and oleaginous kernel or seed, pleasant in flavour and not unwholesome; in feudal times they, together with the acorns, used to fatten the vast herds of deer and droves of swine which were the staple food alike of lord and vassal; squirrels, dormice, pigeons, and pheasants, feed freely on them: they are sometimes sold to the oil-miller, who procures from them by expression an oil which is useful for lamps and for other purposes. Young plants are readily raised from the seed, which may be sown from October to February, on beds, with a thin covering of loose soil, care being taken to protect them from field-mice, which would readily devour them. When grown about five or six inches high, the seedlings, like other seedlings, are reset out in rows on fresh ground, where they remain until sufficiently advanced to be transferred to their ultimate destinations. The roots of the beech keep near the surface, and are wide-spreading, causing a barrenness in the verdure surrounding the tree.

86. The colour of the wood is an ashy brown, that of the white beech being the lightest, and that of the black beech the darkest in shade; the annual rings have a light and a darker side, just serving to make them visible; but they are throughout their thickness very uniform in texture; the larger transverse septa are fine, and therefore small in the flower compared with some other woods: the wood has a dry even grain, and is tasteless and inodorous. This tree, although not very suitable for house-carpentry, is, notwithstanding, one of great importance; for, although, from its great liability to rot soon from damp, and from being so subject to the destructive inroads of worms whether damp or dry, it is unfitted for beams and other bearing purposes, it is, for piling and such other purposes as keep it continually immersed in water, exceedingly well adapted, being hard, close, strong and tough, and very durable in water; indeed, in that respect it is as good as oak; and it would also endure well when dry, if kept thoroughly so; were it not for the worms which destroy it; and touching these destructionists, it has been suggested that the regularity of the pores in this wood affords a ready facility for infusing into it some bitter decoction for their prevention, and which, as they are almost the only obstacle to its attaining more general use, must be a subject well worthy of attention. It must be observed at the same time, that water-seasoning is a considerable preservative of this timber against worms, being better for that purpose than seasoning in the ordinary way. The best time for felling it is a little after midsummer, and the timber should directly be cut into planks, and then put to steep for about ten days before drying; if the tree be tapped some time before felling, for the purpose of letting out the sap, so much the better. A great supply is brought to the London market in planks and boards.

87. It is extensively used for furniture, tool-handles, turnery, and wheelwrights' work, for all of which its compact grain, smooth surface, and exemption from brittleness, admirably qualify it; it is found useful in the dockyards for wedges and similar purposes; coopers use it for clap-board, and musical instrument makers for sound-boards; it forms good charcoal, the ashes affording a good quantity of potash; the refuse wood is, in the vicinity of large towns, used for billets; like the elm and one or two other woods, it bears well the drift of spikes; and it is susceptible of a fine polish.

88. *ALDER*.—Of this genus there are said to be eleven species, nine of the number being natives of Europe and two of North America; it is also said to be a native of Asia. It is indigenous to Britain, abounding naturally in soils of every degree of moisture, from damp to marshy, and may be found on the margins of nearly all our streams, as well as by the sides of lakes; it also grows in high and even dry localities, but not with that luxuriance which it exhibits when grown in those moist situations in which it delights; and it seldom thrives, indeed scarcely lives, in soils which are of a chalky or calcareous nature, those of a strong clayey, or dry, burning, gravelly or sandy description being alike uncongenial to its welfare; the swampy places where it flourishes to perfection are such as are of good quality with their moisture. Under the most favourable circumstances, it attains a height of 50 or 60 feet, with a trunk several feet in girth, sometimes possessing a picturesque outline, and generally assimilating to the oak in appearance. It is not generally ranked amongst forest trees, and is seldom cultivated with a view to utility, the object being rather confined to its ornamental qualities, and occupying spots where nothing much better will grow; for the banks of rivers it is exceedingly well calculated, its multiplicity of roots serving to bind them together, and thus reducing the chance of their being carried away by floods.

89. Of what is termed the common alder, there are said to be four varieties, besides the hoary-leaved, oblong-leaved, wave-leaved, glaucous, and their varieties, and some shrubs, which are generally propagated by grafting on the common alder: this has leaves of a roundish jagged form, somewhat glutinous, and downy at the ramifying of their veins beneath. It is easily propagated, by large cuttings planted in spring where the tree is to remain, or by the seeds, which ripen in October. The cones should be gathered dry, thrashed and sifted, the seeds kept in sacks till spring, and sown thick in March or early in April; the ground should be smooth and even, to prevent the seeds being buried too deep. When one year old, the strongest plants should be transferred, and the weaker seedlings left for another season; in the new bed they should be placed four or five inches apart, in lines a foot asunder; in the after-culture the ground should be kept clear of weeds, which rob the young plants of their nourishment. It is of rapid growth when properly situated, and is said to be most profitable when kept as underwood, large poles suitable for the turner, or for piles or planking for bridges, bring a good price; and a considerable bulk of fuel being obtained by cutting over the copse at stated periods.

90. The Alder is another of those timbers of which the principal use, as regards building, is in piling, or any such works as are under water or on marshy ground; and for these purposes it is highly esteemed, on account of its extreme durability when so situated, being, in fact, almost imperishable: when exposed to the weather, however, or to mere damp, it soon rots; and when dry it is very susceptible of engendering worms: when employed in sea-works, it is liable to the pipe-worm, which destroys it with great ease, and fattens in it to its greatest size. The wood is tender, soft, uniform in the grain, and easy to work, and therefore suitable for the carver's art, could it be saturated with some ingredient obnoxious to worms; the roots and knots are valued for cabinet-work, being often beautifully veined; it is applied to turnery and other similar uses; it is also employed in the construction of pumps, sluices, &c., and in roofing and flooring temporary buildings; great quantities are annually felled in the Scottish Highlands for conversion into herring-barrel staves, and the Highlanders also use the bark in dyeing their tartan and other woollen stuffs; the bark,



which possesses a considerable degree of as-tringency, is besides used by tanners and leather-dressers; charcoal made from it is considered excellent in the manufacture of gun-powder. Vitruvius says that the piles whereon the whole of the buildings of Ravenna, in Italy, stand, consist of it; Virgil mentions it in the "Georgics" as furnishing the material for boats or canoes, which were formed out of its hollowed trunk; Evelyn says the oldest boats we read of, Noah's ark excepted, were made of it; also that it was used for the piles upon which the Bridge of the Rialto, at Venice, was founded in 1591. The colour of the wood is rich, a red yellow, somewhat like that of Scotch fir, but a little variable in shade; when found in bogs it is generally perfectly black; neither the annual rings nor the larger transverse septæ are very distinct. It is most durable when felled a little after Midsummer; and is rendered less subject to worms by being water-seasoned.

(To be continued.)

#### LONDON AS IT WAS, AND AS IT IS IN 1844.

(Continued from p. 410.)

THE royal palace of Westminster, the great hall of which was re-built prior to 1399, by Richard II., occupied the two large areas or courts still distinguished by the names of Old and New Palace-yard. These courts being bounded by the river Thames, and on the west by the Abbey of St. Peter, St. Margaret's parish church, the little and great sanctuaries, &c., were entered on the west and south by gates. Most of this extensive pile of building was destroyed by fire in 1512, and latterly St. Stephens met the same fate.

Opposite to the principal entrance to the hall in New Palace-yard, was, in olden-times, a handsome conduit or fountain, from which at coronations and other great rejoicings, wine was made to run at divers spouts. Henry the III. entertained in this hall and other rooms on New Year's Day, 1236, for the honour of the king and queen, 6,000 poor men women and children. In 1399, on the building being finished, Richard kept his royal Christmas in it, with his accustomed prodigality, "with daily justing and runnings at tilt, whereunto resorted such a number of people, that there was every day spent 26 or 28 oxen and 300 sheep, besides fowls out of number. The quantity of guests daily who sat down to meat, was 10,000 people, whose messes were told out from the kitchen by 300 servitors; and not less than 2,000 cooks, well skilled in their profession, were employed to furnish the requisite number of dishes. Henry III., kept several great Christmases in this hall, as did likewise his grandson, Edward II."

In this hall parliaments were frequently held, and during its re-building in 1397, Richard II. erected a temporary shed for the purpose, adjoining it, open on all sides and at both ends, that all men might hear what passed, "and to secure freedom of debate, he surrounded the house with 4,000 Cheshire archers with bows bent and arrows nocked ready to shoot, which fully answered the intent, for every sacrifice was made to the royal pleasure." The day of retaliation was, however, close at hand; and a second parliament held in the new hall, a short time afterwards, wrested the crown from this weak and misguided prince.

The trial of Charles I., was held in Westminster Hall, and Pennant, noticing the primitive manners at that period, observes "the commons who had an inclosed place for themselves, at a certain hour pulled out of their pockets bread, cheese, and bottles of ale."

The ancient palace of Westminster, now, having been used as a royal residence since 1532, the several apartments were appropriated for divers uses; two of which for the re-

ception of the lords and commons, and others occupied by the courts of star chamber, requests, and wards, and liveries, the hall, which at first was only used for royal banquets, and feasts for refreshing the poor, is now variously appropriated.

Adjoining to the south angle of the hall and north end of the old palace, King Stephen founded a chapel, and dedicated it to St. Stephen, the Protomartyr. Edward III. re-built it in a very magnificent manner in 1347, and converted it into a collegiate church, and afterwards endowed it with his *hospitalium*, or great house in Lombard-street, lands in Yorkshire, and an annuity out of his treasury, to make up 500*l.* per annum. John Chamber, M.D., physician to Henry VIII., and the late dean of the same, caused to be erected on the north side, a magnificent cloister at the expense of eleven thousand marks.

The revenues of this collegiate chapel at its suppression, amounted to 1,085*l.* 10*s.* 5*d.* per annum, and the same being surrendered to Edward VI., was appropriated for the reception of the representatives of the commons of England, who have ever since continued to meet therein. Contiguous to this chapel on the south was that of our lady of the Pen, to whose image many rich offerings were made. This wooden deity, together with the chapel, was consumed by fire in 1452.

Whitehall palace was erected by Hubert de Burgh, Earl of Kent, and Chief Justice of England, who, in 1243, bequeathed it to the preaching or Blackfriars, in Chancery-lane. They disposed of it to the Archbishop of York, and he devising it to his successors for their city Mansion; hence it received the appellation of York-place. In the reign of Henry VIII. the royal palace of Westminster being almost destroyed by fire, the king purchased York-house of Cardinal Wolsey. In 1697 it was wholly consumed by fire. Henry no sooner became possessed of this palace than he built St. James's; and for the use and service of it, as well as that of Whitehall, enclosed a beautiful spot of ground and converted it into a park, for the accommodation of both palaces; erecting a magnificent gate opposite the Mansion-house, opposite the Banqueting-house, to which he added a fine gallery for the accommodation of the royal family, nobility, and gentry to sit in, to behold the several justings and other military exercises in the tilt-yard. He also erected contiguous to this gate, a tennis-court, cock-pit, and places to bowl in. The present magnificent fabric denominated the *Banqueting-house*, and *Whitehall Chapel*, was erected by King James I.; being the only and meanest part of his intended spacious palace that was built, and which it is thought, if finished according to the plan, would have been the finest in existence. The civil war put a stop to the work.

The Horse-guards originally had their stables in the place they now occupy; the present building was erected in the reign of George II., at a cost of 30,000*l.*

The Admiralty was removed to the spot it now occupies in the reign of George II. The former Office stood in Duke-street, the present one on the site of Wallingford-house. The equestrian statue of Charles I., by Le Sueur, stands on the same spot where formerly stood a beautiful cross, one of the celebrated memorials of the affection of Edward I. for his beloved Eleanor. It was cast for the Earl of Arundel, and was not erected till the year 1678, when it was placed on the present pedestal, the work of the admired Grinlin Gibbons. The face has been declared faulty for want of expression, but there is a certain simplicity in the whole, hardly to be met with in the equestrian statues of the present day. It is with regret we observe the corroding hand of Time marking the pedestal.

What a change has come o'er the spirit of our dream. Within thirty years, immense piles of buildings have disappeared from this neighbourhood, and piles of stately buildings have risen in their stead; aristocratic silence has succeeded the bustle of former times; and with the last remnants of old Charing-cross, the old appliances of country-waggons and stage-coaches, disappeared before the revolutionary power of steam. From hence to the Haymarket all is new, or assumes a new aspect.

The Haymarket and Hedge-lane, as late as the reign of Charles II., were literally lanes bounded by hedges; and all beyond, north, east, and west, was entirely country. In 1600, it presented a very countrified appearance, most of the houses exhibiting a mean and dilapidated appearance, widely different from the present. Thus it continued until about 1822, when the market was removed to the neighbourhood of Regent's Park. Suffolk-street and its neighbourhood was then rebuilt, the opera-house was outwardly embellished, the low pot-houses gave way to handsome wine and spirit stores or taverns, and Regent-street swept away much of the low neighbourhood in its rear.

In former times Coventry-house stood near the Haymarket, and gave name to Coventry-street. It was the residence of Lord Keeper Coventry; and Henry Coventry, Secretary of State, died here in 1686. His house occupied the site of the house formerly known as the gaming-house. A great part of the Haymarket and Piccadilly was built by Mr. Elwes, the celebrated miser; who also built several of the splendid mansions in Portland-place.

Pall Mall was formerly laid out as a walk, or place for the exercise of the mall, its northern side being bounded by a row of trees, and that to the south by the old wall of St. James's Park. The principal edifice in 1800 was Carlton-house, originally the property of the Earl of Burlington, and purchased from the family by Frederick, Prince of Wales, father to George III.; it was then far from being a commodious residence, and coming into the possession of the Prince Regent (afterwards George IV.), it was almost entirely rebuilt at a vast expense, from the designs of Mr. Holland.

Marlborough-house, now occupied by the Queen Dowager, was first tenanted by the great Duke of Marlborough; his Duchess, when the building was finished, determined to open a way from it to Pall Mall, and *vice versa* directly in front. But in order to thwart her design, on account of her altercations with the court, and declared animosity against the newly-acceded royal family, Sir Robert Walpole purchased the house before it, on purpose to block her up. This building exhibits outwardly a singular taste; it has, nevertheless, many beautiful and commodious apartments.

In 1800, where now stands Trafalgar-square was the King's Mews, a place of considerable antiquity; and so called from the word *Mew*, a term employed by falconers, implying to moult or cast feathers, because, in former times, and so far back as 1377, this place was appointed for the accommodation of the king's falconers and hawks. But the royal stables at Somerset, since called Bloomsbury, being consumed by fire in 1537, Henry VIII. ordered the removal of the hawks from the Mews, that they might be enlarged, and rendered fit to receive his Majesty's horses; and to this purpose was it, up to the time of its demolition, appropriated. In 1732, it was begun to be rebuilt by George II., and improvements and repairs were carried on up to the beginning of the present century. Whatever claims it may have had to admiration in those days, they could not arrest the march of alteration.

Northumberland-house, built by Bernard Janson in the reign of James I., derives its name from the ancient and noble family, who, for many centuries, have been possessors of it. It is still one of the largest and most magnificent private residences in London, and contains many very elegant and commodious apartments. It stands upon the site of the cell and chapel St. Mary Rounceval, suppressed among the alien priories by Henry V., but rebuilt by Edward IV., who fixed a fraternity in it. The hermitage of St. Catherine stood opposite, another monastic building, belonging 1262 to the see of Llandaff.

St. James's Church was built by Henry, Earl of St. Albans, in consequence of the increase of new buildings in St. Martin's-in-the-Fields. On the death of this earl, Charles II., by his letters-patent in 1684, granted the church and cemetery in trust to his nephew, Lord Jermin, and his heirs for ever; who thereupon assigned it to Sir Walter Chorges, Bart., and others, to be used as a chapel-of-ease of the inhabitants of St. Martin's, and it was thereupon consecrated by the then Bishop of



London, by the appellation of St. James's-in-the-Fields; the parish of St. James was then formed by Act of Parliament, the presentment to the living being vested in the Bishop of London and Lord Jermin; the Bishop of London presenting twice to once of Lord Jermin; the bishop finally became the sole patron thereof. St. James's Church, standing on one of the most imposing situations in all London, has externally a mean appearance, though its interior has few rivals throughout the world.

St. James's Palace was originally an hospital for lazars or leprous persons, founded before the conquest, and dedicated to St. James, but was rebuilt in the time of Henry III. Henry VI. gave the custody of it to Eton College, which having, for a valuable consideration, resigned it to Henry VIII., he converted it into a palace, and enclosed the park, which was subservient to the amusement of this and the palace of Whitehall. Charles II. was particularly fond of this place; he planted the avenues, made the canal and the aviary adjacent to the Birdcage-walk, which took its name from the cages which were hung in the trees. Here, Gibber tells us, the King was often seen, amidst crowds of spectators, feeding the ducks and playing with his dogs, and passing his idle moments in affability even to the meanest of his subjects. In St. James's Palace the celebrated Nell Gwin had a suite of apartments, decorated in the most sumptuous manner.

A critical writer of the last century, speaking of Burlington House, observes, "How many are there who have lived half a century in London, without knowing so princely a fabric exists. It has generally been taken for a jail. None, I am confident, ever passed under its gloomy walls late at night without thinking of ghosts, robbery, and murder. The formidable entrance, that betrays no marks of humanity but what are deaved over the doors, recalls to the imagination—

"Thrice threefold the gates  
Impenetrable!"

the character Milton gives to those gates of which the keepers were *Sin and Death*." He, however, excuses it on the score that the house was built when out of town; there is no excuse, however, for its existence in the present day, for it is a great draw-back to the improvement of Piccadilly; a screen of elegant shops would be infinitely preferable, and much more advantageous to the noble owner.

"As firm as London upon the Bridge," was formerly a saying in the city; and many a serious, sensible tradesman used to believe London to be the eighth wonder of the world: the streets were then paved, or rather half paved, with large shapless pieces of rock, and the foot-paths with sharp flints for the benefit of tender feet; and when a reformation of building began, the good old system was as ably defended as by any select vestry of the times we live in. The removal of signs and sign-posts of the Cat and Fiddle, Goose and Gridiron, Blue Boars, Green Dragons, and King's Heads, ornamenting Cheapside and other leading thoroughfares, was lamented as a falling off in national taste.

(To be continued.)

#### CHURCH-BUILDING INTELLIGENCE, &c.

*St. Mary's Church, Bury St. Edmund's.*—We have great pleasure in announcing that the extensive works of restoration at St. Mary's Church are making such progress, that the building is expected to be ready for the celebration of divine service at the latter end of November, when it is understood the Lord Bishop of London has kindly consented to officiate. Although the beauty of this fine edifice is still hidden by the massive scaffolding, and the lumber and confusion consequent upon so large a repair, the eye at every view meets evidences of the excellence of the improvements, and the judicious character of the changes which are in progress. The incomparable foliated and richly carved roof has been perfectly and substantially restored: the graceful piers of the arcades have put on a gratifying freshness of appearance; and the walls and richly-traceried lights have been completely made good. Many of the latter required much new stone work; and the great

west window, the largest we believe in any parochial church in the kingdom, has been entirely reconstructed; care being taken most scrupulously to adhere to the original design of its elegant tracery. It is to be filled with the arms of the distinguished subscribers to the restoration, executed by Willement. A new symbolic window, to be filled with stained glass representing the Martyrdom of St. Edmund, by the same talented artist, has been inserted in the clerestory wall over the noble chancel arch. The design is very rich, consisting of a compressed pointed arch, filled with intersecting triangles within a circle, all richly foliated. For this elegant window the parishioners are indebted to the liberality of J. H. P. Oakes, Esq., a magnificent admirer of pure ecclesiastical architecture. The principal entrance of the church, at the west, will open into a spacious lobby, the elaborately panelled screen of which is to be filled with plate glass; thus affording the spectator an instant and striking view of the grand interior with its lengthened vista of nave and chancel, and its magnificent roof terminated by Mr. Oake's beautiful window. The organ gallery has been entirely removed, but the side galleries, we regret to say, are still to be permitted to impede the proper effect of the various improvements; but they have been judiciously curtailed to the west, and their ends finished off with a neat and unobtrusive panelling. By the removal of the organ gallery, considerable additions will be made to the accommodation of parishioners on the floor of the church. The additional sittings will consist of open benches in the old style. We should like to see the whole body of the church covered with such benches; and regret that any feeling on the part of the pew-holders should have hindered the removal of the present unsightly *bins*; but we look with confidence to good results from that example which, it is understood, some of the seat holders, are about to set by the introduction of a few open sittings; which, while they effectually preserve the exclusive right of the holders, do not grievously offend their poorer brethren by any aristocratic distinction; nor disturb the beautiful harmony of the church's furniture. A new octagonal font, after the best models of the period, has been placed at the north-west end of the nave, on an ample stone dais, which is approached by one step. It is beautifully executed in Caen stone; is embellished with highly enriched panels, and with the arms, in enamel, of the archbishop, the bishop of the diocese, the corporation, and the donor, J. Fitzeger, Esq., the patron. By the font, but nearer the west, will be placed within one of the arches of the nave, the fine organ; the re-erection of which, we believe, has been intrusted to Mr. Gray of London. In the centre of the nave, looking towards the chancel, the reading-desk, an elegant moveable lectern, will be placed; and the present unsightly and heavy pulpit, on the south side of the nave, will be superseded by a new one of carved oak of appropriate design; which, though placed nearly on the same site, will be more favourably situate both for the ear and eye of the congregation. The present unsightly, inconvenient, and improperly placed vestry at the end of St. Mary's Isle will be removed; and a new and commodious one constructed in the basement floor of the tower, the entrance to which will be direct from the church-yard. The secular business of the parish will then be conducted without any of those desecrations of the holy edifice which have been too frequent; an improvement which cannot be too highly commended. The chancel will then alone remain to be done; and though the present state of the borough funds precludes the hope that the corporation will direct a complete restoration of its many beautiful and curious features, especially of the gorgeous coved roof, we trust they will not use a niggard hand in the matter; but perform at once, substantially and with propriety, the essential repairs so much needed.—*Bury Post*.

The Queen Dowager has sent a liberal donation to the fund for the completion of the re-building of the ancient church at Twitchen, North Morton, Devon.

The Lord Bishop of Lincoln consecrated the newly-erected church at Beeston, on the 5th inst. This church is provided with open seats, uniform throughout, and there is not a pew-door in the edifice.

The Church Commissioners, in their report just published, state that among a number of applications under their consideration for the perpetual patronage of new chapels, which it is proposed to build and endow, and for the assignment of districts thereto, under the Act 1 and 2 Will. IV., c. 38, is one from James Fussell, Esq., for the perpetual patronage to be vested in him, his heirs, and assigns, of a new chapel which he proposes to build and endow at Whatley, Somerset.

*St. Mary, Redcliff Church.*—The fund for the restoration of this splendid memorial of civic piety now amounts to 5,336l. We wish we could see a more rapid advance in the subscriptions.

The corner-stone of a new church, which is to be rebuilt for the parish of Sowton, Devon, was lately laid by John Garratt, Esq., of Bishop's Court, at whose sole expense the fabric will be erected.

The new church at Dilton Marsh, Westbury, Wilts, will be consecrated by the Bishop of Salisbury on the 30th of September.

Mrs. Lawrence, of Studley Park, has given 10l. towards the restoration of St. Saviour's Church, York.

#### RAILWAY INTELLIGENCE.

The *Leeds Intelligencer* states, on authority, that after a careful examination of the country, and several meetings, it has been now determined to bring before parliament, in the next session, a combined plan for forming new railways between the towns of Leeds, Huddersfield, Bradford, Dewsbury, and Halifax, in connection with the Leeds, Manchester, and Liverpool railways. This is the result of the union between the Leeds and Manchester Railway Company, and the Leeds and Bradford Short Line Company, with other parties.

*Railway from Hull to Driffield.*—A petition has been very numerously signed by the principal tradesmen and inhabitants of Driffield and its neighbourhood. The scheme of a railroad from Hull to Bridlington, by way of Beverley and Driffield, seems to meet with the approbation, not only of the people of Driffield, but also of the inhabitants of Beverley and Bridlington.

*Midland Railways Extensions.*—The directors of the Midland Railway Company have issued a statement relative to the proposed extensions into Lincolnshire. A special meeting is to be held early in October, to take the subject into consideration.

*Atmospheric Railways.*—The *Moniteur* publishes a law authorising the opening of a credit of 1,800,000 francs (72,000l.) for the trial of the atmospheric railway system.

The directors of the Midland Railway Company have determined to connect the town of Stamford with their line by a branch railway.

#### Correspondence.

##### CRACK HOUSES.

SIR,—The practices adopted by builders in the erection of houses for their own private speculation are so radically unworkmanlike and dishonest, that I am rather surprised it has not been more frequently brought before the notice of your readers. Houses in the present age are most frequently built for sale, consequently, the proper construction of them, in the opinions of some persons, is a matter of very trifling concern—the cheapest plan is the one adopted; the least timber, and that of the worst quality, is used; and the unfortunate buyer has the double consolation of losing his money and becoming the possessor of a tenement which is dilapidated in two years, and in about six is frequently untenable.

As much, however, as I disapprove of the present practice of "running-up" houses by speculating builders, a portion of the blame must rest on the buyers; if a person unacquainted with building chooses to follow his own opinion, instead of procuring a professional one, and by this means risks, and in many cases loses, his money, it certainly is partly his own fault, and he must pay the penalty of his own obstinacy. If we wish to reform abuses, the chief object should be to remove the temptation; by persons procuring a professional opinion, at the cost of one or two



guineas, on the safety and solidity of the buildings they are about to purchase, they would ensure a safer return for their capital, and would soon prove a barrier to the further progress of such dishonest and dangerous practices.

But another source for the spread of speculating building is one which, though less seen, and when observed is too often disregarded, is the practice of persons buying a piece of ground, and covering nearly its whole extent with the smallest and most wretchedly constructed houses for the poorer classes; ill-ventilated, single-hung sashes to the smallest window openings, small rooms, and a yard with the privy close to the back-door, and covering nearly its whole extent; these, built in the cheapest manner possible, are inhabited by persons who have the will, but not the power, to remove, being at the mercy of the hard-hearted landlord for arrears of rent; this class of speculators are the principal support of the present system, and are ably seconded by the scamping part of the building community; their reign, however, will soon draw to a close, thanks to the New Building Act.

I disagree, however, from your correspondent at p. 462; in his attempt to be facetious, he has fallen into error. The class of speculative builders will be found to include by far the greatest number of persons in the trade; and though there are some builders who for honesty and upright conduct are unexceptionable, yet they form so small a portion of the class, that they are in danger of being swamped by the host of under-price contractors and speculators who so plentifully abound. Instead of the present time being one favourable for the advancement of building, I can assure "W. T. B." that the present time is the worst for legitimate (if I may use the expression) building that has been known for many years. Go where you will, old established builders complain of no work; in fact, building, with a few exceptions, is almost at a stand-still, if we except the rows of houses springing up built by speculators, which are all taken under-price, in many cases builders of standing refusing to contract for them, with the prospect of being paid by a man of straw, and the houses mortgaged to their full amount. I would ask "W. T. B." why he objects to the use of stucco, and the shop-fronts being prettily painted? Though he uses it as a compliment, it hears the mark of sarcasm too strongly to pass muster, especially being preceded by the word "sepulchre." The other instance mentioned of his friend's house, proves not so much against the defective building as a bad choice of situation; at the same time, I think either the surveyor made a mistake in his valuation, or that "W. T. B." in order to make his case stronger, has overshot the mark in the respective amounts. Perhaps your correspondent would explain the term chattering windows, an expression which to me is utterly unintelligible.

I hope that your correspondents will take up the matter of speculating building, and seriously exert themselves to put a stop to a system which, if it goes on much longer, will end in half the builders becoming insolvent, through a set of scamps, who, having very little credit themselves, will not suffer much by its loss. The effects will be far more serious to the honest man, who endeavours to maintain himself and his family in a respectable manner.

Sept. 9th, 1844.

SCRUTATOR.

Sir,—A letter appears in your magazine of last week on the quality and quantity of material used in certain buildings; the remarks are very just, and apply to three-fourths of the buildings now erecting in the neighbourhood of the metropolis. But the fault does not rest where "G. T. B." lays it, but with the public themselves. The vast numbers of houses that have been built within the past ten years have not been required so much to meet the demand caused by increase in population, as by the rage for investment. The parties who wish to invest money seek for those houses that will produce the largest rental for the purchase; a really well-built house, producing 7 or 8 per cent., will not suit their purpose; they must make 10 or 12½ per cent.; therefore the cheaper a house is run up, the greater rental will it produce; consequently a demand is created for that kind of building, and the

man who builds a substantial house, of good material and workmanship, must be content to keep his house on his hands. An additional facility is created for the disposal of the inferior property by its falling into the hands of auctioneer surveyors, who lend money on them, afterwards becoming agents for the sale. These men are appealed to for the value; this is not estimated by the cost of house, quantity of material, or workmanship, but only by the *rental it will bring*. Therefore, a good house, valued by a respectable builder or surveyor at 600*l.*, is, in their eyes, only worth 400*l.* or 450*l.* I have seen repeated instances of this. The builders are suffering at present from the laxity shewn by some district surveyors, owing to which a house may be built in one district for 100*l.* less than in another. There is one spot in which the bricks are put in with a mixture of mud and lime from sugar refiners, the term for which is "Billy Sweet;" and in another district the same is used, but omitting the (what was once) lime.

If the public will use the same discernment in purchasing houses they use in purchasing goods in a shop, there will soon be an end to the cheap building; but while purchasers are to be found for *rubbish only*, the builders of such rubbish are not to blame.

NOT A BUILDER, BUT A LOOKER-ON.

#### ADULTERATION OF WHITE LEAD.

Sir,—It is with full confidence that justice to the trade alone, if not another sentiment, will make you give room in your valuable columns to the following reply to a statement made by "Verax" in your last, on the adulteration of white lead, and colours used by house painters:—

That white lead is lowered by *barytes* or *chalk*, no person in the trade (who at least understands it) can dispute, for the best English lead you can purchase in the market, I have found, when ground, to contain three and one-sixth of *cawk* or other ingredients to one of pure lead; and the very inferior lead, such as sold at 18*s.* per cwt., 7½ to one, which is mixed in water first (instead of being ground in oil as "Verax" states), then dried and ground in oil, which makes the dry white lead sold by colourmen as spurious, if so it may be called, as that ground in oil. It is absurd to think of having a genuine article at the price the common white lead is now sold at, and no respectable house painter, that understands his business, will purchase them to do even common work, as they are the most expensive in the end.

But as to colours of every description being adulterated with whiting, to be used by persons in the trade, is ridiculous indeed; it may do for little oil shops, &c., who sell cheap paints, but he must be a *tyro* who could not detect it; for if a house painter bought colours ground, it would not be compound colours, but the primitive ones, which, if adulterated, is easily detected by an inexperienced eye, much more by an old practitioner. It is not surprising either the white lead paints being marked up lower than the price of the genuine material, in these *puffing* times, when there is so much speculative building going on, and three perhaps out of four in the building line employ their own men, and often the employer and the employed know nothing of the nature of colours, but are obliged to trust to those that sell them, which, even if they are sold under the market price of blue lead, there would be a profit realised through the *vehicle* they are mixed with, which is often fish oil, and as great an evil as an inferior pigment.

There is no doubt but lead, with a portion of *barytes*, if well washed, is preferable to using lead alone for colour (but as to whiting, I should doubt, to any extent), and the resistance of certain gasses which will destroy the colour of lead, but the drying quality depends on their being well washed from acid, and the *vehicle* they are ground or mixed with, linseed oil being *tardy* in drying through the small quantity of oxygen it contains, but by adding any substance that supplies it with oxygen remedies the defect.

Persons would not be victimised, did they employ persons competent to purchase the genuine article.

Mill End, September 8th.

R. H.

#### Miscellaneous.

**HOLYROOD PALACE AND PARK.**—Considerable improvements are at present going on at this ancient seat of royalty. Workmen are repairing the crown which surmounts the grand entry. The roof is also undergoing necessary repairs, as well as the Chapel Royal. But the greatest of all the contemplated improvements—namely, the draining of the irrigated meadows—has now commenced in earnest, and when completed will be of immense advantage to the health of the citizens. The cut for the drain to accomplish this desirable object, extending from Duncan's-gate, St. Ann's-yards, on the east, to the foot of Arthur-street on the west—a distance of 1,000 yards—is now excavating, and a great many men being employed, the work is proceeding with great spirit. The depth of the cut is twelve feet and the breadth ten feet. The dimensions of the drain to be built within it are five feet in height by two and a half feet in breadth, or thereby. The building of the drain is now begun. Mr. Lind is the contractor for this extensive work. We may also state that the powder magazine, in the Royal Park, is in the course of removal. We trust that the approaching visit of her Majesty to Scotland will have the effect of making the Commissioners of Woods and Forests accelerate their operations at Holyrood, so that our gracious Sovereign, on her subsequent visits to Scotland, may have a residence of her own, instead of being forced to live in the palace (however splendid) of one of her subjects.—*Edinburgh Evening Post.*

**PROPOSED MONUMENT IN YORK CATHEDRAL TO THE LATE DR. BECKWITH.**—A special meeting of the members of the Yorkshire Philosophical Society was held last week at the Museum, to take into consideration the expediency of making a grant from their funds towards the erection of a monument to the late Dr. Beckwith, who recently left a legacy of 10,000*l.* to that institution, and which it is said has already been paid. The Rev. W. V. Harcourt was called to the chair, who opened the business of the day by appropriate observations. Dr. Goldie moved that the sum of 50*l.* be granted for that purpose. Mr. Pritchett moved as an amendment, that the sum of 60*l.* be allowed. After remarks from several of the members, C. J. Hanson, Esq., moved that the sum of 100*l.* be granted. Some discussion then took place, and the amendment for 60*l.* was ultimately carried by a small majority. It is expected that this sum will be augmented by subscriptions from other institutions.

**BRISTOL DOCK COMPANY.**—A general meeting of the proprietors in this company was held at the White Lion, Bristol, for the purpose of taking into consideration the propriety of widening the south Entrance Lock of Cumberland Basin. The recommendation of the directors to widen the lock to 54 feet was adopted. The drawings exhibit a lock of 54 feet in width by 245 in length, capable of admitting a vessel of the length of 211 feet above the water line; or of 237 feet from stem to stern; and with the improvement suggested by Mr. Brunel, by sloping the wall towards the top, a steamer of 62 feet can be admitted. Mr. Brunel is of opinion that the cost will not exceed 22,000*l.*, while to repair the present lock would require 17,000*l.*

**BRITISH ASSOCIATION OF ARCHITECTURAL DRAUGHTSMEN.**—The town members of this association celebrated their second anniversary by dining together at Freemasons' Tavern, on Monday last, the 2nd instant. In the course of the evening numerous portfolios of valuable drawings, as well as other interesting objects, were exhibited, affording a very agreeable and instructive entertainment to all present.

**NEW SCHOOL AT CHILDREDITCH.**—Through the exertions of the Rev. J. Lewis, jun., the pastor of Childreditch, a commodious school, in the Elizabethan style of architecture, is building in that parish, from a plan of Mr. Kendall's. Her Majesty the Queen Dowager has graciously contributed 20*l.* towards it, the Right Hon. Lord Petre, a like sum, and the Bishop of London 5*l.*

An immense new workhouse is about to be erected at Leeds, as, in the old edifice, very gross indecency and immorality prevail, in spite of every precaution taken by the officers.



**JOHN'S AND CO'S. PATENT STUCCO CEMENT.**—We are requested by Messrs. Mann and Co., the agents for the patentees, to intimate to architects, builders, plasterers, and others, that they may now see the effect of this valuable material, properly applied, on the west wing of the quadrangle, forming the chief entrance to Guy's Hospital, in St. Thomas's-street, Southwark; and they challenge a comparison with any other cement for beauty of finish, solidity of work, facility of application, and certain durability, being perfectly independent of either paint or colouring. Any plasterer may produce the same effect with this cement, by merely working it according to the given rules, which are so simple, that it would be more difficult to deviate from them than to follow them. We recommend our readers to inspect this practical illustration, which will be of more avail in shewing what this cement really is, than a thousand advertisements, or as many attempts to explain its merits by conversation. Messrs. Mann and Co. will give every information concerning it, on application to them at No. 5, Maiden-lane, Queen-street, Cheap-side.

**IRON HOUSES FOR TROPICAL CLIMATES.**—In an early number of this periodical, we gave an account, accompanied by a sketch, of an iron palace, which was lately sent out to the chieftain of Old Calabar. These edifices are, we believe, becoming popular in warm countries, and combine many advantages, especially to the settler or missionary, who above all others ought to be provided with an easily erected and comfortable home. Chapels also constructed of iron are extremely convenient, and might perhaps be made portable for the use of scattered congregations. We have great pleasure in recommending to our friends, either in the West Indies or Africa, for such purposes, the house of Wood, Waygood, and Co., 62, Gracechurch-street, manufacturers of the patent corrugated iron for houses, roofs, sheds, &c., and also of every kind of colonial implements. Our tropical readers may perhaps be obliged to us for pointing out a place which combines very moderate prices with extreme excellence of workmanship, and which, from the character of its managers, offers every guarantee for the satisfaction of purchasers.

**ASPHALTE OF SEYSSSEL.**—The uses of this material are now no longer confined to pavements and footways, they extend to the very pipes underground; it is now employed for protecting the long metallic pipes which run underneath the streets of Paris from the effects of oxydation. These pipes, being covered over with damp earth, become in a very short time so corroded as to be almost completely eaten away by the rust; hence they frequently burst, causing the water to overflow, and interrupting its circulation, thereby occasioning much expense for repeated repairs, to say nothing of the great inconvenience attending them. All this will be obviated by the new system, which consists in coating the metallic pipes with a layer of asphalt one or two centimetres thick; the asphalt being impervious, oxydation can hardly take place. The better to secure this advantage, zinc is substituted for the cast metal, as being less subject to oxydation; and the pipes are screwed together instead of being adjusted end to end. This improvement will effect a great saving in the cost of keeping the water-pipes in repair.—*Revue de Paris.*

**MONUMENT TO GENERAL KINNERSLEY.**—It is rumoured that Mr. Bailly, the eminent sculptor, has been directed to prepare a memorial to the memory of the late General Kinnersley, to be placed in the parish church of Leominster, next to the monument of the late Wm. Wall, Esq., of the Ryelands, whose estate the general's family purchased.

**WELLINGTON STATUE.**—A portion of the equestrian statue of the Duke of Wellington, about to be erected in front of the Royal Exchange, Queen-street, has arrived in town, and the remainder is daily expected.—*Glasgow National.*

**EARL DE GREY.**—A subscription is being raised in Dublin for a marble bust of the late Lord Lieutenant. The bust is to be placed in the rooms of the Royal Dublin Society.

Bayley's statue of Sir Astley Cooper has been placed in Westminster Abbey.

**EXTRAORDINARY SALE OF LAND.**—A small estate, of about 88 acres, situate at East Dundry, in the county of Somerset, for nearly a century past in the occupation of the present tenant and her ancestors, and let at present for about 95*l.* per annum, was sold by auction at the Commercial Rooms, by Messrs. Fergus and Son, for the sum of 4,990*l.*, exclusive of the auction duty and expenses, being more than fifty-four years' purchase on the rental!

**DARTFORD.**—In the river Darent, near the spot where Mr. A. Dunkin imagines Cæsar hoped to attack the city of Caswallon, was found last week a beautiful flint celt. At the broad edge it is as sharp and fit for actual use as when it was finished by its primeval makers.—*Dover Chronicle.*

**DOWLAIS IRON WORKS.**—It has been stated, on pretty good authority, that the Dowlais Iron Company have at present as many orders on hand as will keep that establishment with all its irons in the fire for seven years to come.

Dr. Arnot has invented an air-pump to supply a draught to furnaces, and supersede the necessity of chimneys in factories, steam-vessels, &c. The invention also forms a powerful ventilator.

### Current Prices of Wood and Metals.

September 10, 1844.

	£. s. d.	£. s. d.
Box, Turkey, per ton	2 0 0	6 0 0
CEDAR, Pencil, per foot	0 0 3	0 0 4
Cuba	0 0 3	0 0 4
N. S. Wales	0 0 3	0 0 4½
Green, per ton	5 5 0	9 0 0
EBONY, Ceylon, large	6 0 0	8 10 0
small	5 0 0	5 15 0
Madagascar, small	5 0 0	6 0 0
Dyes, &c.		
LIGNUM VITÆ, Jamaica	3 0 0	5 0 0
St. Domingo	8 0 0	12 0 0
MAHOGANY, Cuba, per foot	0 0 7	0 1 4
St. Domingo	0 0 7	0 1 6
Honduras	0 0 4½	0 0 10
Jamaica	0 0 0	0 0 0
TIMBER:—		
Teake, African, per load	6 10 0	10 10 0
Oak, Quebec	3 15 0	4 10 0
Fir, Riga	3 17 6	4 0 0
Dantzic and Memel	3 10 0	4 5 0
Swedish	0 0 0	3 12 6
Pine, Quebec, red, per load	0 0 0	3 15 0
yellow	0 0 0	3 0 0
N. Brunswick	0 0 0	0 0 0
Miramichi & St. Johns	2 15 0	4 10 0
Wainscot Logs, 18 ft. each	4 10 0	5 5 0
Lathwood, Memel, &c. fm.	0 0 0	12 0 0
B. America	0 0 0	0 0 0
Deals, Gefle, 14 ft. 3 in. by 9	29 0 0	31 0 0
Stockholm	25 10 0	26 0 0
Gottenburg, 12 ft. 3 by 9	0 0 0	0 0 0
Christiana, 1st & 2nd	27 0 0	29 0 0
St. Petersburg, Memel,		
Dantzic, 12 ft. 1½ in.	16 0 0	18 0 0
Quebec yellow Pine,		
first quality	17 0 0	18 0 0
second ditto	10 0 0	11 0 0
White Spruce, 120.	16 0 0	17 10 0
Dantzic Deck, each.	0 18 0	1 6 0
Plank, Dantzic Oak, load.	9 0 0	10 0 0
STAVES, Baltic, per 1200.	160 0 0	0 0 0
Quebec Pipe, 1200	50 0 0	52 10 0

COPPER—Brit. Cake, p. ton	0 0 0	84 0 0
Tile	82 0 0	83 0 0
Sheet, p. lb.	0 0 0	0 9½
Bottoms	0 0 0	0 0 0
Old	0 0 0	0 0 0
South Amer., ton	72 0 0	73 0 0
Foreign Cake	0 0 0	0 0 0
Tile	0 0 0	0 0 0

IRON, British	0 0 0	0 0 0
Bars	0 0 0	6 0 0
Rods	6 15 0	7 0 0
Hoops	8 0 0	8 5 0
Sheets	8 15 0	9 0 0
Cargo in Wales, Bars	4 18 0	5 0 0
IRON, Figs No. 1, Wales	3 10 0	4 0 0
No. 1, Clyde	0 0 0	2 7 6
Russian, COND	0 0 0	16 10 0
PSI	0 0 0	0 0 0
Archangel	0 0 0	0 0 0
Swedish	9 10 0	9 15 0
Gourieff's	0 0 0	0 0 0
LEAD—British, Fig. p. ton	16 10 0	17 0 0
Sheet, milled	0 0 0	17 15 0
Bars	0 0 0	0 0 0
Shot, patent	0 0 0	19 15 0
Red or Minium	0 0 0	21 10 0
White	0 0 0	23 10 0
Litharge	0 0 0	20 0 0
Fig, Spanish	16 0 0	16 10 0
American	0 0 0	16 0 0
STEEL—English	0 0 0	0 0 0
Swedish Keg	16 0 0	16 10 0
Fagot	0 0 0	17 0 0
TIN—In blocks, p. cwt.	3 12 0	3 13 0
Ingots	3 12 0	3 13 0
In Bars	0 0 0	3 13 6
Banca	3 6 6	3 7 0
Straits	3 4 6	3 5 0
Peruvian	0 0 0	2 17 0

Plates, p. box, 225 shs.—

No. I. C. 13½ by 10 in.	1 7 0	1 13 0
I. X.	1 13 0	1 19 0
I. XX.	0 0 0	0 0 0
IXXX.	182 lb.	0 0 0
IXXXX.	203	0 0 0
No. II. C. 13½ by 9½ in.	105	0 0 0
II. X.	133	0 0 0
III. C. 12½ by 9½ in.	98	0 0 0
III. X.	126	0 0 0
Small {SDC } 200 shs.	167	0 0 0
Double {SDX } 15 by 11	188	0 0 0
{SDXX }	209	0 0 0
SDXXX.	230	0 0 0
SDXXXX.	251	0 0 0
{C. 16½ by 12½ in.	98	0 0 0
{X. .... 100 sheets	126	0 0 0
{XX. ....	147	0 0 0
{XXX. ....	168	0 0 0
{XXXX. ....	189	0 0 0
Jaggers, 14 by 10 in.	—	0 0 0
SPELTER—On the spot, ton	0 0 0	21 0 0
Delivery	0 0 0	21 5 0
ZINC, English Sheet	0 0 0	30 0 0
PLATINA ORE	0 0 0	0 0 0
ORSIDEW	0 0 0	0 3 0
QUICKSILVER	0 0 0	0 4 6

### Tenders.

TENDERS delivered for erecting a Warehouse on the Battle-bridge Estate.—C. W. Eppy, Esq., Architect, 21, Lincoln's-inn-fields.

Fletcher	£768
Richard	735
Laurence and Son	727
Pileam	694
Ternan and Son	677

TENDERS delivered for building a School in Esher-street, Kensington-lane.—Mr. James Harrison, Architect, Holford-square, Pentonville.

Lock	£520 18 0
Danes	422 0 0
Ashly	412 5 0

TENDERS delivered for building a small-house, in the Chalk-road, Islington, for Mr. Clayton.

Brighton	£184 0 0
Jones	134 10 0



## NOTICES OF CONTRACTS.

For Paving, Pitching, Cleansing, and Lighting the City of Bristol for three years, commencing September 29.—Commissioners' Offices, 44, Queen-square, Bristol. Sept. 16.

For Building a New Church at King's Cross, Halifax.—Plans and Specifications at the Offices of Messrs. Craven and Ranken, Solicitors, Halifax, until the 14th September. September 16.

For a National School and Master's Residence at Louthouse.—Plans and specifications at the Offices of Messrs. Perkins and Backhouse, Architects, Leeds. September 18.

For Paving several of the Unpaved Streets, in the Parish of St. George-in-the-East.—Drawings and specifications at the Office of Mr. Andrew Wilson, jun., Cannon-street Road; Mr. W. L. Howell, Clerk to the Commissioners, Cannon-street, Ratcliffe-highway. September 19.

For about 8,000 Beech, Elm, Fir, or Larch Piles, also for Sheet Piling and Planking of the same description of Timber, at per cubic foot, for the Directors of the Dock Company at Kingston-upon-Hull.—Mr. W. H. Hulham, Secretary, Dock Office, Kingston-upon-Hull. September 21.

For a Wash-house for the Hospital Wards at the Union Workhouse, Newmarket.—Plans and specifications, Mr. Francis Clark, Architect, Newmarket. Mr. W. P. Isaacson, Clerk to the Guardians, Newmarket.

For the Execution of the various Works in the formation, ballasting and laying the permanent way of the Canterbury, Ramsgate, and Margate Branch Railway.—Plans and specifications at the office of Mr. Joseph Cubitt, Civil Engineer, 12, Manchester-buildings, Westminster; Mr. J. Whitehead, Secretary, South-Eastern Railway, London-bridge. September 24.

For an Iron Palisade Fence on the boundary wall of the Southampton Cemetery, two Iron Entrance Carriage Gates, and one Footway-gate.—Specifications, with a plan of the Iron Gates, &c., Mr. Doswell, Surveyor, Albion-place, Southampton. Mr. C. E. Deacon, Secretary, Audit-house, Southampton. September 25.

For the building of the new church at Lynn.—Plans, &c. Mr. Thew, Bookseller, High-street, Lynn. 1st October.

For various buildings and other works at Gateshead, Brockley, Whins, and other places along the line of the Newcastle and Darlington Railway.—Plans and specifications at the Railway Office, York, from the 16th to the 30th September. Mr. G. Hudson, Chairman, Railway Offices, York. October 2.

For 16,000 Larch or Baltic Sleepers, of various dimensions, for the Ashton, Staleybridge, and Liverpool Junction Railway.—Secretary, at the Manchester and Leeds Railway Office, Palatine-buildings, Hunt's-bank, Manchester. October 8.

For the Sinking and Walling of one or three Wells, three Reservoirs walled and puddled, one large cesspool, and a large quantity of earth removing.—Mr. John Child, Architect, 20, Guildford-street, Leeds.

A new Iron Wheel and Forby, at Bourne Brook Mill, Northfield.—Plans and Specifications at the Office of Messrs. Arnold, Haines, and Arnold, Solicitors, Birmingham.

## COMPETITIONS.

PREMIUM OF 20l. for the chosen Plan for a new Church at Winchester, to hold about 1,000 persons on the floor, cost not exceeding 4,000l. Further information from Rector. 10th October.

## ADVERTISEMENTS.

TO BUILDERS, CABINET-MAKERS, AND OTHERS.  
**SALISBURY GLUE** 60s. per Cwt.; fine Scotch do. 5s.; Town 40s., 44s., and 42s.; Best Glass Paper 10d.; Second do. 8d.; French Polish and Spirit Varnishes 19s. per gallon; Naphtha do. 10s.; Genuine White Lead 26s.; Second do. 24s. and 22s.; Improved Stucco Paint 25s.; Invisible Green and Chocolate Colour 28s.; Fine Green, and all Colours used in House Painting, prepared by a new process to dry in six hours, 6d. per lb.; Turpentine 21. 6d. per gallon; Linseed Oil 2s. 6d.; Fine Copal Varnish 20s.; Quick Drying Carriage 14s.; Oak do. 12s.; French Polish and Spirit Varnishes 10s., and 6s.; Turpentine Varnish 3s.; Dry Blended Green 3d., 4d., and 6d. per lb.; Lamp Black 3d.; Emerald Green 1s. and 1s. 3d.; Whiting 1s. 3d. per cwt.; Stucco-holm Tar 18s. per barrel; Pitch 16s. per cwt.; Gilder's Materials, Ladders, Bronze, Dutch Metal, Patent Gold Paint, Dyes and Dr.-woods, Acids, Alkalis, Gums, and Salts of every kind and description at equally low prices. W. NIXEY'S Old-Established Warehouse, 22, MOOR-STREET, SEVEN-DIALS, LONDON.

TO BUILDERS, PLASTERERS, AND OTHERS.—Yellow Ochre 8s. per cwt.; Lamp Black, 24s.; Blue Black, 16s.; Venetian Red, 12s.; Chrome Yellow, 42s.; Brunswick Green, 24s.; Emerald Green, 1s. 2d. per lb.; Glue, 42s. per cwt.; Patent Driers, 40s.; Best Ground Lead, 26s. per cwt.; Second do. 24s.; Copal Varnish, 20s. per cwt.; Linseed Oil, 26s. per cwt., or 2s. 2d. per gallon; Boiled Oil, 2s. 8d.; Turpentine, 2s. 3d.; Gold Size, 9s.; Copal Varnish, 12s. and 10s.; Paper do. 11s. and 14s.; Brushes, Varnishes, Colours, &c. at lowest prices. J. L. CHEAP COLOUR AND LEAD WAREHOUSE, 58, JUDD-STREET, NEW-ROAD.

PLUMBERS, PAINTERS, BUILDERS, and OTHERS supplied with CROWN and SHEET WINDOW GLASS, SHEET PLATE, &c. &c., for Pictures, Glazing, &c. &c., in any quantity, at Manufacture Prices.  
TURPS, per gallon .. .. 2s. 4d.  
LINED OIL, ditto .. .. 2s. 4d.  
SHEET LEAD, in sheets, per cwt. .. 18s. 6d.  
Ditto, cut to sizes as PIPE .. .. 19s. 6d.  
WHITE LEAD (Genuine) per cwt. .. 25s. 0d.

Colours, Pipe, Brushes, &c. &c., equally low, and quality warranted. Complete Lists, priced, may be had on applying to R. COGAN, 5, Princes-street, Leicester-square, London.  
PRINT PUBLISHERS, PICTURE FRAME AND CABINET MAKERS, can provide with flat, Crown, flattened Sheet, and the patent Sheet Plate, Lists of which, showing the price for any Sheet, from 14 by 12 to 40 by 36 of Best and Second quality, will be sent (gratis) upon receiving the address. Builders, Glaziers, and others having to Contract, sending a copy of their specifications, with a list of dimensions to R. COGAN, will receive by return of post the lowest prices for all qualities and sizes of Crown Sheet-Glass and Sheet-Plate, &c. Glazing estimated for, if required.

NURSERYMEN, MARKET GARDENERS, AND OTHERS requiring Small Glass, will find a greater variety of sizes (a large Stock of which constantly on hand) than is kept by any other House in London.

COMMON SHEET AND CYLINDER. The advantages of Common Sheet over Crown for Glazing Skylights is decidedly great, and is generally used where strength or superior appearance is required. A sheet 6 in. long, with openings of any width, needs only one lap. This Glass is considerably stouter than Crown, and may be had from 1s. 3d. per foot.

Also may be had, COGAN'S PATENT CHIMNEY FOR GAS OR OIL, which effects a great saving in the consumption, produces a more brilliant light, prevents smoke, and is cheaper than any other Patent Chimney sold.

LAMP SHADES AND GAS GLASSES, OF EVERY DESCRIPTION.

GAS CONTRACTORS, FITTERS, GLASS MERCHANTS and others supplied with Lamp, nearly 100 Patterns, with prices affixed, sent to any part of the Kingdom gratis.

CLOCK MAKERS, ALABASTER FIGURE MAKERS, ARCHITECTS, MODELLERS, AND OTHERS, supplied with FRENCH ORNAMENTAL SHADES, for country Models of Public Buildings, Geological Curiosities, &c. &c. of all sizes and shapes. List of Prices may be had on application.

French Table Flowers, China Vases, Fancy Glass Ware, and Alabaster Figures in every variety.

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J. FARRELL, Secretary, Seyssal Asphalt Company's Works, "Claridge's Patent," Stangate Depot, London.

COMMISSIONERS OF FINE ARTS' REPORT ON THE MEANS OF PREVENTING DAMP IN WALLS.

THE DIRECTORS OF THE SEYSSAL ASPHALTE COMPANY have much pleasure in recommending the notice of Architects, Builders, and others, the application of THE ASPHALTE OF SEYSSAL as the only effectual means of preventing DAMP rising in WALLS.

The following account of its application is extracted from "The Appendix to the Commissioners of Fine Arts' Report," page 18.

"In 1839 I superintended the construction of a house of three stories on the Rue d'Enghien. The foundation of the walls is constantly in water, about 14 inches below the level of the ground-floor. The entire horizontal surface of the external and internal walls was covered, at the level of the internal ground-floor, with a layer of Seyssal Asphalt, less than half an inch thick, over which coarse sand was spread.

"Since the above trace no trace of damp has shown itself round the walls of the lower story, which are for the most part painted in oil of a gray stone colour. It is well known that the least moisture of the air, or of the ground, or of the lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is only about 24 inches above the external surface of the soil, and only 19 inches at the utmost, above that of the street water.

"The layer of Asphalt having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been since remarked at the base of the door-posts."

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Will be immediately attended to.

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## WINDOW BLINDS.

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Holland Blinds Painted, Calendered, and re-made. Venetian Blinds Painted, Taped, and Lined. Estimates furnished.

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## MOREWOOD'S PATENT GALVANIZED TINNED PLATES.—Patronized by the

Admiralty and the Honourable Board of Ordnance, being extensively used in the Dock Yards, at the Tower, and elsewhere.

For every variety of ROOFING, and other purposes, where a strong, light, cheap, and durable material is required. It has been found by experience that this article is beyond all comparison superior to zinc, possessing, as it does, all the advantages arising from the strength and firmness of iron, combined with perfect immunity from rust; whilst it is free from the very serious objection, which applies to zinc, viz. its contraction and expansion, consequent upon every change of temperature, and from which circumstance leakage must of course result. This material is not likely to be destroyed by fire, as is the case with zinc and lead, which melt and run down, thus freely admitting fresh air to the fire, and causing it to burn more fiercely. It is, therefore, obviously well adapted for all the purposes above named, and is most importantly so, when there is the possibility of fire. It is also peculiarly suitable for chimney-tops, gutters, spouting, and out-door work generally, possessing the strength of iron and the immunity from corrosion. It is by far the most economical metal roofing that can be obtained, in consequence of its strength, as it may be laid without boards, and upon the lightest rafters. This mode of preserving metal from rust does not only apply to sheet-iron but also to manufactured iron in any form, as bolts, nuts, hinges, nails, &c. &c. T. Holland, 34, Gracechurch-street.

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For 16,000 Larch or Baltic Sleepers, of various dimensions, for the Ashton, Staleybridge, and Liverpool Junction Railway.—Secretary, at the Manchester and Leeds Railway Office, Palatine-buildings, Hunt's-bank, Manchester. October 8.

For the Sinking and Walling of one or three Wells, three Reservoirs walled and puddled, one large cesspool, and a large quantity of earth removing.—Mr. John Child, Architect, 20, Guildford-street, Leeds.

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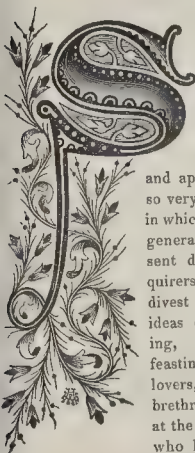
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# The Builder.

NO. LXXXV.

SATURDAY, SEPTEMBER 21, 1844.



SOMETIMES we have been asked what we strictly mean by the term Freemasonry, so often adopted by us, and apparently in a sense so very different from that in which the word is most generally used at the present day; and our inquirers seem unable to divest themselves of the ideas of certain frolicking, dressed-up, well-feasting, good-fellowship-lovers, charitable to their brethren, stately enough at the festive board, and who have found out the

secret of knowing nothing whatever concerning stone-masonry or of any other of the arts by which buildings can be plotted, reared, and made to endure.

Our answer is, Freemasonry is what it always used to be, and what it can alone truly be,—the sublimest science applied to architectural design and practical building.

The decayed remnant of the Freemasons have traditions that Moses, Solomon, Wykham, and many patriarchs who were great builders, were Freemasons; this may be or may not be true; and till it be proved that those characters who are mentioned in the Bible, without any such information relative to them, were so, we must take as entirely rabbinical all such assertions; and we think those clergymen, who knowing how cautious it is necessary for a divine to be in matters of belief or of sacred history, must be gifted with strange consciences or extraordinary mental perceptions to give into assertions so unproved, and of which men can hardly exhibit a belief, without falling into condemnation for heresy; we do not wonder, therefore, that the Pope should have thus so condemned the modern so-called Freemasonry, since the whole of Catholicism contains in its dogmas nothing so hazardous.

It is reported that Sir Christopher Wren reinstated Freemasonry in England; and well he might; for since the fall of the old Freemasonry, no other man has existed so intimately acquainted with the subject; but how would that great man be mortified to find the fall of his darling art, as it is at present found in England! Freemasonry has been said to flourish in the nineteenth century, and yet, through the decline of the true art, buildings have become unsound, tearing themselves to pieces by their own gravitation; the engineers in their works are restoring the art partially, but with little of the beauty and economy of the old masons; few of their works approach the grace and wise thriftiness of the old examples of the middle ages; there are, it is true, many industrious persons at work, measuring, delineating, and collecting examples, so that by-and-by our reasoning powers will be able to collate them and to ascertain motives, and thence to design in the true spirit of Freemasonry; there is no mere surface-work

in masonry, all is muscle and bone; there is no mere lumber; all the material of a masonic building is dutiful in its station; tons of weight are not raised to do mischief, and tons more of other weight to restrain that mischief, and so leave no result but cost and foundation-burthen; but dynamics, and all the higher sciences, were called into action, and in proportion as these excel the ancient times in many arts and sciences, just so should modern excel ancient Freemasonry. Some minds are at work, even in the present immature condition of our knowledge of the structure of ancient buildings, to re-arrange and render again active ancient architectural science; but this must of necessity be the work of years, for little can at present be done beyond such collection and collation: no one has hitherto published so apparently simple a piece of information as a representation of a prism composed of a succession of such materials as will have equal capability throughout of resisting crushing, the densest being lowermost, and those least capable of bearing being uppermost: nor has any one shewn the proper form of a body composed all of the same kind of materials, which shall have its particles equally crushed throughout: very slender information exists as to the alterations in the capabilities of different kinds of materials when increased in bulk, whether laterally or vertically; this information settled and made notorious, will form the ground-work of restored Freemasonry. After that, a knowledge of dynamics will work the greater part of the rest, a principal component part of which must of necessity be a due acquaintance with the catenary, either approaching purity or in a broken state, whether by the effect of bosses, pinnacles, or any other expedients or devices, or from any unavoidable circumstance.

The climax of architectural knowledge will be, the so ordering a building, that there will be such a total discharge of lumber from it, that its curves, arches, vaultings, roofings, piers, columns, buttresses, and every other part of it will remain as nearly as possible where they are designed to be, and where actually placed,—which cannot be the case unless the whole building, if only strung together and inverted “bodily,” would retain every position, form, and curvature, as designed—the mere circumstance of inversion excepted: many of these things can be proved by the bones of animals: the bones of four ox tails strung together and inverted will prove a vast deal relative to the forms, and the quantity of materials proper for groined vaults, and will shew the difference of curvature necessary in proportion to the size of the central boss: if that boss be heavy, which may be shewn by tying the tails together at some considerable distance up from their small extremities, the extraneous weight thereby cut off, will occasion the curves to be straighter than if only a small boss were used, this shews the theory of steeples of four flying buttresses, like those of Newcastle-on-Tyne, and Saint Dunstan, London; the former of these has less superstructure, and buttresses very properly more embowed; the London example, though in minute detail less elegant than the other, is of much finer outline and general form, having a loftier superstructure, its four flying buttresses are consequently made much less embowed. If the four buttresses of the Newcastle example had been less bowed, the structure would have been out of balance, and they would consequently have fallen inwardly; if, on the contrary, the buttresses of Saint Dunstan’s steeple had been more embowed, the heavy superstructure would have sunk, because

the pressure would have fallen *within* the buttresses, and they would have consequently been forced more outwardly, till the whole would have fallen. These steeples, which have been supposed to have much mystery involved in their construction, are nothing but the four angle-ribs of the simplest description of groined vault, designed in such form as to balance properly with a large boss; they are simply vaults discharged of the cuticle lumber-work, which, in ordinary cases, lies between their angle-ribs. The example of the ox-tail bones will also shew one fact, viz., that in proportion as the burthen to be commenced with is great or small, so must the summit of the arch commence large or small in bulk of section: so that, using the tails for a model, and pinching off by a ligature as much of the smaller parts of the tails as will represent the burthen to be supported, the remainder of the tails will shew the necessary commencing strength, and its proportion throughout the work from thence downwardly.

Eventually it will be found that a church should consist of a series of pyramids of equilibrated pressure, disposed at uniform distances; these will be split at certain points to form buttresses, columns, vaulting-ribs, and all the other parts of the fabric without the intervention of a single particle of any material other than that composing each such equilibrated pyramid of pressure; thus each particle of such fabric will be as safe from fracture as each other particle of it.

In the New Metropolitan Building-Act some approach has been made to this branch of Freemasonry, by the adoption of a system of progressive thickness in walls from their summits, downwardly. In a perfectly designed church, such a progression should go on from each summit-boss to the foundation of the work, so that, beginning at the foundation, the bulk of the materials should scientifically diminish upwardly; and where flying-buttresses and vaultings commence, the same mass should be divided and proceed through the several vaulting ribs upwardly; and if any irregular extra thickness be required for any part, nature should be followed, who in such cases, in animal mechanism, always uses a material of a structure less dense, the aggregate strength of which is only suited, though of increased dimension, to the duty to be performed. Hence, in such cases, the Freemasons frequently used only chalk, tophus, or other light materials. In proportion as Freemasonry is restored, all the nonsense about roofs and construction which is being put forth in the saucy, ignorant pamphlets of the so-called Cambridge Camden Society, will be dissipated. There is not in existence, and never was, a perfect open tieless roof; science may make such a thing, but it never did yet. Nearly half of them destroy at least half the effective strength of their supporting walling, upon which they make war. For such a roof to maintain its due form, it must in design and model be inverted, as we before intimated, and the walls must be inverted too with it; the work will then assume, upon being erected, a state of permanent rest; but it will then be found that the walling has assumed a curved form; for want of this curved form the walls of all buildings with open roofs are invariably thrust over. In Westminster Hall, where the building is nearly literally all roof, the stumpy walls of enormous thickness, notwithstanding the enormous flying and perpendicular buttresses of the fabric, were greatly thrust over, which has been concealed by internal and external



stone casing, and the falling of the parts of the roof, by straining at its joints, has been partially remedied by screwing up and repairs.

In the violent papers upon architecture in the *Catholic Dublin Review*, every thing is shewn with the most childish reversal of genuine Freemasonry; flying buttresses are generally omitted, and the whole construction, as shewn thereby, is the weakest and most absurd, and that which is the most diametrically opposed to genuine architect art, while not a few of the mere surface-parts of the designs are highly exceptionable.

Freemasonry being in so comparatively lost a state, as we have already hinted, the observations which we have made must necessarily be most imperfect; they are rather directed with the view of exciting inquiry than with the object of teaching any one. Most of these imperfect notions have come intuitively to us, for there is not at present any treatise upon Freemasonry: when we have such a treatise, the system of church-building will be entirely altered; canons for every thing will be established; centres for the best or the most intricate vaults may be kept ready-made; for the same centres may serve for churches of the same size, and thus one of the heaviest parts of the expense of vaulting will be saved. All the rules of the Church-building Society will be altered and improved, many of them being at present most objectionable, more particularly the late alterations relative to the construction of churches.



#### NEW BUILDING-ACT.

A meeting of the Master Carpenters will be held on Wednesday, the 25th instant, at the Freemasons' Tavern; when the final report upon the new Building-Act will be laid before the meeting. We shall endeavour to place this before our subscribers on the first opportunity.

#### MINERALOGY.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 467.)

THE microscopical discoveries of Ehrenberg have contributed to establish the identity of chalk with animal organizations, but, like all microscopic observers, he falls into many strange errors and inconsistencies, and by generalizing too much, sometimes throws a doubt upon the whole of his purported discoveries. That much of the chalk consists almost solely of the carapaces of animalculæ cannot be questioned, and it was to this organic origin of chalk I first drew the attention of this learned professor while making his philosophical observations in Egypt and Nubia: but, he evidently confounds the cellular structure of the animalculæ with the cellular structure of all calcareous animals; for all polypes, mollusca, and crustacea have a cellular structure, all are convertible into chalk, and all, under the form of chalk, microscopically present the cellular structure to our observation. That he is mistaken when he speaks of the vast peat mosses, twenty-three miles from Berlin, as being composed of animalculæ to the extent of thirty or forty feet in thickness, is evidenced by the fact, that these lower beds chiefly consist of decayed fuci, as is testified by Humboldt and Van Buch, and the former found the *Fucus Sacharinus* in inner peat moss from 8 to 10 inches in length, and from 1 to 1½ inches in breadth, as fresh and uncorrupted as they are found in the sea at Heligoland: the latter writer also observes, that in the vicinity of Drontheim, the flat peninsula of Cereland consists also of a great peat bed, of which the undermost strata are composed almost entirely of half-decayed marine plants, the long leaves of *zostera* and others. It is true that, together with the de-

cayed fuci of earth of marine plants, the reliques of animalculæ abound, and that their internal arrangements can be made visible by the process adopted of feeding them with colouring substances; but it is equally true that he has mistaken the cellular structure of fuci, actinæ, &c., for distinct animalculæ.

The calcareous deposits disposed beneath the tropics, both beneath and above the waters, answer exactly to the chalk formations of Great Britain, and present the like variations, evidently proceeding from like local causes: the ocean marl so commonly observed in the West Indies is also of like composition and character, being a true chalk, with which is blended masses of living fuci and animal species, and the organic remains of each. In all parts of the world, where the causes of effects are in active operation, an uniform sequence of events takes place, beginning with life, and ending in the various products forming the fossil and mineral kingdom. Several writers have supposed that this marl or chalky substance, so commonly constituting extensive beds of tropical seas, is produced by the digestive processes of animals; and this indeed is partly the case, as vegetable earth is sometimes formed by the like processes, but a great portion of it is the product of animal and vegetable decomposition.

In the ocean it is a kind of chalk, variably united with sands, marine bodies, and seawater; but these vast beds, as they gradually become elevated above the waters, so they undergo changes in conformity to their nature, local associations, and local influence. Thus, some of the calcareous groups consolidate as limestone, others decompose, and acting and being acted upon by surrounding bodies, undergo individual or general changes. Take for instance the phenomena of the Red Sea, the chains of mountains surrounding it, and intersecting Arabia, the deserts of Nubia, Egypt, and other great wastes of Africa, together with the vast forming reefs and islands of that sea: in one place we observe the coral in every stage of decomposition, pass gradually into various mineral forms, as sulphate, muriate and carbonate of lime, silica, bituminous limestone, siderite, jasper, &c.; in another, changes are more uniform and circumscribed. Some of the coral islands consist almost wholly of limestone rock, presenting various states of induration, others consist of the comminuted particles of shell-fish and reliques of testacea gradually converting or already converted into silicious bodies, disintegrated, or in aggregate masses, as the accident of combination may determine; beaches of the sea are wholly composed of the shells, sands, and particles recently thrown up by the waves; but vast hill and mountain masses wholly consist of carbonate or sulphate of lime—the carbonate as chalk, the sulphate as gypsum.

In the midst of deserts 100 or 200 miles from the sea, the limestone, calcareous, and chalk ranges are found covering the plains to a great depth, or otherwise forming hill and even mountain chain of considerable extent. The hills marking out the boundaries of Egypt are sometimes wholly composed of chalk and marine exuviae, sometimes stratified with alternate layers of chalk and petrified shells, analogous in form and composition to the stratified beds of chalk and flint in this country. Sometimes the matrix of decomposed coral forms a soft carbonate of lime, and the enclosed shell-fish are seen passing, by the slow process of decomposition, into chalk. In all countries the causes and effects are precisely alike so far as regards the primary origin of these beds; but the after changes depend for the form they may assume upon local affections. In America the chalk formations have passed into the state of bituminous and other limestones, or varieties of sulphate of lime; in England, where there is less heat and a greater degree of moisture than in tropical lands, the matrix of soft carbonate of lime passes into the state of chalk, and the nodulates or organic reliques inclosed pass into flint. If in chalk aggregates the carbonic acid be displaced by sulphuric acid, it becomes gradually converted into gypsum, other deviations exhibit alabaster and other crystalline marble, anhydrous selenite, &c.

Gypsum or selenite, otherwise termed sulphate of lime, is very extensively disseminated through the upper beds of the earth under a variety of forms and combinations, being in general most abundant in close proximity to

salt beds. Of this genus, two species are known, viz. the *prismatic* and the *accreting*; the first being divided into four sub-species, the latter into six sub-species. Sulphate of lime is produced under particular local influences, and however extensively disseminated, the local causes of effects produced strongly simulate to each other.

After the changes above explained, oceanic earths, upon being exposed to long continuous vertical heat in regions where it seldom or never rains, become oxydized, or, as it is termed by some chemists, burnt, by which process they lose some of their primary constituents, permanently combine or neutralize with others, and dispose the oxydized mass to unite with the gases and vaporous exhalations which pass through it from the inner beds, or are absorbed from the atmosphere. One of the most common exhalations in hot, dry regions and virgin lands is sulphureted hydrogen, and lime uniting with this gaseous compound, a fixed and permanent result is produced termed ANAHEDRITE. Again, where hydrogen is present in greater quantities, a triple compound is the result, known as SELENITE or SPARRY GYPSUM. Sometimes sulphureted hydrogen or sulphurous gas passes through the dry calcareous beds, and the chemical action consequent on this intrusion gives birth to rock gypsum in its varieties.

It is generally supposed, nay it is taken for granted, that all the varieties of limestone are formed under great lateral pressure; but the facts elicited from Nature by observation give the decided negative to this theoretic idea. The change from chalk into marble is produced by simultaneous expansion of its particles produced by chemical action, and this change almost invariably takes place in beds very superficially disposed upon or within the surface of the earth. The formed crystal increases and cohesion of the particles takes place by infiltration, and the more exposed a bed of earth is to atmospheric influences, the harder the rock becomes; this is the very reverse to the process of lateral pressure. Jaspers and petrifications of the desert are much harder than flints in the British strata. The high crystalline structure of all rocks depends upon the extent of their exposure to atmospheric heat, and such is the law governing natural cements. Thus sands and gravel cohere and form breccia, and breccia exposed to atmospheric influences becomes converted into gneiss, granite, &c.; in no one instance do we find them subject to lateral pressure during the progress of change.

Lime has the tendency at all times to assume the form of chalk, having a great affinity for carbon, and absorbing it rapidly from the atmosphere as well as from the contiguous beds; for this reason it is that carbonate of lime is more extensively distributed over the calcareous regions and diverges into more numerous varieties than any other class of earths.

The after changes of an organic body, or a group of calcareous animals, excites at once our wonder and admiration; embedded in ocean marl, they may decompose, and become identified as one with the marl, or uniting with other aggregate masses, their identity be lost in enormous masses of rock. Elevated above the element which gave them birth, they are preserved from decomposition by the salts left by evaporated waters, and they enter the petrified state, passing from thence into the form of jasper, agate, opal, carnelian, or some other product. Decomposing in the midst of the calcareous bed, they pass from the organic state into chalk, from thence into flint, or some other mineralized substance; they sometimes contribute to give variety and beauty to marbles, porphyries, and other precious stones; sometimes they mineralize, still retaining their form as a metalline substance. Again, the body may pass through other organic systems, contributing by this means to the increase and spread of life; or decomposing, it may destroy and become the grave of the living.

In Egypt, the hills have generally a matrix of soft limestone, and the fossils are converting or converted into chalk; in England, the matrix, permeated by waters, impregnated with carbonic acid, becomes converted from soft limestone into chalk, and the chalk nodules silicify as flints; in all these changes we observe traces of a beginning, and causes and effects, and effects and causes, succeeding each other; but we cannot dive into



uturity, and tell what shall be the end of these manifold and in many instances inexplicable changes.

What becomes of the wild theories of Liebig, when we rightly consider the phenomena of the fossil and mineral kingdoms? Animals and vegetables are incessantly employed in elaborating consolidated matter, abstracting their material from the elements of air and water; they die, but their labours survive them; they have added to the earth during the whole period of their existence, they now in death contribute their bodies to its further increase, and as though still animated, they still go on abstracting gaseous, æriform, or fluid matter from the medium in which they are placed. Look at the earth in which you daily tread, what is it but the relics of once living generations, inhabiting land or waters? The organic beds, absorbing oxygen from the atmosphere, become more dense in their structure, or changing in their atomic disposition and combinations, turn into things of another name and nature. Chains of mountains are wholly composed of organic exuvie of the ocean, and the vast plains built up of this material are covered by perhaps equally vast accumulations of animals and vegetables of the dry and, of lakes, rivers, and streams. To oxydate the vast surface beds, to convert farinaceous chalk into other and more ponderous bodies, offers a continuous absorption of the elements of air and water, to the incessant and positive loss of the latter, nor are there any analogous processes by which these elements in their quantities can be replaced.

The chalk ranges of Europe are very extensive, constituting a vast portion of the superficial soil; they attest, not only to the high antiquity of the strata, but also exemplify the means taken by Nature to attain the end. When we observe a reef of coral or bed of calcareous earth forming beneath tropical waters, we cannot fail to identify the continuous increase of the earth with the continuous increase of life. We acknowledge genera, orders, and species in their various stages of decay and change, or preserved from the one or the other, maintaining their characteristic form and qualities through amazing long intervals of time; the reef, or land above the waters, presents to us the same composition and character at whatever elevation it may be, assuming gradually forms, and entering into combinations differing somewhat from the preceding, from the circumstance of being placed in another medium, and consequently the passive subject of other action manifest upon them, but there can be no mistake as to the identity of origin. Again, we find them disposed within cold and temperate regions, where they never could have existed in their living state, and forming the entire earth appropriated to the uses of man: sometimes in no respect differing either in genera, orders, or species from the now inhabitants of tropic seas; at other times presenting varieties which elicit our admiration, and create endless conjectures concerning the epochs in which they lived, and the causes of their removal from climes within which alone they could have existed.

(To be continued.)

#### BRITISH ARCHEOLOGICAL ASSOCIATION.

THE first meeting of a new society called "The British Archæological Association" was held at Canterbury on Monday, the 9th inst., in the Town Hall of this fine old cathedral city. "The chief objects of the meeting," we are told in the printed prospectus of the general committee, "are to promote a personal intercourse between antiquarian and historical inquirers who reside in different parts of the country and abroad, and to afford a week's amusement and instruction by the reading and discussing of papers on antiquarian and historical subjects before the different sections, and visiting and examining together the antiquities of the locality."

The first place selected was Canterbury, a city rich in its antiquities, possessing a fine cathedral, exhibiting a long series of successive changes in the historical features of Gothic architecture, with many buildings fast going to decay, or more speedily ruin, under the hand of ignorant restoration, with many interesting churches in its immediate vicinity, and adjoining

ing downs, abounding in the rude grave hillocks—the Saxon barrows of English antiquaries.

The meeting was divided into four sections; 1. Primeval, 2. Medieval, 3. Architectural, and 4. Historical. The architectural section met on Wednesday evening, when the president, the Rev. Robert Willis, Jacksonian Professor of Cambridge, read a translation which he had made of the account of Canterbury Cathedral, written in 1174, by one Gervase, a monk of Canterbury. He exhibited at the same time a block plan of the Cathedral, and contrasted as he went on the building described by Gervase with the building as we now see it. His style of delivering his matter and his manner were equally pleasing. A communication from Mr. Repton was read, containing some remarks on Roman and Saxon columns, and Mr. Godwin exhibited a curious collection of masons' marks, which he had copied from the cathedrals of Cologne, Strasburg, Gloucester, and Canterbury. He had found, he said, the same marks in use in all countries, they were still fresh on our cathedral walls, and in a conversation with a mason, that morning at work in the Canterbury Cathedral, he found that many masons (all who were Freemasons) had their mystic marks handed down from generation to generation. The mason he, Mr. Godwin, had conversed with, had got his mark from his father or master, and he again from his father or master.

The Rev. Mr. Hartshorn read a paper on the castles and military antiquities of Kent, and Mr. A. Booth gave a description of a triangular bridge, and a stone on which was an unknown inscription at Crowland, in Lincolnshire. The proceedings of the day terminated in a *conversazione* at the assembly-rooms.

#### NEW CEMENT FOR BUILDERS.

MR. AUSTIN, of Hatton Garden, has recently taken out a patent for "a new method of gluing or cementing certain materials for building and other purposes." The mode of manufacturing and applying it is thus described in the specification:—

"The cement used by the patentee is made by mixing India-rubber with cold naphtha, in the proportion of eight ounces of India-rubber cut into small pieces to each gallon of naphtha, stirring it from time to time until the India-rubber is dissolved; then to one part by weight of this mixture two parts of lac are added, and the whole is thoroughly blended together by the application of heat, accompanied with occasional stirring. When greater elasticity is required, a larger proportion of the India-rubber solution is used; if greater hardness is necessary, a larger proportion of lac is employed; and where the India-rubber would be liable to injury from great exposure and pressure, a much less proportion is used, and it is sometimes dispensed with altogether; asphalt, pitch, or resin, or other materials of that nature, may in some instances be substituted for the lac.

"The materials for building purposes to which this cement is applied are slate, tiles, stone, glass, and metal plates. When being used, the cement is kept in a heated state in a dish or vessel containing a narrow trough, termed a stamper, which slides up and down therein between guides; the slate or other material is brought to the heat of 150 degrees Fahr., and placed upon the dish, and the stamper being then raised, imprints or stamps a margin of cement thereon. The requisite margins of cement for forming overlapping joints being thus applied to the slate or other material, the cemented portions or margins are laid in contact with each other, and in a short time become firmly united, forming water-tight surfaces. Sometimes, to expedite the process, a coating of naphtha or other spirit that will act upon the cement, or a solution made by dissolving the cement in naphtha or other spirit, is applied to the cemented portions or margins. The cement may also be used for securing the above materials to the building as well as to each other.

"The patentee connects pieces of glass together with the above cement when making skylights, conservatories, frames for horticultural purposes, &c.; he also cements slate, stone, metal, and manufactured clays and cements together, or to wood, or to woven or other fabrics, and woven or other fabrics

to wood, for building and other purposes; he likewise cements pieces of leather together for making boots and shoes, and hose or pipes for fire-engines; also leather and cork together, or to wood, metal, or woven or other fabrics, and woven or other fabrics to wood for the manufacture of trunks, portmanteaus, packing-cases, and other purposes. When joining these materials, the parts must be dry and free from dust, and should be warmed previous to receiving a coat of the cement, in order that it may not be chilled at the moment of application. If the joint is to be made at once, the parts must be expeditiously put together and pressed, as the cement rapidly loses its heat, and becomes solidified, but the junction may be effected at any subsequent period by the application of heat, or the spirit or solution before described."—*Newton's London Journal for August.*

#### THE EARL OF ROSSE'S LEVIATHAN TELESCOPE.

(From the Standard.)

TO THE EDITOR OF THE STANDARD.

SIR,—With pure delight do I communicate to you the fact that the levathan telescope, on which the Earl of Rosse has been toiling in his demesne at Parsonstown now upwards of two years, although not absolutely finished, was on Wednesday last directed for the first time to the sidereal heavens. I very much regret not being present on this occasion, but experiments on which I have for many years been employed rendered it impossible for me to leave home.

The letter which I have this morning received from its noble maker, in his usual unassuming style, merely states, that the metal, only just polished, was of a pretty good figure, and that with a power of 500, the nebula known as No. 2 of Messier's catalogue was even more magnificent than the Nebula No. 13 of Messier, when seen with his lordship's telescope of 3 feet diameter, and 27 feet focus. Cloudy weather prevented him turning the levathan on any other nebulous object.

Thus, then, we have, thank God, all danger of the metal breaking before it could be polished overcome. Little more, however, will be done to it or with it for some weeks, inasmuch as the noble earl is on the eve of quitting Ireland for England, to resign at York his post as President of the British Association, and to visit his noble relatives at Kilwinick and at Brighton. This done, he returns to Ireland; and I look forward with intense anxiety to witness its first severe trial, when all its various appointments shall be completed, in the confidence that those who may then be present will see with it what man has never seen before. The diameter of the large metal is six feet, and its focus 54 feet. Yet the immense mass is manageable by one man. Compared with it, the working telescopes of Sir William Herschel, which in his hands conferred on astronomy such inestimable service, and on himself astronomical immortality, were but playthings.

J. SOUTH.

Observatory, Kensington, Sept. 17.

CHINESE DWELLINGS.—In all China the houses are built upon the ground, *i. e.*, without any cellar under them. The apartments are paved with flat, square bricks; a thing very agreeable in warm weather, but little suitable to the cold season. To defend them from the piercing cold, which they experience in the northern parts of the empire, the Chinese have devised subterranean furnaces in every direction under the bricks of the floors, and under a kind of platform on which they sleep, so that the heat diffused by the tubes produces in the apartment the temperature desired. The fire is kept up night and day in the outer stove or furnace without the smallest danger to the buildings.

A monument has just been erected at Staindrop to the memory of the Duke of Cleveland, the work of Sir Richard Westmacott, which consists of a recumbent figure, with bas relief emblematic of the virtues, surrounding the altar-tomb whereon it rests. We hear that the sculptor himself values it as one of the best of the works which he has executed. Sir Richard declines, we understand, competing for the Holland Monument.



LONDON AS IT WAS, AND AS IT IS IN 1844.

(Continued from p. 473.)

In early times Westminster, now the seat of Government, of legislature, and of health, was formerly a mean, wretched place, remarkably unhealthy on account of being a marshy island, surmounted on the one side by the Thames, and on others by what is called Long Ditch, a branch of the river which began near the east end of the place where Manchester-court is now situated, intersected King-street, and running along Gardeners-lane to Long Ditch, crossed Tothill-street, a little to the west of the Gate-house, and continued its course along the south wall of the abbey garden, where a common sewer was erected over it. The island thus formed was in a manner a waste, overgrown with briars and thorns, and was thence called Thorny Island. In this situation was the abbey church founded, and it continued thus for ages a place entirely distinct from London, there being a large space between them. The Strand was the road that led from London to that town, and it was open on either side to the Thames and to the fields. In 1355 this road was first paved as far as the Savoy; and many years afterwards Sir Robert Cecil, building a house at Ivy-bridge, his interest brought the pavement of the road to be extended thither, and many of the houses of the nobility were erected in the Strand.

Westminster owed many of its most distinguished privileges to Henry VIII., for when the abbey was in 1541 converted into a cathedral, he appointed the whole county of Middlesex, except Fulham, as its diocese. Upon this occasion Westminster became a city; it had many years before been the seat of the royal palace, the high court of Parliament, and of our law tribunals. The first important improvement was inclosing St. James's Park, which was at that time a wild wet field, it was then drained and partially planted. From that time Westminster began to extend on every side, though it did not long enjoy the honour of being a city, and even the palace was some time after burnt, for it never had more than one bishop, and he being in 1550 translated by Edward VI. to the see of Norwich, the new bishoprick was dissolved by that prince; and its right to the epithet of city was thereby lost, though by public complaisance it has retained that name ever since; but yet Westminster had not any arms till the year 1601.

The city of Westminster at present consists of two parishes, those of St. Margaret and St. John the Evangelist; but its liberties contain seven parishes, viz. St. Martin's, St. James's, St. Paul's Covent Garden, St. Mary le Strand, St. Clement's Danes, and St. George's, Hanover-square, and the precinct about where the Savoy formerly stood.

The first stone of Westminster-bridge was laid in January 1738, by the Earl of Pembroke, the last stone was laid in 1747.

The most probable account given of the origin of the abbey church of St. Peter, Westminster, is that Sebect, king of the East Saxons, who died in 616, having been converted to Christianity by Austin's discourses and his uncle Ethelbert's example, erected this church on the ruins of a temple dedicated to Apollo, and caused Mellitus, Bishop of London, to consecrate it to St. Peter.

This church and monastery were afterwards repaired and enlarged by Offa, King of Mercia, but being destroyed by the Danes, they were rebuilt by King Edgar, who endowed them with lands and manors, and in the year 969 granted them many ample privileges. Having once more suffered from the ravages of the Danes, they were again rebuilt by Edward the Confessor, who pulling down the old church, built for that age a magnificent one in the form of a cross, which afterwards became a pattern for that kind of building. In 1065 it was consecrated with great pomp, confirmed in its ancient rights and privileges, and endowed with many rich manors and additional immunities. He also gave the church and convent a charter of sanctuary, in which he declares, that any person whatsoever, let his crimes be ever so great, who takes sanctuary in that holy place, shall be assured of life, liberty, and limb, and that none of his ministers, nor those of his successors, should seize any of his goods, lands, or possessions, under pain of everlasting damnation; and that whoever presumed to act con-

trary to this grant, should lose his name, worship, dignity, and power, and, with the traitor Judas, be in the everlasting fire of hell.

William the Conqueror, to shew his regard to the memory of his friend King Edward, repaired the church, and offered a sumptuous pall as a covering for his tomb; he also gave fifty marks of silver, a rich altar-cloth, and two caskets of gold; and the following year was crowned there, being the first coronation performed in that place.

Henry III. improved the church by erecting a new chapel to the blessed Virgin, but afterwards finding the walls and steeple of the old structure much decayed, he pulled them down with the design of rebuilding them, but he did not live to accomplish the work. In 1502, King Henry VII. began that magnificent structure now generally called by his name; for this purpose he destroyed the chapel of Henry III. and an adjoining house, called White Rose Tavern. This chapel was also dedicated to the Virgin Mary, and he, designing it for a burial-place for himself and his posterity, commanded in his will that none but those of blood royal should be buried there.

Before the suppression of religious houses, the abbey was surrendered to Henry VIII. by William Benson, the then abbot, and seventeen of the monks, when its revenues amounted to 3,997l. 6s. 4½d. Besides its inestimable furniture, it had no less than 216 manors, 17 hamlets, and 97 towns and villages in different parts of the kingdom. After this the abbey underwent several changes until Queen Elizabeth, after ejecting the monks established therein by her predecessor, erected Westminster Abbey into a college, under the government of a dean and twelve secular canons or prebendaries, a schoolmaster, usher, and forty scholars, denominated the Queen's, to be educated in the liberal sciences preparatory to the university, and to have all the necessities of life except clothing, of which they were only to have a gown every year.

The Almonry receives its name from the alms of the abbey being distributed there, and was originally a chapel dedicated to St. Catharine. Near this chapel Abbot Islip erected the first printing-house that ever was in England in 1474, when William Caxton, citizen and mercer of London, brought that invaluable art from Holland. Its introduction into this country was the commencement of a new era, its first fruits the seeds of a great moral and social revolution, which before 1944 will have extended and brought forth its fruits in the most remote regions of the earth. The works issued from the Caxton press are eagerly sought for by scholastic antiquarians.

St. Margaret's Church was built by Edward the Confessor for the common services of religion. It was rebuilt in the reign of King Edward I., by the parishioners and merchants of the staple, except the chancel, which was erected at the expense of the Abbot of Westminster. In 1735 it was repaired, and the tower cased and mostly rebuilt at an expense of 3,500l. granted by Parliament. In 1758 it again underwent repair, with considerable damage to its taste. The patronage of the living is in the dean and chapter of Westminster.

A clever writer in 1735 observes, "The great men at the court end of the town are particularly distinguished by refusing to do any thing to serve others, and by a great number of tall powdered animals with two legs, who walk before a chair, or hang like a cluster of bees at the hind part of the chariot, embracing each other in an unseemly posture. For the benefit of this part of the metropolis, which includes the *beau monde*, the king has given the liberty to all idle people of walking in St. James's Park. Here is the Mall, famous for being the rendezvous of the gay and gallant, who assemble there to see and be seen, to censure and be censured; the ladies to shew their fine clothes, and the product of the toilet, the men to shew their toupees, observe all the beauties, and fix on some favourite to toast that evening at the tavern. I once happened to fall into a file of very fine fellows in this place, and remember, when we began our march, we ranked one French suit, though somewhat sullied, three pairs of clock stockings, one suit of Paduasoy, two embroidered waistcoats, the one a little tarnished, and two pair of velvet breeches. We made a most formidable show, carrying the whole breadth

of the Mall, and sweeping all before us; we thought ourselves at least capable to act upon the defensive; but by that we had got opposite to Godolphin House, we were convinced of our error, for here a puppy in a French suit pulling out a most extravagantly rich snuff-box, no less than three deserts, and went at once over to the enemy. As one misfortune seldom comes alone, a monstrous gold headed cane in the hands of a gamester, deprived us of two more of our company. So that all on a sudden our corps was dwindled away like a South Sea project, and began to look as thin as a House of Parliament at a 30th January sermon, or an independent company of foot. In this plight the remains of us stood staring up at each other as stupidly as the country people do when they go to view the royal apartments at Hampton Court or Windsor, as not knowing whether to advance or retreat. Fortunately for us, in this dilemma we enlisted one of the most beautiful sword knots that ever came into the kingdom; we could perceive recruits coming in from every quarter, and in less than seven minutes got ourselves into *statu quo*. Several revolutions of this kind happened to us in the space of about two hours, till at last I was left only with a little strutting fellow, who calls himself secretary to a foreign minister, and I got rid of him by fixing his eye upon a periwig that appeared to be made about a month later than mine was."

The Mall was long the favourite resort of loungers, the chosen spot on which to make an acquaintance, to form an intrigue, or to pick up a flat. The love of outward display was prevalent in the eighteenth century, and crowds of belles and beaux were to be met with in this walk, rivaling each other in pomp and ornament of dress, many of whom, like snails, carried all their earthly possessions on their backs. Here the ladies' maid was often mistaken for her ladyship, the valet was seen sporting the wig, sword, and ruffles of his master. Bullies, sharpers, peers, poets, dandies, d'honneur, courtzeans, and a motley crowd of town and country idlers were seen bravely dressed, according to the quaint fashions of the day, and rivaling each other in the ridiculous display of swords, sword-knots, toupees, bag-wigs, embroidered waistcoats, brocades, pantaes, and patches; laughing, talking, quarrelling or intriguing, and sometimes fighting, for the English at that period were much addicted to this elegant amusement. Combats, says Ali Mohamed Hadji, are very common among the lower orders, the assailants fighting like rams, running head foremost, and butting each other; these exercises were in great esteem, and diverting both men and women. In the evening of their sabbaths and festivities, it was common to see the streets filled with these sorts of encounters: all kinds of servants being at liberty, and generally well loaded with liquors, have frequent quarrels and bickerings about precedence. Mothers encouraged their sons, and married women their husbands to engage, the latter holding their husbands' canes and children the meanwhile. And some people of quality lay aside their wigs, swords, and neckcloths to box, when they are insulted by mean persons, against whom they must not draw their swords, this being esteemed the most rascally thing a gentleman could be guilty of; for which reason persons of high rank might often be seen with swollen faces and black eyes.

The Mall was often resorted to as a finish to some Bacchanalian feast, or early in the morning, as a consequence of that feast, in order to discuss some frivolous question at the point of the sword, and duels were very frequent near Marlborough House. It was also resorted to by hungry expectants, as it is even to the present day, who, should no fortunate chance turn up, are fain to dine with that cold-blooded sprig of nobility, Duke Humphrey.

The Park is now filled with trees, shrubs, flowers, swans, and Muscovy ducks, but its aristocratic days have departed, few visit its elegant inclosure but holiday folks, unfashionable idlers, sentimental lovers, disappointed belles, and beaux. An occasional spectacle is seen on the opening or closing of Parliament, and the daily parade of the Guards; but St. James's Park is now decidedly unfashionable.

In this age of improvement and extension of the greatest and wealthiest metropolis in the world, with such houses as the new buildings



at Westminster springing up before our eyes, the magnificent club-houses now decorating Pall Mall and St. James's, and the numerous princely palaces, streets, and squares, springing up as it were by a stroke of some magician's wand, it is both a shame and national reproach to us that the sovereignty of the country has no fitting habitation in the metropolis. The situation of Buckingham Palace is the most unfavourable that could possibly be chosen; and were it not for the accidental circumstance of Bird-cage walk, and the beautiful sheet of water, it would be intolerable. The old red-brick palace offended the eye, when stone and stucco became the prevailing taste; and the sums of money expended over it by the whims and caprices of George IV., would have been amply sufficient to erect an imperishable monument to the memory of some great architect, and to the taste of the times in which we live. A site in the Green Park, to the west of Constitution Hill, would have been better chosen than the present one, the gardens of Buckingham Palace being thrown into the park to compensate for what would be taken away; or St. James's Palace might have been altered.

What excites our greatest surprise is that the Woods and Forests should tolerate the low rookery of Crown-court and Angel, and the still lower den of infamy, well known to aristocracy as King's place, within the very heart of courtly St. James's; these places ought to have been pulled down long ago, and the several sites appropriated to noble mansions.

Bury-street, Duke-street, King-street, and St. James's-street, were built some few years before St. James's Church; many of their leases, which were for 99 years, have fallen in; the whole space occupied by these streets is crown property, and many reasonable complaints are made by the inhabitants against the Commissioners of Woods and Forests, in consequence of the exorbitant ground rents charged under the new leases, wholly unwarranted by the size of the houses or the class of persons who occupy them. On the east side of Bury-street formerly stood the house of the celebrated Guy, Earl of Warwick; and, previous to the improvements, a court, existing under that name, marked out the spot where he sought concealment after one of his lost battles. Bury-street was once inhabited by the first rank and fashion, and even to the present day, it is noted as the temporary residence of the gentry during the parliamentary season; in common with all the neighbouring streets it has a much less enviable notoriety for black-legs. The range of houses occupied by the Hon. Colonel Needham, have been thrown into one, and magnificently fitted up, with a taste peculiar to the eccentric owner.

In King-street is the celebrated Almack's, a most unsightly building outside, but admirably adapted in the interior for the purposes to which it is appropriated. Here also is St. James's Theatre, built in 1837 by the celebrated vocalist, Mr. Braham; it was run up very rapidly, being finished in little more than seven weeks. The house was opened with the opera of "Agnes Sorrel," in which Miss Glossop made her first appearance. King-street has much improved in appearance of late years; the court, a disgraceful rookery leading into St. James's-street, being thrown open, the Bazaar and the fine range of buildings were then built.

St. James's-square has many stately and commodious mansions; but is rapidly losing cast in consequence of the introduction of club-houses, and the removal of fashion to Belgrave-square. The principal mansion is the town residence of the Duke of Norfolk. This part of the town abounds with noble club-houses, of which we shall speak more particularly in the next.

(To be continued.)

THE ROYAL EXCHANGE.—Her Majesty has most graciously signified her intention to open the Royal Exchange in the course of the last fortnight of the month of October. His Royal Highness Prince Albert is to accompany her Majesty upon the occasion.

#### SIR R. PEEL AND MANCHESTER PUBLIC PARKS.

We have very sincere and very great gratification in laying before our readers the copy of a letter received by the Honorary Secretaries of the Public Parks' Committee from the Premier—a letter which reflects honour upon the Right Hon. Baronet for the sentiments it avows, the associations adverted to, and the acknowledgments made; and which we commend to general attention as a noble example, worthy to be followed by many other gentlemen formerly connected with Manchester, and on whom it has much stronger claims individually. The following is the Premier's letter:—

"Whitehall, Sept. 7, 1844.

"Gentlemen,—Although I have no longer any personal connection with the town of Manchester, by property or other local tie, yet, considering Manchester to be the metropolis of a district, to the industry of which I and my family are under very deep obligations; and most heartily approving of the wise and benevolent design to provide for those who are doomed to almost incessant toil, the means of healthful recreation and harmless enjoyment, I willingly contribute to the furtherance of that design, and offer my cordial wishes for its success.

"I request my name may be added to the subscription which has been commenced for this purpose, for the sum of one thousand pounds.

"I am, Gentlemen, your obedient servant,  
"ROBERT PEEL."

"Malcolm Ross, Esq.;

"Edward Watkin, Esq."

This munificent donation is, to our mind, greatly enhanced in value by the graceful and liberal terms in which it is conveyed. We hail it, too, as a pledge that, in the estimation of every benevolent mind, no petty party feelings should be allowed to obtrude into this excellent design for the benefit of a large and industrious community. That object, which commands from Sir Robert Peel on the one hand, and from Mr. Mark Philips on the other, such substantial proofs of their cordial and generous support, can scarcely, even to the most suspicious mind, be deemed a political movement to serve a party purpose. We trust to find the example of Sir Robert Peel addressing itself with all the weight that justly belongs to it, to those who, after having realized handsome fortunes in Manchester, are now enjoying them in other parts of the kingdom. They, too, are under deep obligations to the industry of Manchester; and we hope they will not lose so favourable an opportunity as is now presented, for proving that they are not insensible to the claims herein made upon their liberality. Let the strength of their past associations and reminiscences be shewn by their present zealous and cordial generosity.

We understand that, at a meeting of the committee on public parks on Monday, a resolution was unanimously adopted, expressive of their high appreciation of the opinions expressed by Sir Robert Peel, and conveying to him their sincere thanks for his munificent gift, and for the gratifying terms in which he has communicated it.—*Manchester Guardian.*

#### STATE OF PARTS OF THE METROPOLIS.

THE Report (with minutes of evidence annexed) of the Commissioners for Inquiry into the State of Large Towns and Populous Districts, was lately laid before Parliament by command of her Majesty, and printed for circulation among the peers, &c. Some of the evidence is of deep interest. In that of Mr. Henry Austin, architect, and resident engineer during the construction of the Black-wall Railway, he stated that in that capacity he had opportunities of examining the habitations of the labouring classes in the district through which that line passes. Many of the rooms of the tenements, he says, were small, varying in size from 8 feet by 10 to 10 feet by 12, and generally under 8 feet in height. "The inmates, houses, and every thing in them, horribly filthy; and there was such a complete want of ventilation, that it was extremely offensive to go into their rooms on account of the smell. The privies were frequently close to the back-door, always in a neglected and offensive condition, and fre-

quently running over. . . . It was the state of the subsoil that first drew my attention to the necessity of abolishing cesspools in towns. I found that the focal matter, or the soakage from the cesspools, had in some cases actually joined from house to house. . . .

The soil in the immediate connection with the houses and surrounding the foundations was so saturated from cesspools as to be, in my opinion, in a worse condition than in dung-heaps. It was exceedingly offensive to remove, and it was constantly matter of remark how human beings could be found to do it. When exposed it drew forth the complaints of the neighbours at some distance." In speaking of the existing tenements for the poor, he refers to an "existing court at Westminster, called 'Snow's-rents,' a striking example, among many worse, of the dreadful condition to which the poorer classes are reduced from the want of proper structural arrangement and control. This court is of considerable width—upwards of 20 feet, but the houses are mostly without yards, and the refuse, when become intolerable inside the house, is deposited in the court itself, the whole centre being a pool of black stagnant filth, that accumulates from time to time, and is left to decompose and infect the whole neighbourhood. I wish I could convey the faintest notion of the awful stench that is engendered there. Ventilation, or rather a healthful state of the atmosphere, is impossible. What little disturbance of the air does take place, would appear only to render its state more intolerable. The chief reasons for this dreadful state are the want of yards to the houses, and the width of the court being greater than required for the traffic. Had the court been narrower, the accumulation could not have taken place, for the houses would have been inaccessible, and some other provision for the refuse must have been made. . . . In wet weather, when the water attains a certain height in the court, it finds its way into an open, black, pestilence-breathing ditch in a neighbouring court; but in the ordinary state of things, the whole centre of this place is one mass of wet decomposing filth, that lies undisturbed for weeks, from which, so dreadful is the effluvia at times arising, that in the tenants' own words, "they are often ready to faint, it is so bad." . . . There is one exposed privy at the end of the court for the use of the inhabitants, male and female, of nine houses, which has not been emptied for four years or more, and in seasons of wet is actually overflowing with soil. . . . The supply of water consists in this, that sixteen houses are accommodated with one stand pipe in the court. On the principal day (Sunday) the water is on for about five minutes, and it is on also for three days in the week for one half hour, and so great is the rush to obtain a modicum before it is turned off, that perpetual quarrelling and disturbance is the result, and water-day is but another name for dissension." Such is the state of things the New Metropolis Buildings Act is designed to obviate, and ultimately to remedy; and indisputably remedy is imperative.

CHINESE CAST-IRON BUILDINGS.—A Berlin correspondent of the *Débat* writes: "M. Gutzlaff, the missionary in China, states that the art of constructing buildings of cast-iron, of which the English pretend to have lately been the discoverers, has been practised for centuries in the Chinese empire. On a hill near the town of Tsing Kiang, in the province of Kiang Nan, is a Pagoda entirely of cast-iron, covered with bas-reliefs and inscriptions, which, from their forms, characters, and dates, are as old as the dynasty of Tang, which is as far back as from the fifth to the tenth century of the Christian era. It is an octagonal pyramid, 40 feet high and 8 feet in diameter at its base. It has seven stories, each with curious historical pictures. This building surpasses every thing M. Gutzlaff had before seen in China."

ACCIDENT TO ONE OF THORWALDSEN'S WORKS.—The *Journal des Débats* announces that an accident occurred, a few days since, in the studio of the late celebrated sculptor Thorwaldsen, at Copenhagen. The colossal model in plaster of Esculapius, the last work which this illustrious artist ever completed, and which was intended to serve as a pendant to his colossal statue of Hercules, placed in the Museum of Copenhagen, fell to pieces, and was so completely broken, that this magnificent specimen is totally lost for all purposes of art.





ALL SAINTS' CHURCH, NOW ERECTING FOR THE PARISHES OF LEXDEN AND STANWAY,  
NEAR COLCHESTER, IN THE COUNTY OF ESSEX,  
BY GEORGE RUSSELL FRENCH, Esq., ARCHITECT, LONDON.

THIS church, of which a perspective view from the north-east is here given, is now in progress of erection, and is intended to accommodate the surplus population of the parishes of Lexden and Stanway, the site of the building being at the boundary of the two parishes, about two miles from Colchester. The style adopted is the late Decorated, which prevailed about the middle of the fourteenth century, in the reign of Edward III. In the church in question the architect did not aim to give the effect of antiquity by means of rubble or flint-work at the risk of the stability of the building but, as our ancestors generally did of old, employed those materials which were nearest at hand; the walls, therefore, are constructed of bricks, in some cases having three bricks in thickness and in others two-and-a-half bricks; the facing-bricks are of a dark purplish red character, making a contrast to the window and other dressings, which are of Caen stone. The nave, which is 60 feet long and 24 feet 6 inches wide, has an entrance on the north from a tower, and also from the west doorway, in which are introduced "nook-shafts." Above the west door is a window of three lights, the head having a great deal of tracery. On each side of the nave, which is divided into six bays, are two single-light and two double-light windows, having dripstones or hood-moulds over them, those on the north side (being that most seen) resting on carved heads. The buttresses between the windows have a projection of 2 feet 6 inches. The nave is divided from the chancel by an arch, and the latter, which is raised two steps, is 25 feet by 14 feet, the sacristy being elevated three steps. The chancel is lighted by an east window of three lights, and by a single-light window on the south side. The entrance to the vestry from the chancel is by a small arch near the chancel-arch, and by which access is also had to a stone

pulpit projecting from the wall; on the south side of the nave, a small transept is carried out for an organ, of the depth to which a future aisle may be added, arches being inserted on the south side to facilitate such an addition. The height of the walls from the ground-line will, when finished, be only 18 feet; but the roof having a very high pitch, being at an angle of 38 degrees, will make the interior sufficiently lofty. The belfry tower, 10 feet square, is constructed to contain a peal of five bells, and is 35 feet high, crowned by a spire of 30 feet additional height, covered with oak shingles, and surmounted by a copper weather-cock. The roof, covered with slates, will be open, shewing the entire construction, the timbers and slate-boarding being planed smooth, stained, and polished. From the steepness of the roof, the tie-beams are not continued, being only hammer-beams, supported by trefoiled spandrils resting on stone corbels, and having moulded curved ribs, collars, and purlins, with king-heads introduced, and the braces above the collars trefoiled. On each side of the east window is a slab of stone, on which the Decalogue will be cut in plain Roman capital letters, so that the people may best "see and read the same," as the canon directs. Above each table of stone will be a trefoiled canopy, the back diapered. Within the chancel, glazed encaustic tiles, from Chamberlain's Worcester Manufactory, will be laid down; the four Evangelists, emblems of the Trinity, the cross, &c., within a border of trefoiled pattern, occupying the space within the rails; and the path up to the steps having the arms of the benefactors towards the endowment of the church. The font will be of carved stone, with appropriate devices in each of its octagonal sides, and with a drain. The fittings will be of deal or of sycamore, consisting of low benches, with

ornaments and curved panels in their ends. Not a particle of paint will be used inside the church, excepting to the iron-work of the roof; the whole of the fittings being stained and polished like the roof. The body of the nave will be paved with tiles. The whole external length of the building is 91 feet, and its width from north to south is 42 feet. The cost of the church will be under 1,700*l*, and it is calculated to hold 300 persons, 20 inches in width for each adult being allowed.

#### TIMBER—ITS TREATMENT AND USES. BY JAMES WYLSON.

(Continued from p. 472.)

91. **ELM.**—There are in Great Britain several species of this tree:—the small, or rough-leaved common *English elm*; the smooth-leaved, or *Wych-elm*; the broad-leaved, or *Wych-hazel*; the *Dutch elm*; the cork-barked, declining-branched, spreading-flowered, white elm, and others; with some more recently introduced—the *Huntingdon*, *Chichester*, fan-leaved, &c. That particularly designated as the *English elm* is common in the south, and is, in respect of size and beauty, a tree of the first rank; in utility, it is perhaps excelled by the *Wych-elm*, the wood of which is generally, of all the elm-species, the most esteemed; the trunk of the former is frequently crooked and rugged, the bark rough, having a cracked and wrinkled appearance; the leaves are doubly-serrated: it is comparatively slow in growth, but hard and durable, and notable for its excellence in resisting moisture; it is thought to be probably an exotic, from the circumstance of its seeds never ripening in this country: its propagation being by suckers, which spring in abundance from the old roots, rendering the tree very eligible for hedge-rows, a constant succession being insured, wherever it has been planted, however often the grown timber be felled; in situations where the appearance of suckers would be objectionable, it is propagated by grafting on the *Wych-elm*: it is also raised from layers. The *Wych-elm* is common in Herefordshire, Essex, and the north and north-eastern counties of England, and grows to the



largest size. It is distinguishable by its leaves, which are smooth on their upper side; also by the bark, which is of a dark leaden colour, and smooth; it is likewise of a more branching nature than the preceding, and its boughs take a somewhat depending character: it is the only species raised from seed; it blooms early, and its seeds ripen in May, and may be sown in a fresh loamy earth; it is tough and flexible in the wood. The Wych-hazel is common throughout Europe, and particularly in Scotland and the northern parts of England; its wood has been estimated at about half the value of the best. The cork-barked and Dutch elms are both very inferior, and, indeed, almost useless; the former is very common in Sussex, the latter is the smallest species, and is a native of Holland. The others, which are raised in nurseries, are not yet sufficiently known to enable us to enter into a statement of their characteristics or qualifications; that described as the declining-branched is said to be truly picturesque in appearance; and, generally, they are of the most rapid growth and luxuriant foliage, but not affording timber in quality equal to that of the common elm.

92. The Elm is a tree of rapid and majestic growth, producing in fifty years as many cubic feet of timber; and attaining within a century a height of from seventy to ninety feet, and a trunk of four or five feet in diameter; when permitted, it also expands its branches over a large extent of ground, forming a delightful summer shelter; but it has been, and indeed still is, frequently trained to a vast height with a single stem, for the purpose of being bored into pipes; a disfigurement, however, from which the general adoption of iron-piping for underground water-conduction will speedily exempt it. It may here be mentioned that no tree bears lopping or shredding better, it being hardly possible to injure it by dismemberment. Though a tree of such magnitude, and clothed with a massive and thick foliage, affording a perfect shade, it is, from the lightness of its spray, the comparative smallness of its leaves, and the loose, free manner in which these adhere, rendered less heavy in appearance than the horse-chestnut or the plane. It possesses the double advantage of its foliage coming early and staying late; in the latter respect it stands alone, bearing its green vesture after every denizen of the forest has been stript by the autumnal blasts. When first expanded, its leaves are of a pale but cheerful green, which deepens in colour, with somewhat of a shiny appearance towards the fall, before which, chilled with the early frosts of winter, they fade to a bright yellow. One elm-tree is said to produce 1,584 millions of seeds, each having the power of producing as many more. The narrow-leaved are of slower growth, and live longer than the broad-leaved species.

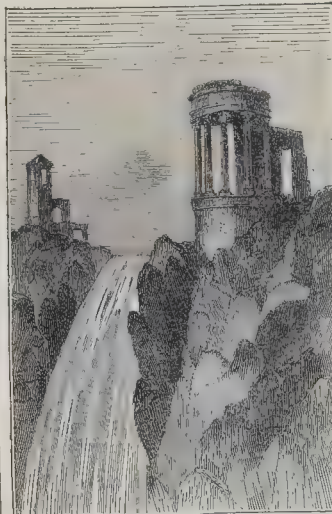
93. It can scarcely be called a forest tree, its haunts being rather about dwellings, or where such have stood; and the finest specimens are found forming avenues in public walks and drives; or planted singly, adorning the parks of our landed proprietors, for which its quick growth and picturesque grandeur of form undeniably recommend it, and leave it very few rivals. All the species delight in a gravelly loam, or any similar soil, which is not too wet; no tree can be better employed for hedge-rows, nor can any succeed better when re-planted, after being considerably matured.

94. It should be felled when between 50 and 100 years old, and in winter, when it has little or no sap; and, however green, if immersed for four or five days in water (if salt-water, so much the better), it will obtain an admirable seasoning, and be qualified for almost immediate use: this mode of treatment prevents, in a very great degree, warping, distortions, and worms. The shrinkage in the width in seasoning is said to be about 1-44th; it also shrinks lengthwise.

95. The wood bears in colour some resemblance to oak; but is in the heart-wood somewhat redder and darker, and in the sap-wood lighter, with an inclination to yellow and to red in the pores; it has no larger transverse septa. It is a hard, strong kind of wood, with a peculiar odour; rather coarse, cross-grained and porous, tough, and difficult to work; it warps and shrinks in the drying, as well as afterwards, in some degree; it is not liable to split, but, on the contrary, it is said to bear, better than any other wood, the driving of nails and bolts. It is a timber which, for the

general purposes of building, is of little value, being seldom so used; and indeed, from its uneven grain, very unfit for beams, or other purposes where a cross-strain has to be sustained; in consequence, however, of its great durability when constantly wet, it is much esteemed for water-wheels, piling, planking below water-mark, and sundry other works of a similar nature: it is also said to be very durable, if kept perfectly dry, though not so if subject to the action of the weather; yet, for the weather-boarding of out-buildings on farmsteadings, it is, when coated with paint or tar, found to stand very well under such exposure. It is used in ship-carpentry for the keels, and sometimes for gunwales of vessels; in husbandry, many implements are made of it, axle-trees, wheel-naves, blocks, gate-posts, rails, &c.; for particular purposes it is even preferred to ash: it is sometimes carved and variously employed for ornamental work; it is also very suitable for dressers and chopping-blocks, as it does not break away in chips like the generality of timber: for coffins, the English elm is preferred by the undertaker.

#### LECTURES ON ARCHITECTURE AND ANTIQUITIES.



REMAINS OF THE ANCIENT TEMPLE AT TIVOLI,  
Reputed to be that of Vesta, or of the Sybil.

#### Lecture IV.

##### ROMAN ARCHITECTURE.

(Continued from p. 461.)

Of peripteral round temples in and near Rome, two have been preserved, both dedicated to the goddess Vesta; (for whom that form was prescribed, as symbolical of the earth:\*) one is at Rome, the other, often called the temple of the Sybil, is at Tivoli, eighteen miles from Rome. THE TEMPLE OF VESTA at Rome is on the left bank of the Tiber, near the Campo Vaccino; and consisted of twenty columns of white marble, (one only of which is wanting,) raised on three circular steps, and placed round the cell, of which part of the wall remains, but none of the entablature exists, all above the columns having disappeared. The columns, which are in good Greek taste, of the Corinthian order, are of lofty proportion, being nearly eleven diameters high, their whole height being 34 feet 7 inches, and their lower diameter 3 feet 2 inches; the internal diameter of the cell of the temple is 28 feet, and the inside received its light from two windows, placed on each side at no great

\* And thus the temples of Vesta are represented in ancient medals. Valadier says, "I templi di Vesta erano rotondi, perchè questa forma simboleggiava la terra: così Numa edificò il suo primo tempio in Roma al dire di Plutarco. La forma rotonda era tanto propria di Vesta, che le mense rotonde perfino Veste erano dette. Costantemente nelle antiche medaglie il tempio di Vesta è rappresentato rotondo." (Raccolta delle più insigni fabbriche di Roma antica; a truly magnificent work.) (Thus Ovid, "Vesta dea est, quæ Terram.")

distance from the doorway; the columns were distant 7 feet 5 inches from the outer wall of the cell, and were placed, each with its centre 7 feet 6 inches from the centre of the next to the peristylum. This temple is converted into a church, dedicated to the Virgin, under the name of La Madonna del Sole. Panvinio enumerates three separate temples of Vesta at Rome, viz. in Vth, VIIIth, (the one under review,) and Xth Regions.

The temple under consideration has been by different authors assigned to different divinities: by P. Ligorio to the marine deity, Portunus (the Palæmon of the Greeks); by Pomponio Leto, to Aurora; by Volaterrano, to Hercules; by Nardini, to the goddess Volupia; and lastly, to Vesta. Valadier, who inclines to the last-named dedication, states that Flavio Biondo was the first who ascribed this building to Vesta; he has been followed by Fabricio Varano, Marliarno, Ficoroni, Venuti, and many other able critics.

TIVOLI, surrounded by the most romantic and beautiful scenery, has been a fruitful subject for the painter, and by none has it been more frequently or ably treated than by the glowing pencil of Turner. The circular temple of Vesta stands on the summit of a rock,

"Where the precipitate ANIO thunders down,"  
ROGERS.

and forms the principal feature in the charming landscape. Ten only of the eighteen Corinthian columns remain; they are  $9\frac{1}{2}$  diameters high, and are placed on a circular basement, about 5 feet high, at the foot of which were probably two steps, according with the Vitruvian precept. The columns are 2 feet 5 inches in diameter, 23 feet 6 inches in height, including base and capital; the entablature is 4 feet 3 inches high, whereof the architrave, which has two faces, occupies 1 foot 3 inches, and the frieze 1 foot 7 inches; this is adorned with a continued enrichment of pateras, and the heads of oxen, sacrificed to the goddess, connected with each other by the fillets and garlands, with which they were decorated for the occasions. The cornice is not enriched. The capitals have always excited great admiration. "The leaves of the capital, instead of being *appliquées* to the bell, as in other examples, are in this cut into it, and impart a magical appearance to it." (Gwilt.)

Besides the remarkable characteristics of the capital, the column has many other peculiar features; the flutes, which are twenty in number, terminate at top with a square head, and at the lower extremities of the shaft in a singular manner, and the base rests at once on the stylobate, without a detached plinth. Messrs. Taylor and Cressy, taking an ancient medal for their guide, have restored the roof to the temple, making it rest on the entablature, and cut in the shape of tiles. The internal diameter of the cell was 23 feet 11 inches, and it was lighted precisely in the same way as the temple of Vesta at Rome, by two windows; the distance from the columns to the outer wall of the cell was 5 feet 6 inches; and the ceiling of the ambulatory was formed in coffers or panels (containing large roses or pateras) of two rows of fifty in each, of which thirty-six remain.

Some writers consider that this building was erected in honour of Hercules, who was the chief deity worshipped at Tivoli, the ancient name of Tivoli; but the temples built in honour of that god were required to be of the Doric order. (Vitruvius.) Some, again, contend that it was built in honour of the sybil Albunea; but it is more probable that her temple was that which is near the circular building, a tetrastyle Ionic structure, walled up and greatly in decay. Valadier justly concludes that it should be ascribed to Vesta, "to whom the circular shape of the temple is so appropriate; to whose stately matronal garments the fluted columns have allusion; the oxen, are symbolical of the cultivation of the ground; while the fruits, the ears of corn, the poppies, and the productions of the kitchen-gardens, distinguish the continual fertility of the earth."\* Piranesi was of the same opinion, and from the few letters (shewn by the large capitals) which remain of the inscription on

\* "La forma orbicolare de' templi è propria di questa dea, le colonne striate al maestoso matronale vestimento hanno allusione; i bovî simbolo sono della coltivazione della terra; le frutta, le spighe, i papaveri, ed i prodotti degli orti la continua fertilità della stessa terra distinguono."—VALADIER.



the frieze, he conjectures that it originally ran thus:—

"*Adem Vesta S. P. T. Pecunia Publica Restituit*  
Curator E. L. GELLIO L. F."

There were two persons of the name of Lucius Gellius—one who was surnamed Poplicola, and was consul B.C. 72, in which capacity he defeated a party of Germans in the interest of Spartacus; the other, probably the son of the former (and as such alluded to in the inscription, *Lucii Filio*), was pro-consul in Greece, and was also censor, in which capacity he so conducted himself that Cicero deemed him worthy of a civic crown, at the time of the suppression of Catiline's rebellion, B.C. 63; and as Cicero died B.C. 43, somewhere between these two dates is the probable period of this temple being erected; unless, indeed, it was only restored by Gellius, in which case it is impossible to assign the real date of its building.

Tibur was often famous as a place of refuge for illustrious persons; hither Cinna, the consul, retreated when banished by Octavius; and here also came Brutus and Cassius, after the death of Julius Cæsar;

"*Quid referant veteres Romanæ gentes apud quos,*  
*Exsiliū tellus, ultima Tibur erat?*"

OVID. PONTIC. I. ELEG. 3.

At Tivoli, Mæcenas had a villa (the ruins of which are yet seen), where he was often visited by his imperial friend Augustus, in company with Horace, to whom tradition assigns also a villa on this spot\* (as asserted by Suetonius); Quintilius Varus, the poet's friend, had a villa near Tibur (Horace dedicated to him the 18th ode of his first book); and two illustrious captives of the Romans had residences on the banks of the Anio, the Numidian emperor Syphax (who died B.C. 201); and the celebrated Queen of Palmyra, Zenobia, taken prisoner by Aurelian, A.D. 273, lived here in great splendour.

It is remarkable that the capitals of the columns in the Basilica at Pompeii are precisely of the character of these (of Vesta, at Tivoli), though certainly not so well executed; there are also similar ancient capitals found at Cora and at Prænestæ.† (Messrs. Taylor and Cresy.) But we have fortunately at home an opportunity of judging of the character and details of this temple, in the beautiful adaptations made of this example by the late Sir John Soane, who employed it entirely in the exterior of the Bank of England (the first instance of this temple being imitated); and besides the elegant compositions in the different fronts, where the porticos in antis are varied with such picturesque effect (Roman examples planned with Greek taste), we have at the north-west corner a circular arrangement, in which one may see an exact copy of the proportions of the temple, even to its frieze of ox-heads and festoons; the details of the doorways and windows are also accurately imitated. A writer in "Weale's Quarterly Papers" (Part 3), does justice to the memory of Sir John Soane, and predicts that the time will yet come that his works will have great influence on taste, &c. when "the world has done hating him."

The only remaining example in Rome (besides the temple of Concord already noticed) of the Ionic style, in which insulated columns are to be found, is in the Temple of FORTUNA VIRILIS, or Manly Fortune, situated in the Roman Forum, nearly opposite to the Temple of Vesta. Like most of the ancient pagan temples, it has been converted into a Christian church, and it is dedicated to St. Mary the Egyptian. Its arrangement is supposed to have been tetrastyle in front, the pronaos having a projection of two intercolumns, but the sides and rear were pseudo-peripteral; and the whole of the seven columns which formed one flank still remain with their continued stylobate, the columns of the pronaos being walled up. The columns, which have twenty flutings, are nearly nine diameters high, the diameter being 3 feet 2 inches; the architrave is divided into three faces, and the frieze is enriched with festoons between candelabra, ox-skulls, and boys, placed alternately; the cymatium of the cornice is adorned with acanthus leaves and lions' heads. Although the design of this building cannot be compared

favourably with the tasteful examples of the Greeks, yet it is to be preferred before the wretchedly debased style of the Temple of Concord, a restoration only, in the age of Constantine, and to be altogether shunned by the modern architect.

Some of the most remarkable features of Rome are the triumphal arches, although indicating generally a corrupted taste, being mostly designed in the Composite style. These erections served at the same time to gratify the vanity of the Romans, and their love of magnificence, and are peculiar to this people, not being known among the Greeks, with whom the nearest resemblance is to be found in the Propylæa.\* A triumph is said to be derived from *θριαμβος*, *Thriambos*, the Greek name for Bacchus, who is said to have been the inventor of such processions. (Plin. vii. 56.) It may be said also to have its name from *σπίασ εὐβαίειν*, to walk about with leaves, as did those who had the honours of a triumph. It had its origin at Rome from Romulus carrying the spolia opima in procession to the Capitol (Dionys. ii. 34); and the first who entered the city in the form of a regular triumph was Tarquinius Priscus (Livy i. 38), and the next Marcus Valerius (brother of Poplicola), who defeated the Sabines in two battles. The earliest triumphal arches were very simple, and in the time of the Republic, such structures were of brick, without ornaments, and having merely an inscription recording the event, and perhaps a statue of the person so honoured. Under the emperors, the arches of triumph became costly and elaborate works, adorned with numerous statues, and with bas-reliefs commemorating their achievements in war. At Rome and in her provinces many arches were built, of which some still remain, bearing the names of the persons by whom they were built, or to whom they were dedicated. Orosius mentions 320 as the number of triumphs.

These triumphal arches were designed with one opening in the earliest times, afterwards with two or more. Of arches with one opening may be named that of Drusus, in the Appian Way, at the entrance of the wall of Aurelian, and which is of the age of Augustus, by whose name it is sometimes called; the arches of Augustus at Pola, at Pompeii, at Susa (in good preservation), and at Rimini; and at Carpentras; one of Titus, at Rome; arches of Trajan at Ancona and at Beneventum, and probably his at Rome consisted of one opening; arches at Vienne and at Vicenza, imitated from that of Titus; of Aurelian and of Janus, both at Rome, and having two stories of columns; at Cavillon; at St. Remi, with two columns on each side; at Verona, an arch termed by Palladio "exceedingly beautiful;" of Gallienus, at Rome; of Hadrian, at Athens, and one at Mylass, in Greece; many other arches, of which only the names remain, were probably of one opening, as of Verus, Gordian, and Germanicus. Arches are found with two openings, but such are hardly to be classed with triumphal arches, and may be considered rather as town-gates, and they were seldom decorated; two examples are seen at Verona, one more elaborate than the other, called the Gate of the Lions; one at Nîmes; one at the Pont de Saintes, and imitated in modern times by Blondel, in the Porte St. Bernard, at Paris; and it is probable that the Porta Capena, at Rome, the gate at which victors were first received by the Senate, and thence called also the Triumphal Gate, consisted of two openings, one for egress of pedestrians, and the other for the entrance of chariots—such is the Roman gateway at Lincoln, and in other English cities. Arches of three openings are of later date, and displayed the utmost magnificence—such were the arches of Septimius Severus and of Constantine, both at Rome; one at Orange, commonly called after Marius, seven times consul; one at Rheims (which appears to have had three equal openings with eight columns in front), called la Porte de Mars, erected, according to some writers, in honour of Julius Cæsar, but by others ascribed to Julian. At Palmyra is an arch of three openings, in which pilasters take place of columns. (In China there are numerous arches of three lofty openings, of course designed after the style of that country.)

\* Among the Greeks, when a person returned victorious from the Olympic games, a breach was made in the walls of the city, the ordinary gates not being considered worthy enough to receive him. For victories over an enemy, a trophy was usually erected on the field of battle.

At Autun is an arch of four openings, the two in the centre being large, with smaller doorways on each side; the lower part plain, but the attic with an arcade adorned with small columns.

At Madrid is a gateway of five openings, called the Puerta de Alcalá, finished in 1788; three of the openings are arched, and two are square-headed, placed between coupled Ionic columns, the whole front extending 128 feet.

#### ADELPHI THEATRE.

DURING the recess, the interior of this theatre has undergone very considerable alterations and improvements, under the superintendence of Mr. Charles Manby. Hitherto, every frequenter must have suffered more or less from the very defective ventilation that prevailed: the architect's attention has been particularly directed to this evil, and he has most ingeniously contrived an apparatus to admit, when requisite, an ample supply of fresh air, so as not to interfere with the comfort of the audience, while the warm air will be carried off through the centre of a dome in the ceiling, by a cowl 5 feet in diameter. His attention has also been successfully directed to those other points in the construction of theatres which are scarcely less important than ventilation, namely, sight and hearing. He has re-arranged the boxes, and made them all radiate to the centre of the stage, removed various projections in different parts of the house which interfered with the diffusion of sound, and slightly reduced the height of the seats, thereby increasing the comfort of those who have to sit for several hours.

A greater depth has been given to the stage, by throwing into it a part of the premises in the rear of the theatre, and several modern improvements have been added for producing the many effects which it is now thought essential to introduce into the performances. While the health and convenience of the public have been attended to, the comfort of the performers has not been neglected: in an adjoining building, a spacious green-room and several dressing-apartments have been added. We understand that the theatre will be opened for the season in about a fortnight from the present time, under the management of Madame Celeste.

#### CHURCH-BUILDING INTELLIGENCE, &c.

Her Majesty's Commissioners for Building New Churches have at the present time under their consideration the following applications for the perpetual patronage of new chapels, which it is proposed to build and endow, and for the assignment of districts thereto, under the Act of the 1st & 2nd Will. 4, c. 38; namely from James Fussell, Esq., who proposes to build a new chapel at Whatley, Somerset; from James Foster, Esq., at Amblecote, Worcester; from William Wilberforce, Esq., at Markington, Yorkshire; from Andrew Lawson, Esq., M. P., at Roeliffe, Yorkshire; from George Bengough, Esq., at Ridge, Gloucestershire; from Joshua Stanger, Esq., at Summers Town, Surrey; from Henry Kemble, Esq., M. P., at Camberwell, Surrey; from Le Gendre Nicholas Starkie, Esq., at Heyhouses, Lancashire; from the trustees of the late Sir George William Japps Jarvis, Bart., at Bournemouth, Hampshire; from John Partridge, Esq., at Bishopwood, Hereford; from Miss Sarah Brinton, at Mount Sorrell, Leicestershire; from Miss Marianne Pidsley, at Salterton, Devonshire; from the Right Honourable Henry Goulburn, at Brockham, Surrey.

*Sedburgh Church.*—A beautiful stained-glass window, the offering of an anonymous individual, has been placed in the south aisle of the parish church. It is the work of Mr. Wailes, of Newcastle, and consists of two Norman lights; one represents the Baptism of the Saviour, in a vesica piscis, surrounded by the words—"Except a man be born of water and of the Spirit, he cannot enter into the kingdom of God;" the other, Christ Blessing Little Children, with the words—"Except ye be converted, and become as little children, ye shall not enter into the kingdom of Heaven." Above the former light is the evangelical symbol of St. Matthew; below, that of St. Mark; above the latter light that of St. Luke,

\* Thus, the delightful author of "Italy,"—  
"And thro' the surging mist a poet's house  
(So some aver, and who would not believe?)  
Reveals itself."—ROCKS.



and below, that of St. John. An elegant border goes round each light, and the intervals are fitted up by Norman patterns. Altogether it is an exact imitation of ancient glass.—*Westmoreland Gazette.*

**Fire-proof Church.**—A district church, for the parish of St. Mary, Lambeth, is being erected in York-street, York-road, Westminster, near the New-cut. It is built of stone and brick, with iron columns and rafters to the gallery, with iron rafters and roof, to render the edifice fire-proof.

#### RAILWAY INTELLIGENCE.

**Direct Railway from London to York.**—A great sensation has been created in the railway world, by the announcement that the directors of the Wakefield, Lincoln, and Boston Railway have united with the promoters of the proposed London and York direct Railway, and that the latter line, as surveyed by Mr. Locke, will be brought before Parliament in the ensuing session supported by a majority of the House of Commons and favoured by the Government. A union with the Wakefield, Lincoln, and Boston Railway will, in fact, be a union with the powerful and wealthy Manchester, Leeds, and Hull line; and it appears that the condition on which the Wakefield directors have consented to transfer their subscriptions and coalesce with the London and York is, that the entire scheme of the Wakefield, Lincoln, and Boston Railway, both as to its connection with the town of Wakefield, and occupation of the Foss and Witham Banks to Boston, form a part of the undertaking; and that the line joins the Hull and Selby line at the latter town, and from thence direct to York, which they confidently state, will make the most extended and complete railway communication presented to the public, at once bringing the great manufacturing and agricultural portions of the kingdom into railway communication with each other, as well as with the metropolis, reducing the distance of the principal towns in Yorkshire and the North from ten to thirty-five miles with London, while the natural facilities for its formation are such as to insure its completion at a cost of little more than one-third the amount expended on existing railways connecting Yorkshire and the North of England and Scotland with London. The entire line from London to York will not have a greater deviation from a dead level than one in 800; it will contain neither a tunnel nor a bank, or cutting exceeding 13 feet: and it is estimated, that in its construction, and in providing the working stock, the advantage of being guided by the experience and warned by the errors of others will be equivalent to a saving of nearly 2,000,000. The united companies are determined to bring into operation upon the new line all the latest improvements in railway locomotion; the carriages, waggons, and engines are all to be of the most approved construction; and this, combined with the favourable gradients will, it is added, secure a rate of speed that may be fairly averaged at thirty-five miles per hour.—*Westmoreland Gazette.*

**Railway Operations at Edinburgh.**—The works in connection with the various railways are proceeding with great activity. The drift tunnel through the mound is nearly completed, and in the eastern garden the ground nearly all levelled for the rails of the Edinburgh and Glasgow extension line. Three large old dingy tenements close under the Calton-hill, between Burns's monument and the gaol, have been demolished, on the North British line. The brewery property to the west of them will speedily share the same fate, as well as many ruinous and closely-wedged domiciles in this plebeian district; by the removal of which the general health of the city, if it do not gain, will undoubtedly lose nothing. In addition to the ruin to which the imperious claims of the railway Acts are consigning so many of the old-fashioned architectural embellishments of our city, it is satisfactory to know that a good deal of building is going on in various directions. We trust we may take this as a token of a return to the prosperity which this capital enjoyed years ago, but which it has lost for some time, for want of a proper stimulative power.—*Edinburgh Advertiser.*

**The Atmospheric Railway near Dublin.**—Frequently since the opening of the line from Kingstown to Dalkey—the only railway on the atmospheric system yet in existence—we have had to notice the arrival of distinguished visitors, from the Continent as well as Great Britain, to view the works in actual operation. A deputation from the directors of the Great Western Railway Company arrived in Kingstown, on the 13th instant, for the purpose of witnessing the successful working of the atmospheric principle on the line of railway from Kingstown to Dalkey. C. Russell, Esq., M. P. for Reading, chairman of the Great Western Railway Company; Messrs. Simmons, Barlow, &c.; Mr. Gooch, superintendent of the locomotive department; Mr. Isambard K. Brunel, chief engineer, with other of the officers, contractors, &c., were of the deputation. Lord Courtenay, Chairman of the South Devon Railway Company, was also of the party. They were received by George Pim, Esq., and others of the directors of the Dublin and Kingstown Railway; Mr. James Pim, jun., Mr. Bergin, Mr. Jacob Samuda, one of the patentees, Mr. Gibbons, &c.; and proceeded so early as nine to inspect minutely the principle and the working of the railway in every way possible, to obtain a thorough conviction of its advantages and its applicability to long lines. The ordinary traffic of the day was not deemed necessary to be interfered with. One of the most gratifying results of the experiments made was, that after stopping half way, the train attained in a few seconds a speed of 35 miles an hour, ascending the steepest part of the incline. Nothing could have been more gratifying to the proprietors of this important national work than the unqualified approbation it received at the hands of those gentlemen. For nearly six hours the party were engaged in their investigations, and departed highly gratified as well as satisfied with the results. Lord Montagu, and his son-in-law, Mr. Marshall, of Leeds, proceeded to Dalkey by this railway, being his first visit to it. Not the least interesting portion of the day's experiments was the accurate signalling from end to end by means of the electro-magnetic telegraph. We understand that the Great Western Company are about to apply to Parliament for several new branches from their main trunk, on which it is intended to adopt the atmospheric system.—*Dublin Evening Post.*

**Warwick and Leamington Railway.**—This line, it is officially announced, will be opened on the 2nd of December next. It joins the London and Birmingham Railway at the Coventry station, and will be worked entirely under the control of that powerful company, of whose undertaking indeed it has become an integral portion, although originally projected by other parties. At the last meeting of the Birmingham Company, Mr. Glyn, the chairman, intimated that the line would be ready for traffic in the course of this year, but he appeared to question the policy of opening in winter.—*Railway Record.*

**Chester and Birkenhead Railway Tunnel.**—The tunnel between Monk's Ferry and the present station of the Chester and Birkenhead Railway in Grange-lane, will be opened for the conveyance of passengers and merchandise on Friday, the 4th of October next. The commissioners of Birkenhead, to whom the premises belong, have resolved to enlarge the Monk's Ferry Hotel, by erecting 100 additional bedrooms, and making other improvements, at a cost of 3,000.

**Hereford and Gloucester Railway.**—A meeting of the Provisional Committee appointed by the four counties of Hereford, Gloucester, Monmouth, and Brecon, for carrying into effect the project of a line of railway into South Wales, was held at Ross, on Monday, the 9th inst. After a rather long discussion, the meeting resolved that the project of a line of railway from Hereford to Gloucester, *via* Ross, with a branch to the Forest of Dean, should be persisted in.

At a special meeting of the Ribble Navigation Company, full powers were given to the directors to co-operate with the directors of the North Union Railway Company in carrying a branch railway to the river. Each party is to bear half the expense.—*Westmoreland Gazette.*

**Railroad in Holstein.**—We learn from Keil (Holstein) that the last section of the railroad from Altona to Keil, which unites Rochs with the latter place, is finished; so that this grand line, which runs to the length of 32 French leagues, the only one yet existing in the states of Denmark, is entirely completed, and will be opened by the king and queen towards the middle of the present month.

**The Railway Dock at Hull.**—Mr. Tadmam, on the part of the dock committee, and Mr. Ryder, on the part of Mr. Broadley, have been engaged during the week in having the Dock-green staked out, preparatory to its being taken possession of for the railway dock, the works of which, it is expected, will be commenced almost immediately.—*Hull Packet.*

A new railway from Liverpool to Manchester in opposition to the present one, is in contemplation. It is proposed to commence at Sutton, pass through Ince, Runcorn, and Warrington. The route is said to be favourable for the construction of a railway at comparatively little cost. At a preliminary meeting at Birkenhead, a few days back, six gentlemen, representing 1,700,000, were present, and expressed a sanguine opinion of success. The new line is intended to be conducted on the principle of low fares, and a large traffic.—*Westmoreland Gazette.*

**French Northern Railway.**—The adjudication of rails and sleepers for the northern railroad, which had been adjourned to Tuesday, only produced the result of having the rails necessary for the first section contracted for. MM. Schneider took them at 339f. 50c. In the second section the prices fixed by the Government as the maximum, 330f. and 332f., were below the offers. It was the same for the sleepers, the prices of the ministry being 225f., 220f., and 215f., and the proposals being 238f., 229f., and 227f. It would appear from this that the offers of the iron-masters have become higher. No time has been fixed for a new adjudication. The Minister of Public Works has decided that a certain number of locomotives and tenders being necessary for the northern line of railroad, in one part between Paris and Clermont, and in the other between Arras, Lisle, and Valenciennes, the adjudication shall take place on the 25th, amongst a certain number of houses sanctioned by him. The supply is to be composed of thirty-four locomotives, thirty-four tenders, and three lots of accessories.—*Galignani.*

**French Railways.**—A trial is being made on the Valenciennes Railroad with soft wood for the sleepers, to prevent decomposition by the humidity of the ground in which they are fixed. Like those used in the Belgian railroads, they are steeped in a solution of sulphate of iron, which, it is expected, will render them incorruptible. If the experiment be successful, the saving will be very great, as a sleeper of oak wood costs 12f., while that made of soft wood will cost no more than 4f. To this is to be added the cost of the sulphate of iron, which, however, is but comparatively trifling.

#### Correspondence.

##### ARCHITECTURAL COMPETITION.

SIR,—Your very just remarks upon architectural competition, will, I have no doubt, do much good in abating the fraud practised in a great number of instances in advertisements for designs, when the parties well know, and among one another in the secret, avow "that it is done only as a matter of form." The practice is far from being new; to my knowledge it has existed for many many years. About thirty years ago, an advertisement appeared in the papers for designs for a new St. Pancras Church; a friend of mine, at that time a leading man in the vestry, suggested to me that I might send in a design, as he thought, from having seen several of my drawings at the Academy and elsewhere, that I should, as he expressed it, "stand a pretty good chance." Being a "little up to snuff," as you have it in your remarks upon this subject in your last publication, I told him that I had no objection to send in a design, if he would guarantee me the cost of my time, paper, &c., as I was quite sure under any other arrangement I should have only my trouble for my pains. My friend did not appear to understand that a competition was not to take place, but pointed out the



advertisement that designs were to be sent in, and he would not believe me when I told him, that although the advertisements were only just issued, that the design had been approved, and the working drawings were then being made; and I named to him the architect who was to have the job. This eventually turned out to be the case. It is true that a very talented architect was selected. But if parties are put to the expense of sending in designs where it is already decided to select a particular person to carry out the works, and where these advertisements are only put in as a matter of form, it would be very desirable if some spirited architect thus jilted would try some method for making these building committees pay for their fun.

I am yours very truly,  
Dorset-place, Dorset-square. H. B.

WESLEYAN CHAPEL, LIVERPOOL-ROAD.

[We think that we cannot "do justice" to Mr. Parkinson more effectually than by inserting his letter, which we have done *verbatim et literatim*.]

SIR,—As the Architect employed by the Trustees of the Wesleyan Chapel Liverpool Road I beg to inform you that as a matter of course all the works have been and still are under my constant and most diligent superintendence. And your omission of my name among the persons present at the time of removing the gallery would never have been noticed by me had not numerous friends of mine expressed their disapprobation of such omission in the strongest terms. I beg further to say that did I suppose for one moment that such omission was invidiously intended to injure me, I would not have condescended to have noticed such paltry conduct on the part of any individual whether an Editor or any other person capable of offering such a contemptible insult, but as I am given to understand that the statement sent to you did ample justice to all parties concerned and to myself among the rest, I am inclined to think the omission was accidental and not intentional, under this impression I beg simply to state that when such a mode of removal was mentioned to me before the tenders were delivered my answer like that of any other Architect was that I could not object to give any one who might become the Contractor the full benefit of any ingenuity he or they might possess at the same time stating that he or they should be held responsible to the Trustees and myself to complete the works in every respect according to the true intent and meaning of the drawings and specification, which I am happy to say has been done to the very letter. I only now beg to observe that the whole operation was carried into effect under my personal superintendence as I was in duty bound to see that such an operation was performed in a manner not in any way to deteriorate from the soundness of the works. And in conclusion beg to state that I have never had occasion to trouble the press with any notices of works executed under my superintendence although the press has often born testimonies of the most flattering kind to the operations which I have been engaged in, without my request or knowledge until I have seen the statements in print. Having stated thus much unwillingly but to satisfy friends, I leave you to do justice to the matter.

I remain Sir Your's Obediently

JOHN PARKINSON

P. S. I had no hand in framing the statement which was forwarded to you.

20 Rahere Street King Square  
18 Sept. 1844

#### ZINC TEMPLATES.

SIR,—Having for a length of time taken in your valuable publication, I of course, with every other person in the trade, feel interested with all improvements connected therewith; and, also, that every one, whether inventor or improver, should have his meed of praise, and no more. In your last week's BUILDER I see, in an article copied from the *Times* newspaper on the new Houses of Parliament, amongst other statements, how greatly the constructive profession is indebted to Mr. Allen for his improvements, in introducing zinc plates or moulds, in lieu of the old wooden templates; for the other improvements I can say nothing, not having seen them, but for the one I have mentioned, I beg to say, that Mr. Allen has

not the least claim to it, it being upwards of twenty years since I saw it in common use in the north of England, with two pieces of wood cut in the form I have shewn below, and a screw-bolt through one of the projecting pieces, which piece is made so as to move to suit the thickness of the stone; these fasten the mould securely, whilst the mason is "cutting it in," which is a term generally used amongst the craft. Should you think this worthy of a place in your publication, you will much oblige

A MECHANIC.

Tonbridge, Sept. 16th.



#### PRICES OF LATH WOOD.

SIR,—In your list of prices I find quoted Memel Lathwood per fm. 12*l*.; will you do me the favour to say where I can get some at that price; for although the greatest reduction in the duties occurred on the article of lathwood, yet it is now dearer than before the duties were taken off. I presume the above quotation is for 8 feet. M. L. B.

#### Miscellaneous.

THE SURFACE OF THE CITY OF LONDON.—During excavations for the sewers in different parts of the city, information has been gained relative to the depth of artificial ground above the natural surface. The following is the very curious statement relating thereto made by Mr. R. Kelsey in evidence before the "Commissioners for inquiring into the state of large towns and populous districts."—Thickness of made ground at Paul's-wharf up to St. Paul's Churchyard, 9 feet to 12 feet; Watling-street, 11 feet to 12 feet 6 inches; Bread-street, 17 feet 6 inches; Cheapside, the natural earth was not reached—the cutting varied from 14 feet to 23 feet; Gracechurch-street, 14 feet to 18 feet; King William-street, 12 feet to 17 feet 6 inches; Princes-street, 10 feet to 33 feet 6 inches; Moorgate-street, 16 feet 6 inches to 21 feet 6 inches; Fenchurch-street, 15 feet 6 inches to 17 feet 10 inches; Bishopsgate Within, 9 feet 6 inches to 16 feet; Fish-street-hill, 5 feet 6 inches to 18 feet 10 inches; Eastcheap, 12 feet to 15 feet; Redcross-street, 7 feet to 9 feet; Barbican, 10 feet to 13 feet; Cannon-street, 9 feet throughout; Rosemary-lane, 8 feet to 12 feet; Water-lane, Fleet-street, 5 feet to 9 feet; Cateaton-street and Lad-lane, 12 feet to 14 feet 2 inches; streets in Cloth-fair, 4 feet 6 inches to 12 feet 6 inches; streets in St. Ann's, Blackfriars, 4 feet to 13 feet 3 inches. The plinth of Temple-bar is buried in accumulation. The east end of Newgate-street was lowered about 12 inches, when the present Post-office was built. London-wall has in part been raised above 2 feet within the last 25 years. The Pavement and Little Moorfields have been wholly re-arranged within the last 10 years. All the improvements from London-bridge to London-wall have largely altered the surface of the main line, and of the adjacent streets. The north side of what is termed Holborn-bridge, the north end of Farringdon-street, has been raised above 2 feet. Such occurrences as these are distinctly noticeable in some way, but the insensible alterations are equally great and curious; as, for instance, from levels taken in 1770 and 1842, it appears that in Bishopsgate-street without, at Bishopsgate-churchyard, the surface has risen 2 feet 2 inches in 72 years, but at Spital-square only 12 inches in the same time. The result of this examination is confirmed by the depths of the sewers, as originally built, and as they now measure.

PAPER TO RESIST HUMIDITY.—This process, which is due to M. Engle, consists in plunging unsized paper once or twice into a clear solution of mastic in oil of turpentine, and drying it by a gentle heat. The paper, without becoming transparent, has all the properties of writing-paper, and may be used for the same purposes. It is especially recommended for passports, workmen's books, legal papers, &c. When preserved for years it is free from injury, either by humidity, mice, or insects. It is further added that a solution of caoutchouc will produce even a still better effect.—*Kunst und Gewerbe-Blatt*.

THE BUILDING MANIA.—Foreigners who arrive in London are struck by the immense speculations in building which now give life and activity to the metropolis and its environs. Every district presents a picture not unlike Virgil's description of Carthage. The workmen extend their walls, raise houses, pushing along unwieldy stones or massy timber. Some mark out the ground for building. Others carry bricks and mortar. They all toil like bees. There is no part much more animated by this movement than Lambeth. The prodigious increase of houses is really astonishing. It appears by Parliamentary papers that within 90 years of the last century there was only an increase of 5,600 houses. From 1790 to 1800 the total number of houses within the parish have been doubled. In 1822 the number was about 14,000. The increase since that period is almost incalculable. Kennington-common, Stockwell, Brixton, South Lambeth, Wandsworth-road, Vauxhall, and the more remote parts of the parish, are formed into streets and rows of first, second, and third-rate buildings. Several squares have been formed and churches erected. Much taste is displayed in the architectural style of the suburban villas and cottages; but amidst this mass of buildings which strike the eye in almost every direction, hundreds of houses remain unoccupied. How so many private residences can find occupants is a question not easily solved. A vast amount of capital has been expended by persons who have drawn their money from the funds in the expectation of getting better interest for it in these building speculations; but the general opinion is, that a considerable portion of the new speculations will produce little return to the capitalist. According to the calculation of those who watch the increase of our metropolitan population, the houses already built are more than enough for the inhabitants of Lambeth, Wandsworth, and Camberwell for the next 20 years.—*Globe*.

THE CATHOLIC CHAPEL AT CLEWER.—Considerable alterations are now in progress at the Roman Catholic chapel at Clewer (which is situated about a mile and a half from the Castle), for the accommodation of the King of the French and suite, upon the arrival of his Majesty at Windsor, upon a visit to the Queen in the early part of next month. A new wing, the brick-work of which is completed, has been added to the north side of the chapel, and an opening, by means of an arched window, made into the interior of the edifice, close to the altar and opposite to the pulpit. This apartment (or tribune), which is intended for the use of the King and his suite, will be completed, and appropriately furnished before his Majesty's arrival. This addition to the only place of Roman worship within several miles of Windsor will be a very great convenience and accommodation to those royal and distinguished Catholic families who occasionally visit her Majesty and the Prince Consort at Windsor Castle. The tribune, which is upwards of fifteen feet square, will contain, comfortably, during the performance of mass, from twenty to thirty persons.

NEW POLICE COURT.—Within the last few days orders have been issued for the speedy erection of a new Police Court, at Kentish Town, in a position where it will afford facilities for the inhabitants of those daily increasing localities, Hampstead and Highgate. It is stated that the new court will not only comprise the places already named, but also Finchley, and the populous districts of Camden and Kentish Towns, Holloway, and the entire of the S division, which extends to Barnet.

A cement which gradually indurates to a stony consistence may be made by mixing twenty parts of clean river sand, two of litharge, and one of quicklime into a thin putty with linseed oil. The quicklime may be replaced with litharge. When this cement is applied to mend broken pieces of stone, as steps of stairs, it acquires after some time a stony hardness. A similar composition has been applied to coat our brick walls under the name of mastic.—*Dr. Ure*.

BERWICK CASTLE.—That venerable and interesting monument of antiquity the ancient castle of Berwick is to be levelled with the ground, in order to allow space for the terminus of the railway forming between that town and Edinburgh.



## BUONAPARTE'S ROAD OVER THE SIMPLON.

—This road, which is considered one of the most magnificent works of modern times, was made between the years 1800 and 1805. It connects the town of Briegg, in Wallis, with Domo d'Ossola, in the valley of the river Toce or Tosa, in Piedmont, and is about 38 miles long. The width is about 9 yards, and its rise and fall only about 1½ inch for every yard, so that it can easily be passed by carriages. It runs in most places between steep and nearly perpendicular rocks, and at six places, tunnels or galleries have been made through the rock. The longest tunnel, which is below Gondo, on the side of Italy, is nearly 500 feet long. These tunnels are generally 30 feet high, and at least as wide as the road itself. There are openings on the sides by which they receive the light. In several other places the road traverses precipices of great depth by means of substantial bridges. The highest part of the road is 6,576 feet above the sea-level; Briegg is 2,334 feet, and Domo d'Ossola 1,004 feet above the sea-level. At certain seasons the waters descend from the glaciers in rapid torrents, and frequently carry away the bridges; the road is also much damaged by the avalanches and masses of rocks which fall from the adjacent mountains. The original cost was 400,000*l.*, and it is supposed that from 5,000*l.* to 6,000*l.* are annually required to keep it in repair.

**THE DWELLINGS OF THE POOR.**—We refer with great gratification to the unanimous decision of the Town Council (Mancheser), that a portion of the funds at its disposal shall be devoted to the opening out of close courts and narrow streets, with the view of causing the thorough ventilation which is necessary to the preservation of health. Look at the evidence of Dr. S. Smith and Mr. P. Holland, as to the effect upon health, and even upon morals, of residence in ill-ventilated, ill-drained, and ill-cleaned courts and streets. The one tells us that the benevolent aid of the physician is comparatively useless when the patient is so situated, and the other that mortality in the worst houses in the worst streets is double that in good houses and good streets! The report on the condition of large towns and populous districts is full of similar proofs.

**THE NELSON TESTIMONIAL.**—The public were for a few hours on Tuesday morning last gratified by a view of the Nelson Testimonial unnumbered by the wooden hoarding that has so long obscured the base and lower portion of the pedestal from observation, and which, when removed, gave this national work the appearance of completion. In furtherance of the determination of the government to complete the monument, a model of the steps and platform round the base had been prepared, and was inspected by the Earl of Lincoln, Chief Commissioner of her Majesty's Woods and Forests; the architect, Mr. W. Railton; and other gentlemen connected with the land revenue department.

**MARBLE STATUE FOR HER MAJESTY.**—A marble statue belonging to the Queen was landed on the 13th inst. at the St. Katharine's Dock, out of the ship Effort, from Leghorn, and in consequence of the absence of her Majesty from Windsor, on her excursion to Scotland, the same has, at the request of her agent, been securely deposited in the docks, pending the decision of the removal to the Palace, and an officer of the Customs will be appointed to superintend the examination at the Palace, when her Majesty's pleasure is known on the subject.

**PUBLIC WALKS.**—A government agent has visited Sunderland, and surveyed and approved the site selected by the Public Walks Committee as a recreation ground for the inhabitants.

Attics, stables, cow-houses, and other places with slated roofs, generally intolerably hot in summer, may be rendered comfortable by giving the slates two or three coats of white paint.

Nearly 1,000*l.* has already been subscribed towards the cost of erecting a suitable monument to the memory of the late lamented Earl of Lonsdale.

It is in contemplation to erect a monument to George Stevenson, the railway engineer, at Liverpool.

A subscription has been opened to construct baths for the working classes at Greenock.—*Hereford Times.*

## Current Prices of Wood and Metals.

September 17, 1844.

	£.	s.	d.	£.	s.	d.
Box, Turkey, per ton	2	0	0	6	0	0
Cedar, Pencil, per foot	0	0	3	0	0	4
Cuba	0	0	3	0	0	4
N. S. Wales	0	0	3	0	0	4½
Green, per ton	5	5	0	9	0	0
EBONY, Ceylon, large	6	0	0	8	10	0
small	5	0	0	5	15	0
Madagascar, small	5	0	0	6	0	0
Dyes, &c.						
LIGNUM VITE, Jamaica	3	0	0	5	0	0
St. Domingo	8	0	0	12	0	0
MAHOGANY, Cuba, per foot	0	0	7	0	1	4
St. Domingo	0	0	7	0	1	6
Honduras	0	0	4½	0	0	10
Jamaica	0	0	0	0	0	0
TIMBER:—						
Teake, African, per load	6	10	0	10	10	0
Oak, Quebec	3	15	0	4	10	0
Fir, Riga	3	17	6	4	0	0
Dantzic and Memel	3	10	0	4	5	0
Swedish	0	0	0	3	12	6
Pine, Quebec, red, per load	0	0	0	3	15	0
yellow	0	0	0	3	0	0
N. Brunswick	0	0	0	0	0	0
Miramichi & St. Johns	2	15	0	4	10	0
Wainscot Logs, 18 ft. each	4	10	0	5	5	0
Lathwood, Memel, &c. fm.	0	0	0	12	0	0
B. America	0	0	0	0	0	0
Deals, Gefle, 14ft. 3in. by 9	29	0	0	31	0	0
Stockholm	25	10	0	26	0	0
Gottenburg, 12ft. 3in. by 9	0	0	0	0	0	0
Christiana, 1st & 2nd	27	0	0	29	0	0
St. Petersburg, Memel,						
Dantzic, 12ft. 1½ in.	16	0	0	18	0	0
Quebec yellow Pine,						
first quality	17	0	0	18	0	0
second ditto	10	0	0	11	0	0
White Spruce, 120.	16	0	0	17	10	0
Dantzic Deck, each.	0	18	0	1	6	0
Plank, Dantzic Oak, load.	9	0	0	10	0	0
STAVES, Baltic, per 1200 <i>l.</i>	160	0	0	0	0	0
Quebec Pipe, 1200	50	0	0	52	10	0
COPPER.—Brit. Cake, p. ton	0	0	0	84	0	0
Tile	0	0	0	83	0	0
Sheet, p. lb.	0	0	0	0	9½	0
Bottoms	0	0	0	0	0	0
Old	0	0	0	0	8½	0
South Amer., ton	73	0	0	74	0	0
Foreign Cake	0	0	0	0	0	0
Tile	0	0	0	0	0	0
IRON, British.						
Bars	5	15	0	6	0	0
Rods	0	0	0	6	5	0
Hoops	8	0	0	8	5	0
Sheets	0	0	0	8	15	0
Cargo in Wales, Bars	4	14	0	4	18	0
IRON, Pigs No. 1, Wales	3	10	0	4	0	0
No. 1, Clyde	2	4	0	2	5	0
Russian, CCND	0	0	0	16	0	0
PSI	0	0	0	0	0	0
Archangel	0	0	0	0	0	0
Swedish	9	10	0	10	0	0
Gouffier's	0	0	0	0	0	0
LEAD.—British, pig, p. ton	16	10	0	17	0	0
Sheet, milled	0	0	0	17	15	0
Bars	0	0	0	0	0	0
Shot, patent	0	0	0	19	15	0
Red or Minium	0	0	0	21	10	0
White	0	0	0	23	10	0
Litharge	0	0	0	20	0	0
Pig, Spanish	16	0	0	16	10	0
American	15	10	0	15	15	0
STEEL.—English	0	0	0	0	0	0
Swedish Keg	16	0	0	16	10	0
Faggot	0	0	0	17	0	0
TIN.—In blocks, p. cwt.	0	0	0	3	12	0
Ingots	0	0	0	3	12	0
In Bars	0	0	0	3	13	6
Banca	3	6	0	3	7	0
Straits	3	4	0	3	5	0
Peruvian	0	0	0	2	17	0
Plates p. box, 225 shts.—						
No. I. C. 13½ by 10 in.	1	7	0	1	12	0
I. X.	1	13	0	1	18	0
I. XX.	0	0	0	0	0	0
IXXX.	182	lb.	0	0	0	0
IXXXX.	203		0	0	0	0
No. II. C. 13½ by 9½ in.	105		0	0	0	0
II. X.	133		0	0	0	0
III. C. 12½ by 9½ in.	93		0	0	0	0
III. X.	126		0	0	0	0
Jaggars, 14 by 10 in.	0	0	0	0	0	0
SPELTER.—On the spot, ton	0	0	0	21	0	0
Delivery	0	0	0	21	0	0
Zinc, English Sheet	0	0	0	30	0	0
PLATINA ORE	0	0	0	0	0	0
OSIDEW	0	0	0	0	3	0
QUICKSILVER	0	0	0	0	4	6

## Tenders.

TENDERS delivered for rebuilding Warehouses at No. 23, Bishopgate-street Without.—Charles Broadbridge, Surveyor, 87, Great Portland-street. Whitelaw ..... £894  
Pipers ..... 878  
Reeve and Co. .... 829  
Jay ..... 794  
Ashty ..... 757  
Estimated from Bills of Quantities.

TENDERS delivered for Repairing, Painting, and Graining the Vestry Rooms of St. Pancras.  
Hewett ..... £143 0 0  
Miller ..... 142 0 0  
Boulting ..... 126 7 3  
Edge ..... 125 10 0  
Schaller ..... 110 17 0  
Winter ..... 110 0 0  
Hatfield ..... 110 0 0  
Day ..... 104 0 0  
Short ..... 102 11 0  
Johnson ..... 99 0 0  
Hopkins ..... 97 3 6  
Steer ..... 90 0 0  
Bolton, Charles-st., Seymour-st. 79 14 0  
The lowest tender accepted.

TENDERS delivered for the intended Alterations at the Union Workhouse at Newbury, Berks.  
Salisbury ..... £342 8 6  
Adey ..... 311 0 0  
Westcombe ..... 310 0 0  
Boyer ..... 300 0 0  
Eyles ..... 285 0 0  
Harrison ..... 278 0 0  
Hanson ..... 260 0 0  
Elliott and Balding ..... 259 0 0  
Stratton ..... 247 12 6

TENDERS delivered for Works to be done at Ball's Pond for John Musgrove, Esq., Alderman and Sheriff.—James Edmeston, Esq., Surveyor.  
Trayhorn ..... £184 0  
Barber ..... 123 15  
Norris ..... 117 0  
Rumens ..... 115 10

## NOTICES OF CONTRACTS.

For completing the Bricklayers', Carpenters' and Joiners', Plasterers', and Smiths' Works of two Villas, at present in carcase.—Specifications, &c., Mr. H. Mabin, Surveyor, Castlenear Barnes, near Hammersmith-bridge. September 24.

For three Six-roomed Houses at Kenish Town.—Plans, specifications, &c., A.Z., at Mr. Jennings's, opposite the Chapel, Kenish Town. September 23.

For such Bricklayers', Carpenters', Masons', and other Works, in the Cleansing, Building, and Repairing the public Sewers and Drains for the City and Liberty of Westminster.—Mr. Lewis C. Herslett, Clerk, 1, Greek-street, Soho. October 15.

For one hundred single Iron Bedsteads for the Union Workhouse at Aylesbury.—Mr. W. Gleadah, Clerk. September 25.

For 1,300 yards of Cast Iron Pipe of six inches diameter, at per yard, for the Commissioners of Water Works for the Town of Southampton.—Mr. Charles E. Deacon, Clerk, Audit-house, Southampton. October 3.

For paving certain of the Foot Paths of the Parish of St. John, at Hackney, with York paving of the best quality, not less than three inches in thickness; and relaying a quantity of old York paving, at per foot super.—Mr. C. H. Pulley, Clerk, Upper Homerton, and 28, Great Winchester-street, Old Broad-street. September 26.

For the Execution of the various Works in the formation, ballasting, and laying the permanent way of the Canterbury, Ramsgate, and Margate Branch Railway.—Plans and specifications at the office of Mr. Joseph Cubitt, Civil Engineer, 12, Manchester-buildings, Westminster; Mr. J. Whitehead, Secretary, South-Eastern Railway, London-bridge. September 24.

For an Iron Palisade Fence on the boundary wall of the Southampton Cemetery, two Iron Entrance Carriage Gates, and one Footway-gate.—Specifications, with a plan of the Iron Gates, &c., Mr. Doswell, Surveyor, Albion-place, Southampton. Mr. C. E. Deacon, Secretary, Audit-house, Southampton. September 25.

For the building of the new church at Lynn.—Plans, &c. Mr. Flew, Bookseller, High-street, Lynn. 1st October.

For various buildings and other works at Gateshead, Brockley, Whins, and other places along the line of the Newcastle and Darlington Railway.—Plans and specifications at the Railway Office, York, from the 16th to the 30th September. Mr. G. Hudson, Chairman, Railway Offices, York. October 2.



For 16,000 Larch or Baltic Sleepers, of various dimensions, for the Ashton, Staleybridge, and Liverpool Junction Railway.—Secretary, at the Manchester and Leeds Railway Office, Palatine-buildings, Hunt's-bank, Manchester. October 8.

For a new School and Master's House, at Leicester.—Plans, &c., at the Vestry Room, Creation.—Mr. S. Fry, Architect. September 27.

For the erection of Amberswood Bridge, in the township of Ince.—Mr. A. B. Chambers, Bridge-master, Cable-street chambers, Liverpool. September 30.

#### COMPETITIONS.

PREMIUM of 20l. for the chosen Design for a new Church at Winchester, to hold about 1,000 persons on the floor, cost not exceeding 4,000l. Further information from Rector and Churchwardens. 10th Oct.

#### TO CORRESPONDENTS.

"Well-wisher" is somewhat hypercritical in his remarks. The back-front of the New Houses of Parliament need not be similar to the river-front; their difference forms, in our opinion, a beauty.

MR. SMITH's letter will be answered next week.

The notice respecting the new Hospital for Consumption, &c., can only be inserted, in its present form, as an advertisement. If, however, our correspondent will furnish us with drawings of the elevations and ground-plans, together with a description of the intended building, we shall be happy to give them a place in our publication.

In page 471 of our last number the words "and might also into requisition skilled workmen as framers and carvers, similar to what has been done in the middle ages," were merely the suggestions of a private individual, and being written in pencil, were accidentally printed.

One or two advertisements were accidentally mixed with the other contents of our last number.

Page 469 near the bottom of column 3 read "for the locomotion safely of a thing extending over a surface of 50ft. by 30ft. put together in a thousand pieces, is not so easy as that of" &c.

#### ADVERTISEMENTS.

##### CHEAP AND DURABLE ROOFING.

By Her Majesty's Royal Letters Patent.



TO ARCHITECTS, SURVEYORS, BUILDERS, &c.

**F. McNEILL and Co. of Lamb's Buildings, Bunhill Row, London.** Manufacturers and Importers of IMPROVED PATENT ASPHALT FELT, for Roofing Houses, Verandahs, &c. beg to call the attention of the Trade to their ROOFING FELT, which has been exhibited at the great Agricultural Shows of England, Scotland, and Ireland, and obtained the prize, for being the best and cheapest article for Roofing, to supersede slates, tiles, &c. It has been very extensively used by Noblemen, Gentlemen, and Tradesmen, in all parts of the kingdom, from whom the most flattering testimonials have been received. Its advantages are lightness, warmth, durability, and economy. It is impervious to rain, snow, frost, and a non-conductor of heat and sound. The Felt can be cut to any length, by 24 inches wide.

The price is only One Penny per Square Foot. Samples, with full directions as to its uses and the manner of applying it, with testimonials from Noblemen and Gentlemen who have extensively used it, sent free to any part of the town or country. A Dry-hair Felt, for covering Boilers, &c., is also manufactured, by which a saving of about 25 per cent. in fuel is effected.

A Liberal Discount allowed to the Trade.  
Patent Felt Works,  
Lamb's Buildings, Bunhill Row, London.

**AT THE ANNUAL MEETING OF THE ROYAL SOCIETY OF ARTS AND SCIENCES**, held in London, on the 10th of June, 1844, His Royal Highness Prince Albert presented to Mr. ROBERT BROWN the medal awarded by the said Society for his invention of the ORNAMENTAL GROOVED RIDGE TILE.  
The Grooved Ridge Tile was invented by Mr. Robert Brown, in 1840, and first used by Mr. Kendal, architect. The Tile being now used by architects generally, the inventor has been induced to establish a manufactory for the same at Surbiton, Surrey, and trusts, that being the inventor, that architects and builders will give him the preference, he being enabled to supply them at the lowest possible rate. The merits of the Grooved Ridge Tile consist in its forming of itself an excellent ridge, whilst the groove along the top enables the architect to introduce whatever outline of ornament he may think proper, at a cheap rate.

Ornamental Plantilles, which are now used by architects generally as an elegant covering for buildings, instead of the common square plantilles, can be supplied at the manufactory at nearly as cheap a rate.  
Two kinds of Serrated Plantilles, the round end and the pointed, have long been used in the county of Surrey, but not as a covering for roofs, only as an ornamental covering for walls of houses, such tiles being placed vertically thereon.  
The great excellence of the Serrated Common Plantilles as a covering for roofs consists in this, that when put on the building they are made to lap over each other, something in the manner of the scales of a fish, by which means they form an excellent protection against either heat or cold, a most important element of consideration. By Mr. Brown's plan the tile can be made of almost any desired colour at a trifling expense.

Orders to be addressed to Mr. ROBERT BROWN, Tile and Pottery Works, Surbiton Hill, near Kingston, Surrey.

#### BASTENNE BITUMEN COMPANY.

Office, 31, Poultry. The Directors of this Company beg leave to call the attention of ARCHITECTS, BUILDERS, and others, to the very beneficial result attendant on the use of BITUMEN in the execution of their works. Its application as a FLOORING will be found eminently useful. It is also valuable for numerous other purposes, more particularly where the object sought for is the EXCLUSION OF DAMP AND WEATHER. The French Polish and Spirit works in Trafalgar-square, which have given general satisfaction. Scale of prices per foot square:—1 inch thick, 8d.; 2 inch thick, 7d.; 3 inch thick, 6d. Works not measuring 100 feet, 1d. per foot extra. Roofing executed at 6d. and 7d. per foot square. Concrete is charged in addition according to the thickness when required. Carriage and men's time are charged extra when works are executed beyond three miles from the General Post-office. Bitumen 26 per ton, without grit. Bitumen 26 per ton, with grit.

CHARLES F. TILSTONE, Sec.

#### TO BUILDERS, CABINET-MAKERS, AND OTHERS.

**SALISBURY GLUE 60s. per Cwt.**; fine Scotch do. 50s.; Town do. 44s. and 42s.; Best Glass Paper 10s.; Scotch do. 9d.; French Polish and Spirit Varnishes 19s. per gallon; Naphtha do. 10s.; Genuine White Lead 25s.; 19s.; 24s. and 25s.; Improved Stucco Paint 28s.; Invisible Green and Choccolate Colours; Fine Green, and all Colours used in House Painting, prepared by a new process to dry in six hours, 6d. per lb.; Turpentine 21.6d. per gallon; Linseed Oil 2s. 6d.; Fine Copal Varnish 20s.; Quick Drying Carriage 14s.; Oak do. 15s. and 10s.; Paints 14s., 10s., and 6s.; Turpentine 21.6d. per lb.; Lamp Glass 3d.; Emerald Green 3d., 4d., and 6d. per lb.; Lamp Black 3d.; Emerald Green 1s. and 1s. 3d.; Whiting 1s. 3d. per cwt.; Stockholm Tar 18s. per barrel; Pitch 16s. per cwt.; Gilder's Materials, Lockers, Brouse, Damsel, Patent Gold Paint, Dies and Die-wheels, Acids, Alkali, Gums, and Salts of every kind and description at equally low prices. W. NIXEY'S Old-Established Warehouse, 22, MOOR-STREET, SEVEN-DIALS, LONDON.

#### ESTABLISHED 1821.

**THE LONDON MARBLE AND STONE WORKING COMPANY, by PATENT MACHINERY**, beg to call the attention of the TRADE to their choice collection of BLOCKS and SAWN SLAB, and being the ONLY Manufacturing Company importing Continental Marbles, thereby enabling Architects, Builders, and their superior Sawing, to prepare Chimney-pieces, &c. at 25 per Cent. lower than the common description of Work submitted generally for Sale.

FOR READY MONEY ONLY.

1/2 in. Vein Marble Slab, from 1s. 6d. per ft. sup.	
1/2 in. do. " 1s. 7d. "	
St. Ann do. " 2s. 6d. "	
Dove do. " 2s. 4d. "	
Burdish do. " 2s. 6d. "	
Black do. " 2s. 6d. "	

All other Marbles in proportion.

Vein Blocks, from 9s. per foot cube; Statuary and Vein Scenings sent to the Works Cut to Order, at 7d. per foot superficial.

The Directors invite the Public to inspect their extensive Show Rooms and Works containing the largest manufactured Stock in this country, and by the great superiority of workmanship combined with talent and artistic skill of the first order, the Company have supported their reputation unrivalled by other competitors in executing superior Chimney-pieces, Dressings for Doorways and Windows, Staircases, Slabs for Furniture and Daises, Pavings for Halls, Pavements, &c. In the department for executing MONUMENTS, TABLETS, ALTAR-PIECES, and FONTS, and for all Sculptured as well as other Works, Drawings and Estimates are submitted.

Address, ESHER-STREET, top of Holwell-street (on the left hand) MILLBANK, WESTMINSTER.

Please to be accurate in copying the Address, to prevent imposition, the Company having no connection with any other establishment but that in ESHER-STREET.

#### PEAKE'S TERRO METALLIC TILE

FROM THE TILERIES, TUNSTALL, NEWCASTLE, STAFFORDSHIRE, THOMAS PEAKE, Manufacturer, having by various means, and during a considerable time, published the name of his style of Roofing Tile, he is duty bound to announce that he has no longer any Agent there; that, consequently, he has opened a Metropolitan Depot, situated three minutes' walk from the Temple, to supply genuine articles and at just prices as possible. The Tiles are central, and goods are sent thence direct to any Place inland, or to the Mersey, to be there transhipped for the British and Irish coasts, the Colonies, &c. The Proprietor is most grateful to his numerous friends, he assures them, and the public also, that as probity and far dealness have been his aim for thirty years past (although no one can control the circumstances which too often arise, affecting alike the quality of manufacture and the time which they ought to be at their destination), so he trusts to his conduct in future to retain and increase his estimable connection. BLUE TILES for various purposes, namely, to cover roofs, both plain and pitched, and in all styles of building; they are easily laid on, as they do not require dressing, fitting, pegs, or nails; for ridges and hips of any angle, plain, capped, rolled, or with a variety of upright ornaments; for valleys; for chimneys and other uses; for paving blue, red, and drab squares, hexagons and octagons for ornamental floors; for drying kilns; for skirting; for coping walls; for chimney tops; for sewers, barrel drains, gutters, surfaces, terraces, and all other uses. BLUE BRICKS for paving blue, red, and drab squares, hexagons and octagons for ornamental floors; for drying kilns; for skirting; for coping walls; for chimney tops; for sewers, barrel drains, gutters, surfaces, terraces, and all other uses. BLUE BRICKS for paving blue, red, and drab squares, hexagons and octagons for ornamental floors; for drying kilns; for skirting; for coping walls; for chimney tops; for sewers, barrel drains, gutters, surfaces, terraces, and all other uses. BLUE BRICKS for paving blue, red, and drab squares, hexagons and octagons for ornamental floors; for drying kilns; for skirting; for coping walls; for chimney tops; for sewers, barrel drains, gutters, surfaces, terraces, and all other uses.

There are suitable ridge tiles and valley tiles, all manufactured by Mr. Peake in the same superior style. — *London's Ency. of Cottage, Farm, and Villa Architecture*, p. 648, sect. 1363; Longman & Co. 1833.

#### BUILDERS, PLASTERERS, and others

Should compare the Prices.—  
Lime Oil, 2s. 2d. per gall.  
Boiled Oil, 2s. 2d. per gall.  
Turpentine, 2s. 2d. per gall.  
Best Ground Lead, 26s. p. cwt.  
Second do. do., 24s. do.  
Third do. do., 21s. do.  
Town Glass, 5s. p. cwt.  
At PEISLEY'S noted Cheap Lead and Colour Warehouse, 58, JUDD-STREET, NEW-ROAD. Brushes, Varnishes, Dry and Ground Colours, at lowest prices.

#### PLUMBERS, PAINTERS, BUILDERS,

AND OTHERS supplied with CROWN and SHEET WINDOW GLASS, SHEET PLATE, &c. &c., for Pictures, Glazing, &c. &c., in any quantity, at Manufactory Prices.

TURPS, per gallon .. .. 2s. 4d.  
LINSEED OIL, ditto .. .. 2s. 4d.  
SHEET LEAD, in sheets, per cwt. .. 18s. 6d.  
Ditto, cut to sizes and PIPE .. .. 19s. 6d.  
WHITE LEAD (Genuine) per cwt. .. 26s. 6d.

Colours, Pipe, Brushes, &c. &c., equally low, and quality warranted. Complete Lists, priced, may be had on applying to R. COGAN, 5, Princes-street, Leicester-square, London.

**PRINT PUBLISHERS, PICTURE FRAME AND CABINET MAKERS**, can be provided with flatted Crown, flattened Sheet, and the patent Sheet Plate, Lists of which, showing the price for any Square, from 14 by 12 to 48 by 80, of Best and second quality, will be sent (gratis) upon receiving the address. Builders, Glaziers, and others having to Contract, sending a copy of their specifications, with a list of dimensions to R. COGAN, will receive by return of post the lowest prices for all quantities and sizes of Crown Sheet-Glass and Sheet-Plate, &c. Glazing estimated for, if required.

**NURSERYMEN, MARKET GARDENERS, and OTHERS** requiring small Glass, will find a greater variety of sizes (a large Stock of which is constantly on hand) than is kept by any other House in London.

**COMMON SHEET AND CYLINDER.** The advantages of Common Sheet over Crown for Glazing Skylights is decidedly great, and generally used where strength or superior appearance is required; a light 6 ft. 6 in. long, with openings of any width, needs only one flap. This Glass is considerably stouter than Crown, and may be had from 13.3d. per foot.

Also may be had,

**COGAN'S PATENT CHIMNEY FOR GAS OR OIL**, which effects a great saving in the consumption, produces a more brilliant light, prevents smoke, and is cheaper than any other Patent Chimney sold.

**LAMP SHADES AND GAS GLASSES,**

OF EVERY DESCRIPTION.

**GAS CONTRACTORS, FITTERS, GLASS MERCHANTS** and others supplied with Lists of nearly 100 Patterns, with prices affixed, sent to any part of the Kingdom gratis.

**CLOCK MAKERS, ALABASTER FIGURE MAKERS, ARCHITECTS, MODELLERS, AND OTHERS**, supplied with FRENCH ORNAMENTAL SHADES, for covering Models of Public Buildings, Geological Curiosities, &c. &c. of all sizes and shapes. List of Prices may be had on application.

French Table Flowers, China Vases, Fancy Glass Ware, and Alabaster Figures in every variety.

R. C. having just completed his Show Rooms for the above articles, begs to invite the inspection of the Public. A liberal Discount to Bazaar keepers and others.

#### SEYSSAL ASPHALTE COMPANY.

"CLARIDGE'S PATENT."

ESTABLISHED 1839.

This ASPHALTE is a Bituminous Limestone, obtained from an inexhaustible Mine at Fymont, in the Jura Mountains.

Previously to its introduction into this country, in 1839, the Material had been used for many years in France, and from its great utility was extensively patronized by the Government of that Country.

Among the various uses to which it can be applied, the following may be enumerated:—For Foot-Pavements, the flooring of the interior of the Carriage Approach to Mansions, Garden-walks, and Terraces; the flooring of Kitchens and other basement offices; also of Coach Houses and Stables, Dog Houses, Pig Houses, and other outbuildings; for Roofing, Covering of Railroads and other Arches, the Lining of underground Cellars near Rivers to prevent the ingress of water; also in covering the ground-line of Walls, to prevent damp rising (this application of the Asphalt of Seyssel is particularly recommended by the Commissioners on the Fine Arts), thereby rendering the basement stories in the worst situations both dry and warm. It is an excellent Cement, as applied to Docks, Breakwaters, or Walls built for resistance to the encroachments of the Sea. For lining of Tanks, Fish-Ponds, and other Hydraulic purposes.

J. FARRELL, Secretary,  
Seyssel Asphalt Company's Works, "Claridge's Patent,"  
Stungate Depot, London.

**COMMISSIONERS OF FINE ARTS' REPORT ON THE MEANS OF PREVENTING DAMP IN WALLS.**

THE DIRECTORS OF THE SEYSSAL ASPHALTE COMPANY have much pleasure in recommending to the notice of Architects, Builders, and others, the application of THE ASPHALTE OF SEYSSAL as the only effectual means of preventing DAMP rising in WALLS.

The following account of its application is extracted from "The Appendix to the Commissioners of Fine Arts' Report," page 18.

In 1839 I superintended the construction of a house of three stories on the Lac d'Engien. The foundation of the building is constantly in water, about 18 inches below the level of the ground. The entire horizontal surface of the external and internal walls was covered, at the level of the internal ground-floor, with a layer of Seyssel Asphalt, less than half an inch thick, over which coarse sand was spread.

Since the above date no trace of damp has shewn itself round the walls of the lower story, which are for the most part painted in oil of a gray stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is only about 24 inches above the external surface of the soil, and only 194, at the utmost, above that of the sheet of water.

The layer of Asphalt having been broken and removed, for the purpose of inserting the sills of two doors, apertures indicating the presence of damp have been since remarked at the base of the door-posts."



# The Builder.

NO. LXXXVI.

SATURDAY, SEPTEMBER 28, 1844.

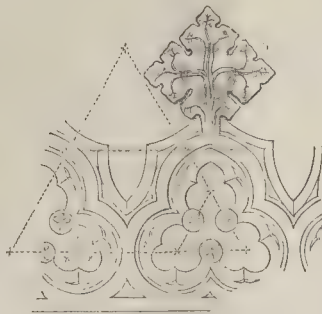


Freemasonry again this week will occupy a small portion of our columns.

We have hinted that the principal thing at present to be done towards its restoration is the gathering together of facts and details of ancient buildings: we have now, it is true, a very large collection of publications upon ancient Gothic architecture, but, unfortunately, very few of them are treated in a freemasonic manner: to a certain extent perhaps it

is well that they should be so published at the present; for as the bias of mind in those who have put forth these works has not been trained philosophically, mischief might have resulted from the issue on their part of false dogmas upon the subject of architectural construction; but while it may thus be well that abstinence be held by these authors from any approach to authoritative assertion on a subject so all-important, we must still complain of a want in them of the right kind of information: for few of them go beyond mere outward forms; whereas we require every the most minute detail, and, above all, the exact jointing of every part of their construction; so that the reason of their holding together, or failure,—the causes of fracture, subsidence, falling from the perpendicular, or any dilapidation, may be found,—and in the copying of such examples, be avoided. A very beautiful work has been just completed, (and which we shall shortly review), denominated "*Illustrations of Baptismal Fonts*," nearly all the wood-cuts of which are most exquisitely engraved; but the subjects being in perspective, without plans or sections, the publication will serve very little towards a restoration of font-work; for, on account of the want of such details, it will in the hands of country clergymen and country masons be entrusted to the use of workmen who, not learned in such matters, will, even where they have ancient details at hand, rarely copy them, choosing rather to depend upon the resources of their own minds, which have been embodied five hundred years after the fall of really good Gothic architecture. We perceive among the examples in this work one or two which we have in our engraver's hands with the necessary details. While speaking of publications upon Gothic architecture, we must notice one, only two parts of which have at present been issued, denominated, "*An Analysis of Gothic Architecture*," illustrated by drawings made from actual measurement, of existing examples throughout England, and carefully delineated to scale, by Raphael and J. Arthur Brndon, architects." We shall also reserve ourselves for a minute review of this work

when some one department of it is complete, at present only noticing that, having the plans, sections, and details, which the other wants, it is, though more roughly executed, of far more use, and especially so from many of its plates exhibiting an attempt towards the revival of the decorative branch of Freemasonry, by the insertion of many formation lines and centres for the radiation of its different curves. This, in the examples here quoted of the flowered open para-



(Scale 1½ inch to a foot.)

pet, or termination of the doorway, leading from the south aisle of St. Alban's Abbey to the cloisters which formerly adjoined the church, by the simple system of triangulation gives the centres for striking a figure apparently very complicated, and determines the dimensions of several parts of the work without further premeditation, thus leading to a certainty, as well as ease of operation, which can alone distinguish the true artist from the bungler. By and by it will be seen, that certain elements in a work first given, a sequence of freemasonic science directed all the rest. We doubt not that the greater part of this will be brought to light again, and as any discovery of the kind is made, we shall promulgate it to the utmost of our ability.

The subjects of this work are to be classed as 1st, Windows; 2nd, Doorways; 3rd, Porches; 4th, Buttresses; 5th, Pinnacles; 6th, Parapets, and other external features; 7th, Piers; 8th, Arches; 9th, Capitals; 10th, Bases; 11th Church furniture; the whole to be comprised in about 150 royal-quarto plates, and with an accompanying description.

It will be scarcely necessary for us to impress again the absolute necessity for these and all other delineations of architecture to contain the jointing of the masonry and all the other constructive peculiarities. In genuine architecture they are always part of the design, for where the workmen are left to form as they please such part of the work, failure is most commonly the result.

These in architecture, instead of being slurred over, frequently form the very pride of the work; for wherever concealment of them is allowed, the work is sure to be slighted, and inevitable failure thence occurs, which, being like a disease concealed within the human frame, is the more fatal,—the very intended remedies which are applied often butnering parts already too feeble, or absolutely cutting away the little inherent strength of the fabricated patient, cause still greater failure, if not absolute ruin.

There is a branch of architectural art which we do not see proposed to be touched upon in Messrs. Brandon's work, viz. the subject of vaultings, which is precisely the one relative to which we need the most information

from actual survey; and till which branch of art is thoroughly revived, we may say Gothic architecture will still be in a fallen state: buttresses and pinnacles are but members of a system, neither of these is anything by itself, and both together form only part of that system: the form of a vault, its thickness, the dimension and number of its ribs, the weight of the bosses, the size and projection of the buttresses, the situations and inclinations of their tablings,\* the weight of pinnacles, and the size angle and position of flying-buttresses,—all depend upon each other:—if the curves of a vaulting be straightish and steep, the boss must be large; if a vaulting be flat, the buttresses must either project greatly or be suddenly diverged inwardly by huge pinnacles; if heavy pinnacles be placed above a clere-story, the internal piers must be more capable of sustaining weight; and in general if there be no pinnacles above the outer buttresses, those buttresses must either be of enormous solid projection, or must be separated from the walling, as at Gloucester Cathedral, and many other buildings where sufficient weight of pinnacle has not been applied to reduce the vaulting-drift within buttresses of any ordinary projection: in all such delineations, every course of the masonry, and all its vertical and other jointing should be most carefully marked and all failure should be indicated, so that the reason of it may be ascertained, whether it be from accident of foundation, from insufficiency of pinnacular weight, or whatever other cause, and in vaultings the jointing of the masonry should be also given, as also the nature of the several materials, whether chalk, or lighter orderer stone, and the effect which they have experienced, whether by time, pressure, extraneous injury, or other cause.



## BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The fourteenth meeting of the British Association, to be held in York on the 26th inst., is to continue till Wednesday, the 2nd of October.

The objects of the British Association are to give a stronger impulse and a more systematic direction to scientific inquiry,—to promote the intercourse of those who cultivate science in different parts of the British Empire with one another, and with foreign philosophers,—to obtain a more general attention to the objects of science, and a removal of any disadvantages of a public kind which impede its progress. At the annual meetings of the association, the state of science in its various departments is taken into consideration, notices of recent scientific discoveries are brought forward for examination and discussion, and pecuniary encouragement is granted from the funds of the association for the advancement of particular researches which require such assistance, and appear likely to benefit theoretical and practical science. In the course of the last ten years, the sum of 10,000*l.* has been thus expended by the association exclusively in the advancement of science.

Amongst the eminent visitors who are expected to attend the present meetings, we may mention the names of Liebig, Lamont, Matteucci, Brewster, Faraday, Peacock, and Whewell. The hospitalities of Wentworth

\* Contrary to the new dogma of Welby Pugin, the water-tablings of buttresses conforming to the catenarian curve of pressure grow steeper as they approach the ground, *vide* the Temple Church, and many other ancient examples; where they are otherwise, they have mostly been unskillfully renewed. The mere eye-service of making them steeper as they are further from the ground, is unnecessary, because the elegance of their profiles can be detected from the peculiarity of not being mitered all round the work, but with the molded and table-work usually cut off perpendicularly at their sides.



House will, on this occasion, be transferred to York, and Earl Fitzwilliam will, as president of the Yorkshire Philosophical Society, entertain a very large party of the visitors at dinner, in the De Grey rooms, on Friday. We hear also that the archbishop, the highly respected patron of the society, and a constant friend and supporter of every useful design in York, will receive at Bishopsthorpe many distinguished members of the association, and exercise towards others that graceful hospitality, which operated so favourably to cement together, in 1831, the various elements that now compose the body of the association. The Earl of Enniskillen and the Earl of Rosse have also made arrangements to enable them being present on the 28th inst.

#### MINERALOGY.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 479.)

A few more years, and the dreamy speculations of geologists will have disappeared for ever; the mind of man has hitherto constantly tended to speculate on impossibilities, and in doing so, shuts itself out from nature, and the natural simplicity of truth. What reasoning being can follow the absurd calculations and mathematical demonstrations of modern philosophers? One tells you exactly how old the earth is; another measures out its sum of air and water, of hydrogen, oxygen, nitrogen, and carbon; another gives a section of the interior of the globe, and describes its composition, how long our hidden recesses of coal will last—how many miles high our atmosphere exists—how the inhabitants of tropic climes could live in frigid regions—how nature plays the see-saw game of elevation and depression, as though animated by a vital, thinking principle—how millions of worlds may be seen in the sweep of a telescope—how this earth is a huge high-pressure engine, regulating itself by funnels and safety-valves, and avenging itself by awakening our fears, destroying the fruits of our labours, and hurrying tens of thousands into eternity by its momentary summings. These are the absurdities of science, which men love to hear, in preference to the simplicity of truth; and upon which literary empirics found their fame and fleeting popularity, striking the weak mind with awe and wonder, appealing to its prejudices and superstitions, rather than to its reasoning powers. In the days of Woodward every fossil body was a *lusus nature*, or plastic freak of nature; and the theories of Bishop Burnet, Whiston, and others, are existing monuments of the taste and superstitions of the day. We have since those times advanced in knowledge at a railway pace, but our thinking faculties do not keep pace with the knowledge acquired; the bulk of the community still sigh after or adhere to the marvellous, even though it convict them of folly and inconsistency.—Empiricism will flourish!

In continuing the subject-matter of Petrology under the more comprehensive term of Mineralogy, I do so in order to treat more at length on the nature and qualities of earths, which form the bases of rocks and stones. It will be understood by every one, that the rocks, and the materials of which they are composed, are so intimately associated together, and are so dependent on each other, as to be inseparable; that rock may be seen in every stage of decomposition, and in every stage of formation, from the forming concrete to the highest crystalline rock. Under the head of calcareous substances I must, therefore, naturally embrace many bodies embraced under the head of petrology.

I have already spoken of the origin of calcareous earths, and, influenced by climate and association, their conversion into rock; but when limestone or marble is subjected to the process of burning, calcareous earth is again produced, and in this state is commonly known under the name of lime, the purest of which is yielded by calcareous spar and some white marbles. Limestone is said to be composed of lime and carbonic acid, because chemists, on the application of heat, extract a gaseous body from it, which by Priestly, Black, and others, was termed fixed air, but latterly denominated carbonic acid gas, still it is very questionable, as I have observed elsewhere, whether carbon forms the actual cementing base of the lime

stone. In 1803 Sir Humphrey reduced lime to a metal, having the colour and lustre of silver, and burning with an intense white light into quick lime.

Gypsum, commonly called plaster of Paris, is a carbonate of lime combined with sulphuric acid; the plaster of Paris being prepared from gypsum by calcination; the varieties employed for this purpose by the ancients were chiefly *alabastrites* or *alabastrum*, effervescing with nitrous acid; but moderns have applied the name of alabaster to quite a distinct substance, which being united with sulphuric acid, the nitrous acid produces no effect. The alabastrites of the Romans were most probably, according to the description given of them by Pliny primarily derived from Egypt only, whence they obtained their porphyries, and other precious building stones; for Egypt, as is manifest in the present day, abounds with this material, particularly in the neighbourhood of the ancient quarries; it exhibited, in general, a stratified appearance, was distinguished by its yellow colour, and often by brown stripes, arising from successive depositions, with some resemblance of the layers of the onyx, whence the onyx baths and pavements of the ancients. Burckhardt notices vast quantities of it in the hills near Cossier. Pliny says, our ancestors thought that onyx was only produced in the mountains of Arabia, and in no other region; it is, therefore, probable that the Romans themselves were not certain at the first of the precise spot where it was procured. It is exceedingly abundant in the chains and groups of hills and mountains running parallel to the Red Sea, and on both sides of it. At first only drinking vessels were made of it; but afterwards the feet of beds, and even seats. Cornelius Nepos says that "It was reported a great wonder when P. Lentulus Spintoe displayed amphore of onyx as large as Chian casks; yet five years after he saw columns 32 feet in length. But from more refinement in the choice of this stone, four columns of a middling size, placed by Cornelius Balbus in his theatre, were esteemed monuments of surprising grandeur. We have seen more than thirty in the dining-hall, which Callistus, well known by his power among the freedmen of the emperor Claudius, had erected at a great expense."

"Some have called this stone alabastrite; and of it little pots or boxes for ointments are formed, as in them it is supposed less liable to corrupt. When calcined, it is also used for plaster. It is produced towards Thebes, in Egypt, and near Damascus in Syria; but this last is white, and little esteemed. The best is from Carmania, the next from India, and a valuable sort is also found in Syria and Asia Minor. The worst, and that without any splendour, is that of Cappadocia. They are chiefly approved when of a honey yellow, with orbicular clouds, and little translucent. It is esteemed of little value when of a horn colour, or white, or of a glassy appearance." This peculiar marble of the ancients has been latterly found in small pieces at Mont Martre, near Paris; in Spain, in rocky masses of great beauty; and, it is said that the territory of Volterra, in Tuscany, affords no less than twenty remarkable varieties.

Patrin says, those most esteemed are the agate alabasters, to which this name is given on account of their fineness; and the onyx alabasters, which present clear and distinct layers of different colours, all of them undulated and festooned, with salient and re-entering angles, like the zones of fortification agates, of which the whole forms a figure nearly circular. The formation of these zones is owing to a play of crystallization, like that of agates; and in like manner they are always found exactly parallel among themselves, whatever may be the irregularity of their course. A perpetual circulation takes place in the interior of the alabaster, while it is still in its natural site, which arranges the various particles, of which it is composed, according to the laws determined by their mutual affinities.

The onyx alabaster is sometimes formed in sheets on a horizontal plane; and then these layers, instead of forming re-entering courses, describe straight lines, or slightly undulated; and as these layers are of lively marked colours, such as the white and red, cameos may be made of them, as they are of onyx agate.

The onyx alabaster of Sienna is of the utmost beauty; it presents layers of three bright and distinct colours—yellow, red, which is opaque,

and white, which is very transparent. The other alabasters of Italy, which are most valuable, are the agate alabaster of Sienna, which is nearly transparent, and of a fine uniform yellow; *pecorino*, which is transparent, of a uniform fawn colour, or mingled with brown veins. Malta also furnishes various alabasters, and particularly one of the colour of wax, like the agate alabaster of Sienna; its past is of the greatest fineness, and of a beautiful semi-transparency. The name of oriental alabaster is given to that which adds to a fine paste lively and distinct colours, and a hardness which renders it susceptible of a fine polish.

The celebrated sculptor Puget discovered, near Marseilles, an alabaster so transparent, that the eye could penetrate into the interior of the substance, and, to the depth of two fingers, trace the beautiful tints with which it was coloured. Guellard says that the waters of Aix, in Provence, form a deep brown alabaster, mingled with whitish zones, which make it resemble the oriental kind. This alabaster is found in an ancient conduit, built by the Romans, which brings the water from a spring about half a league from the town.

At Montmatre, and in the other hills of plaster-stone in the environs of Paris, and especially at Laguy it is very abundant, resembling the fine oriental stone; but this is, in reality, a stalactitic gypsum, which takes but a slight polish, and is much less brilliant.

Alabaster, from its beauty, and the great facility of working it, has always been in great demand as a building material; it is used for ornamental architecture and sculpture, and in climates favourable for its preservation might safely be used for the entire structure. The ancients were very fond of this material, and went to enormous expense in procuring the most varied and beautiful kinds from all parts of the world. The Temple of Fortune, built wholly of that species called *phenigites*, has long been famous. Its great beauty being in its transparency, from which alone this temple was perfectly light when the doors were shut, though it was built without a window, and had no other light but what was transmitted through the stone its walls were built with. It was anciently found in Cappadocia, and is still plentiful there, as also in Germany, France, and Derbyshire in this country. It takes an excellent polish, and is very fit for ornamental works, when there is no great strength required. Other writers observe that *phenigites* seem more applicable to a marble capable of reflecting light like a mirror, than to one transparent; and Suetonius, in his life of Domitian, observes of this monarch, that "fearful of being assassinated, he lined, in various places, the walls of the portico where he used to walk, with the stone called *phenigites*, by the reflection of which he could see every object around him."

The extreme solubility of the stone renders it ill-suited to resist atmospheric action. Dr. Watson tells us that he suspended two ounces of alabaster in a pail of water forty-eight hours, changing the water several times, and found that it had lost one-thirtieth part of its weight; but little in reality can be gathered from this experiment, for some alabasters are so soft, as to be little better than concrete masses. There is a kind of alabastrite called in Italy *fioretto*, implying that it is marked with irregular spots faintly resembling flowers. Two columns of this kind, according to Brard, are placed in the Museum at Paris; they were discovered in 1780, in the ruins of Galbium, four leagues from Rome.

Common alabaster is generally of compact texture, resembling the hardest loaf sugar; sometimes it exhibits the fibrous structure; the colour is generally of the purest white, sometimes slightly tinted with grey; but when stalactitic, its veins are sometimes yellow and brown, by errigenous infiltrations; at the old passage near Bristol, they assume a rose colour; in Nottingham they appear blue.

Alabaster, like alabastrite, is generally regarded by mineralogists as being a sinter or deposition; on the shores of Africa and Arabia it is often found interposed in thin plates or successive layers in the small calcareous hills, at other times it is evidently produced by sedimentary deposition in undisturbed waters. M. Gruelin says that it forms entire mountains, and it is certain that there are immense formations of this material crowning the vast heights of America. In many parts of the deserts it forms immense strata, being evidently the



decomposed remains of calcareous animals, chiefly polypes, and rarely exhibiting specimens of organic remains. Sometimes, in forming, it passes through several stages of change, as sulphate and common chalk; it is allied to gypsum, almost always indeed being found in contact with it, and the latter very often passes into it. The Marsigli marble is rather an alabaster than a marble. Alabaster may be distinguished as belonging to the older and newer formations, but the terms primary and secondary, when applied to this material, only tend to divert the mind from the real object of pursuit, which is to discover its origin, qualities, and the varying purposes to which it may be adapted. The hills of Egypt, in which the catacombs are disposed, might reasonably be classed under the head of alabaster formations, and there is no doubt, that were these soft calcareous beds disposed beneath a more humid climate, that they would pass into this state. In these hills all traces of animal organization are slowly disappearing before the changing hand of Time; and in some strata the change is so exceedingly slow that although thousands of years have elapsed, the mineralogical observer will not fail to observe that they are still in the infancy of progress.

Gypsum alabaster is distinguished by not effervescing in nitrous acid; it loses its transparency, its lustre, and solidity, when exposed to fire, and changes into plaster of Paris. It is so soft, as to be marked with the nail, and takes an indifferently fine polish; the most valuable variety is sensibly transparent, milk-white in colour. Many of our finest monuments, and a vast variety of statuary work are of alabaster, chiefly brought from Italy, and often wrought in that country. The alabaster of the department of Mont Blanc is of the most beautiful white, sometimes veined with grey, and receiving an exquisite polish.

Anhydrous alabaster is of several colours, white, rose, grey, and even blue, which is called celestine; the white is also found at Vizil, near Grenoble, and was used by the Romans, as appears by the column at Thim, on the banks of the Rhone, erected in the time of Aurelian. Mixed with a considerable quantity of silex, it forms the *bardiglio* of the Italians, found near Vulpino, fifteen leagues from Milan, and employed in making columns, tables, and vases. There is also white alabaster from Derbyshire; with a blue transparency from Nottingham; yellowish white alabaster from Laguy, about twenty miles from Paris, translucent and full of little cracks, used for columns and vases; bright grey alabaster, with green and yellowish spots, from Taormini, in Sicily, another remarkable spot for a variety of marbles and serpentines; translucent alabaster, of a bright yellow, waved with white, from the Isle of Goyzan, near Malta; Anydrous alabaster from Grenoble, &c. &c.

(To be continued.)

#### PIMLICO SLATE WORKS.

WE have been highly gratified this week by an inspection of the slate works exhibited in the show-rooms of Magnus and Company, at Pimlico. Slate, except as a material for coverings, and manufacturing writing-tablets, is but of recent introduction into London, and though during the last few years it has been occasionally, and in some instances extensively, employed in flooring warehouses and forming cisterns, the extent of its applicability is little known, and its most valuable properties still remain unfamiliar to the public at large. Strength far beyond that of the best Yorkshire stone, amazing durability and cleanliness surpassing that of most other material, are qualities that must recommend it to every person having a regard to comfort or economy, whilst its cool and non-absorbent nature renders it eminently suitable for shelves and tables in the larder, dairy, and other receptacles for food; for skirtings it is also particularly well-adapted. There are great varieties of slate: in some places it is found in thick laminae or flakes, and it differs in its qualities and colours. White, brown, and blue are the common colours; that under consideration is distinguished from all others by its beautiful *ebon-like* appearance, and its freedom from green spots or stains of any kind; it is produced from the proprietors' own quarries in North Wales. It is impossible to withhold

the tribute of admiration when we behold the improvements made in the manufacture of the different objects which constitute the splendid show at Pimlico. Enamels, hitherto confined to plates of metal, are now painted on slate with beautiful effect; the colours are vivid and permanent: the aid of fire, so essential to the method of painting in enamel, is also used; indeed, the intensity of the heat in various stages of the process is so great, that the slate is rendered superior to marble. Among numerous specimens that attracted our attention was

a mosaic table recently completed for Colonel Dawkins Pennant, the owner of a Welsh quarry, a billiard-table made similar to one supplied to the Duke of Wellington a short time since, some splendid imitations of mosaic pavements, chimney-pieces of the most costly description, with exquisite paintings burnt in, similar to those of the finest china or papier maché, and enriched with sculptured slate caps, pateras, &c.; some highly ornamented loo and work-tables, together with several vases and flower-pots on plinths, columns, &c.

#### TUPPER'S PATENT "SAOTAPE NOSING," OR "CARPET-GUARD" FOR STAIRS AND STEPS.

THE annexed wood-cut, fig. 1, represents a flight of stairs altered to this new patented method of laying down carpets, &c., and of ornamenting stairs, and it is a drawing of a full-sized model at present deposited at the Polytechnic Institution.

The chief peculiarities of this patent consist in the prevention of carpet or oil-cloth from wearing out at the edge of the stairs or steps, which is very perceptible in all houses; it also occasions the use of less of the fabric put down, as there is a saving of from 1 to 2 inches upon every step, and this fact is shewn in fig. 3, which is a section of two stairs, the upper one exhibiting Mr. Tupper's principle, the other being upon the old method. It will be seen that the carpet or other covering will be preserved upon the former, whilst upon the lower step it would be submitted to the action of the feet, and in that way would soon wear out.

In addition to these economical features, it also possesses that of preventing the stretching of the carpets by which the stair-rod is so frequently displaced by getting out of the "eyes." This invention is also intended to be in those houses in which the proprietors will not go to the expense of new nosings, applied by cutting through the tread

obliquely close to the nosing, as shewn in fig. 3; in the slit so made the carpe is passed tightly down, in contact with the wood-work of the stair *everywhere*, presenting no edges for wear and tear, being protected by the nosing, which may be left either plain or painted wood, or covered.

The nosings may be altogether separate from the stairs, and the method of fixing them is very simple, and is effected by wrought-iron studs and plates; they may also be secured by screws, hinges, &c., they being made of various woods and metals, and can be ornamented to any extent or pattern, either by carving or by casting, so that the staircase is intended by this invention to coincide with the architecture and appointments of the house. In the large model, the nosings are of carved oak and walnut, and the effect is both neat and decorative.

In these moveable nosings, two or more "stays" are so placed, that when the nosing is applied and is fixed, to the *riser* of the stair, these stays clamp the carpet securely, obviating the use of stair-rods and eyes. This patent is intended to be applicable to all stairs, whether of wood or stone; and in large houses, where support *might* be required, the stair-rod is proposed to be made of an arch-like form, as shewn in fig. 2.

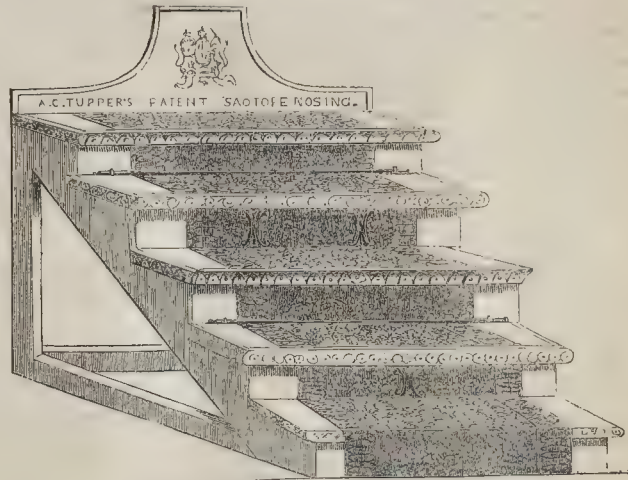


Fig. 1.



Fig. 2.

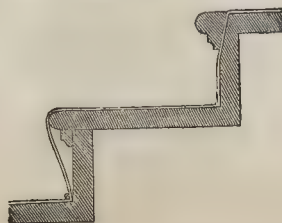


Fig. 3.



## LONDON AS IT WAS, AND AS IT IS IN 1844.

(Continued from p. 481.)

According to Dr. Johnson the term *club* is used to signify "an assembly of good fellows under certain conditions." Todd says, "an association of persons subjected to particular rules" the latter definition is more appropriate to the leading clubs of the present day. They are a kind of *hybrid* establishments, where what is wanting in witty and humorous intercourse, distinguishing the clubs of the last century, is replaced by ostentatious display, cheap living, and warranted wines, embracing all the advantages of first-rate hotels divested of their extortions. They are aristocratic larders in which any thing can be obtained for money—repositories of peers, politicians, poets, continental perambulators, and wealthy plebeians; of statesmen in place, and statesmen wanting place; of churchmen, embryo-warriors, and matured veterans; representing *en masse* the wealth and power of the country.

We have little or no account of clubs previous to the seventeenth century, possibly from their existence not being worthy of record. About the year 1570 existed a celebrated club, which met at the Mermaid Tavern in Friday-street, of which Shakespeare, Beaumont, Fletcher, Raleigh, Seldon, Donne, and others were members. Ben Jonson belonged to another club which met at the Devil Tavern. *The King's Head Club*, noticed in Tate's continuation of Dryden's "*Absalom and Achitophel*," was a celebrated whig club wearing a green ribbon as a badge.

*The Calves' Head Club* is said to have been instituted by Milton in the time of Oliver Cromwell, and its members are said to have consisted exclusively of Independents and Anabaptists, whose object was to celebrate the triumph of free principles over "kingly tyranny," and to commemorate the decapitation of Charles the First. They had no fixed place of meeting, but for some time used a house in a blind alley near Moorfields, where an axe hung up in the club-room was revered as a memento of the execution of that monarch. The bill of fare consisted of large dishes of calves' heads, dressed several ways, by which symbols they represented the king and his friends who had suffered in the cause; a large pike with a smaller one in its mouth, as an emblem of tyranny; a cod's head, typical of the king; a boar's head with an apple in its mouth, and other symbolical dishes. At the conclusion of the repast, one of the elders presented an *Ikon Basilike*, which with great solemnity was burned upon the table while the anthems were singing. After this, another produced Milton's celebrated *Defensio Populi Anglicani*, upon which all laid their hands, and took oath to stand by and maintain the same. The famous Jerry White, chaplain to Oliver Cromwell, officiated; and after the entertainment the pious memory of the fallen patriots was drunk from a calf's skull filled with wine and other liquors.

*The Virtuoso's Club* was first established by some of the principal members of the Royal Society, in order, as a witty writer observes, to propagate new whims, advance mechanic exercises, and to promote useless as well as useful experiments; being imitated in this respect by many of the literary associations of the present day. They met at a tavern in Cornhill to experimentalize, and many singular schemes are said to have emanated from the club, such as a plan for conveying the Hampstead air into town by means of pipes, &c.; they claim the merit of the invention of the barometer, having given the idea to Mr. Tompion, watchmaker.

*The Knights of the Order of the Golden Fleece* consisted of a merry company of tippling citizens and 'Change brokers, who used every night to wash away their consciences with salubrious claret; the initiating fee was one shilling and sixpence, and nicknames were attached to all the members, after their known propensities or peculiarities. This club was held for many years at the Golden Fleece, Cornhill, and afterwards removed to the Three Tuns, Southwark.

*The Surly Club* or Wrangling Society was composed of master carmen, lightermen, old Billingsgate porters, watermen, and kindred

professionals, and was held at the Billingsgate Dock, where the debates were often of a very stormy nature, and their mutual exchanges of civility with the fish women was extremely edifying to the juvenile aspirants to the civic honours of their reputed fathers.

*The Atheistical Club* was kept at a tavern in Westminster, and consisted chiefly of young libertines, whose "wish was father to the thought." They are said to have been broken up by a wag, who, clothing himself with horn and hide, suddenly appeared among them at the back of the landlord, and dispersed the assembly in the most admired disorder; they tremblingly returned after all was over, but the smell of the sulphur left by his satanic majesty had such an effect upon them, that nothing was heard of them afterwards.

*The Split Farthing Club* consisted of miserly merchants, traders, and city, who met weekly to consider on the most desirable means to attain their ends, to hear of sources of speculation for thousands, and to quarrel over the division of a farthing. *The Ugly Face Club* was named after Hatchet, a well-known usurer of that day who carried all the flesh of his face upon his nose, as a Cape sheep does upon its tail. There was also a well-known club kept in the stews of the Mint, called *The Broken Shopkeepers' Club*, who met there to proclaim their individual honesty, and rail at their creditors.

The celebrated *October Club* was a violent Jacobin club, got up to favour the Pretender in the reign of Queen Anne, when the Tories lost their power, after the trial of Sachaeral. Their designation was the result of a laughable mistake of the drawer of the tavern where they met for the first time, who used their pass-word *October* as the title; and thus christened them while they were deliberating on the name they should assume.

*The Man-hunters' Club* consisted of a parcel of young rascals, chiefly limbs of the law, who at the quiet hours of 10 and 11 o'clock at night used to sally forth in small bands, and selecting a prey, cause him to run for his life, and hunt him over Lincoln's-Inn-Fields; on their return they had to report progress for the amusement of the rest; some of them having been killed in these wild frolics, and time dispersing the rest, the club was eventually broken up. *The Mock Hero's Club* was also an assembly of lawyers' clerks of a lower grade; they held forth in Baldwin's Gardens, assuming the names of heroes and the swagger of braves, maintained with the spirit of curs.

*The Beau's Club*, or *Lady Lap-dogs' Club*, kept at a tavern near Covent Garden, consisted of fashionable non-descripts who met to compare dresses, invent new fashions, boast of their exploits with the fair sex, and toast their imaginary mistresses.

*The Wrangling, or Hurtle Farthing Club*, consisted of a set of noisy wrangling politicians who disputed upon politics and war until they came to blows with each other, settled the affairs of nations, and very often left their own to be settled by their creditors.

*The Lying Club* originated with Sir Harry Blunt, a witty gentleman, who kept an excellent table. Finding great amusement in the travellers' talent of his guests, he proposed, over the bottle, a weekly meeting, which was carried *nem. con.* One of the rules of the club was, that if any member spoke a word of truth between six and ten o'clock, he should forfeit a gallon of wine.

*The Brother's Club* was noted in the time of Queen Anne, and for many years afterwards; among the distinguished names figuring as members we find Harley, Bolingbroke, Swift, &c. *The Beef-steak Club* consisted of many of the celebrated public characters of the day; Mrs. Woffington the actress was president, being the only female member.

*The Kit-Cat Club* is one of the most celebrated clubs handed down to us; it is said to have been formed about the time the seven bishops were tried. This grand monopolizer of wit and poetry of the times in which it existed in full vigour, owed its origin to a rather curious circumstance. Boccia, a bookseller and printer, used to regale himself at a mutton-pie shop, situate at the end of Ball's-court, Gray's-Inn Lane; and his liking for these delicacies extending to the vendor of them, he persuaded him to emerge from this his cymmerian darkness, and to take a shop near

the Fountain Tavern, in the Strand, with the assurance that Boccia and his friends would pay him a weekly visit. Boccia, making himself acquainted with several poetical sprigs, persuaded them to visit the pie-man's, who, prepared for the visit, had put forth his whole culinary art, and so tickled the palates of his visitors, that Boccia had no difficulty to persuade them to renew their visit weekly, bringing their friends with them. The club was formed, Boccia was made president, and it was conditioned that he was to have the refusal of all their juvenile productions. The cook's name being Christopher, for brevity called Kit, and his sign being the Cat and Fiddle, it was agreed that the club should be known by the cognomen of the *Kit-Cat*. Boccia, in return for the poetry supplied him, published the daintiest pieces, and, by his bookselling-craft, soon spread the fame of the club over the whole metropolis. An accidental and well-told hit completed their triumph. Among the rest of the celebrated pieces that owed their origin to this witty society was that most accurate banter of the *Hind and Panther*, called the "City-mouse and Country-mouse." This completely established the fame of the club; every wit and poetical aspirant became ambitious to become a member; and the pie-man's house being found inconvenient, it was agreed to remove to the Fountain Tavern, wine being wisely considered a greater provocation to wit than mutton-pies. They, however, still continued to patronize the pie-man, who was thus enabled to supply them with the most *recherché* products of the oven; and Boccia derived still greater advantages by being the authorized and exclusive publisher of their flights of fancy. In 1764 there was a *Literary Club*, of which Johnson, Boswell, Burke, Reynolds, and Goldsmith, were members.

Of the oldest and most considerable clubs now existing are *White's* and *Brooke's*; the first consisting of Tories, and the latter of Whigs; both are conducted on very exclusive principles, and many public and honourable men have been black-balled in consequence of a defect or absence of pedigree. This power of balloting has been much abused in its exercise by both clubs. *The Union Club*, in Cockspur-street, is perhaps older than either of the above; it was formerly held in a small house at Charing Cross, and while the new house now occupied by them was building, they occupied the old Morley's Hotel. *Boodle's*, named from the proprietor and founder of it, has seen upwards of a century; it chiefly consists of country gentlemen, and is well attended in the winter season. Fuller, the present proprietor, was formerly a waiter there, and passed through all the degrees to the possession of wealth; contrary to the general usage in these cases, he is a good master, and bears his fortune with humility. *Crockford's* is too well known to need description; the late Mr. Crockford was a poor fishmonger, but being fond of betting, he was always seen on the turf, and was remarked for his shrewd and successful hits in a small way. His was the prize among many blanks—he became rapidly rich, and of course respected by the honourable fraternity of gamblers and noble horse jockeys. Having attained the summit of wealth, he turned out of doors the vicious instrument of his rise, and married his nursery governess, Miss Fitz, whose mother was wife of Richardson, a lawyer in Bury-street. Such is a small scrap in the history of the late owner of Crockford's, a building magnificently fitted up within, and every way adapted for the purposes to which it was appropriated.

(To be continued.)

**LIGHTING THE METROPOLIS.**—The following statistics, prepared by one of the principal gas companies, will give some idea of the means at present employed for lighting London and its suburbs:—There are eighteen public gas works, conducted by twelve companies; their capital amounts to upwards of 2,800,000*l.* employed in pipes, tanks, &c. The revenue derivable therefrom is estimated at 450,000*l.* per annum. There are about 180,000 tons of coals used annually; there are 1,460,000,000 cubic feet of gas made; 134,300 private lights; 30,400 public lights; 380 lamp-lighters; 176 gasometers, several of them double, and capable of storing 5,500,000 feet; and about 2,500 persons are employed in various ways.



## RETROSPECTIVE ARCHITECTURAL LITERATURE.

## THE ELEMENTS OF ARCHITECTURE.

COLLECTED BY SIR HENRY WOTTON, KNIGHT,  
From the best Authors and Examples.

(Continued from p. 469.)

First, therefore, touching *Picture*, there doth occur a very pertinent Doubt, which hath been passed over too slightly not only by some Men, but by some Nations; namely, whether this Ornament can well become the Outside of Houses; wherein the Germans hath made so little Scruple, that their best Towns are the most painted, as Augusta and Noremberg. To determine this Question in a Word: It is true that a Story well set out with a good Hand, will every where take a judicious Eye: But yet withal it is as true, that various Colours on the Out-Walls of Buildings have always in them more Delight than Dignity: Therefore I would there admit no Paintings but in Black and White, nor even in that kind any Figures (if the Room be capable), under nine or ten Foot high, which will require no ordinary Artizan; because the Faults are more visible than in small Designs. In unfigured Paintings the noblest is the Imitation of Marbles, and of *Architecture* itself, as *Arches*, *Friezes*, *Columns* and the like.

Now for the *Grotto*, here grows another Doubt, whether *Grotesca* (as the Italians) or *Antique* Work (as we call it) should be received against the express Authority of Vitruvius himself, Lib. 7, Cap. 5, where *Pictura* (saith he) *fit ejus, quod est, seu potest esse*; excluding by their severe Definition, all Figures composed of different Natures or Sexes; so as a *Syrène* or a *Centaur* had been intolerable in his Eye: But in this we must take leave to depart from our Master, and the rather, because he spake out of his own Profession, allowing Painters (who have ever been as little limited as Poets) a less Scope in their Imaginations even than the gravest Philosophers, who sometimes do serve themselves of Instances that have no Existence in Nature; as we see in Plato's *Anphibiana*, and Aristotle's *Hirco-Cervus*. And (to settle this Point) what was indeed more common and familiar among the Romans themselves, than the *Picture* and *Statue* of *Terminus*, even one of their Deities? which yet, if we will consider, is but a piece of *Grotesca*. I am for these Reasons unwilling to Impoverish that Art, though I could wish such medley and motley Designs confined only to the Ornament of *Friezes* and *Borders*, their properest Place. As for other storied Works upon Walls, I doubt our Clime is too yielding and moist for such Garnishments; therefore leaving it to the Dweller's Discretion, according to the Quality of his Seat, I will only add a Caution or two about the Disposing of Pictures within.

First, That no Room be furnished with too many, which, in truth, were a Surfeit of Ornament, unless they be Galleries, or some peculiar Repository for Rarities of Art.

Next, that the best Pieces be placed not where there is the least, but where there are the fewest Lights; therefore not only Rooms windowed on both Ends, which we call thorough-lighted, but with two or more Windows on the same Side, are Enemies to this Art; and sure it is, that no Painting can be seen in full Perfection, but (as all Nature is illuminated) by a single Light.

Thirdly, That in the placing there be also some Care also taken, how the Painter did stand in the Working, which an intelligent Eye will easily discover, and that Posture is the most natural; so as Italian Pieces will appear best in a Room where the Windows are high, because they are commonly made to a descending Light, which of all other doth set off Men's Faces in their truest Spirit.

Lastly, That they be as properly bestowed for their Quality, as fitly for their Grace; that is, cheerful Paintings in Feasting and Banqueting-Rooms; graver Stories in Galleries; Landscapes and Boscage, and such wild Works, in open Terrasses, or in Summer-Houses (as we call them) and the like.

And thus much of *Picture*, which let me close with this Note, That though my former Discourse may serve, perchance, for some reasonable Leading in the Choice of such Delights, yet let no Man hope by such a speculative Erudition, to discern the masterly and mysterious Touches of Art, but an Artizan

himself; to whom therefore we must leave the Prerogative to censure the manner and handling, as he himself must likewise leave some Points, perchance of no less value, to others; as for Example, whether the Story be rightly represented, the Figures in true Action, the Persons suited to their several Qualities, the Affections proper and strong, and such like Observations.

Now for *Sculpture*, I must likewise begin with a Controversy, as before, (falling into this Place) or let me rather call it a very meagre Fancy, strangely taken by Palladio, who having noted in an old Arch or two at Verona some part of the Materials already cut in fine Forms, and some unpolished, doth conclude (according to his Logic) upon this Particular, that the Ancients did leave the outward Face of their Marbles or Free Stone without any Sculpture, 'till they were laid and cemented in the Body of the Building; for which likewise he findeth a Reason (as many do now and then very wittily, even before the thing it self be true) that the Materials being left rough, were more manageable in the Mason's Hand than if they had been smooth; and that so the Sides might be laid together the more exactly; which Conceit, once taken, he seems to have farther imprinted, by marking in certain storied *Sculptures* of old Time, how precisely the Parts and Lines of the Figures, that pass from one Stone to another, do meet; which he thinks could hardly fall out so right (forgetting while he speaks of ancient Things, the ancient Diligence) unless they had been cut after the joining of the Materials. But all these Inducements cannot contravert the sole Inconvenience of shaking and disjointing the *Commisures* with so many Strokes of the Chissel, besides an incommodious Working on Scaffolds, especially having no Testimony to confirm it, that I have yet seen, among the Records of Art: Nay, it is indeed rather true, that they did square, and carve, and polish their Stone and Marble Works even in the very Cave of the Quarry, before it was hardened by open Air: But (to leave Disputation) I will set down a few positive Notes, for the placing of *Sculpture*, because the chusing hath been handled before.

That first of all it be not too general and abundant, which would make a House look like a Cabinet; in this Point, Moral Philosophy, which tempereth Fancies, is the Superintendant of Art.

That especially, there be a due Moderation of this Ornament in the first Approach; where our Authors do more commend (I mean about the principal Entrance) a *Doric*, than a *Corinthian* Garnishment; so as if the great Door be arched, with some brave Head cut in fine Stone or Marble for the Key of the Arch, and two incumbent Figures gracefully leaning upon it, towards one another, as if they meant to confer; I should think this a sufficient Entertainment for the first Reception of any judicious Sight, which I could wish seconded with two great standing Statues on each side of a paved Way, that shall lead up into the Fabrick, so as the Beholder at the first entrance may pass his eye between them.

That the Niches, if they contain Figures of white Stone or Marble, be not coloured in their Concavity too black; for though *Contraria juxta se posita magis illucescunt* (by an old Rule) yet it hath been subtly, and indeed truly, noted, that our Sight is not well contented with those sudden Departments from one Extream to another; therefore let them have rather a dusky Tincture, than an absolute Black.

That fine and delicate *Sculptures* be helped with Nearness, and Gross with Distance; which was well seen in the old Controversy between Phidias and Alcmeneas about the Statue of Venus: Wherein the first did shew Discretion, and save Labour; because the Work was to be viewed at good Height, which did drown the sweet and diligent Strokes of his Adversary: A famous Emulation of two principal Artizans, celebrated even by the Greek Poets.

That in the placing of standing Figures aloft, we must set them in a Posture somewhat bowing forward; because (saith our Master, Lib. 3, Cap. 3, out of a better Art than his own) the visual Beam of our Eye, extended to the Head of the said Figures, being longer than to the Foot, must necessarily make that Part appear farther; so as to

reduce it to an erect or upright Position, there must be allowed a due Advantage of stooping towards us; which Albert Durer hath exactly taught, in his forementioned Geometry. Our Vitruvius calleth this Affection in the Eye, a Resupination of the Figure: For which Word (being in truth his own, for aught I know) we are almost as much beholding to him, as for the Observation itself: And let thus much summarily suffice, touching the choice and use of these adorning Arts. For to speak of garnishing the Fabrick with a Row of erected Statues about the Cornice of every Contingation or Story, were Discourse more proper for Athens or Rome, in the time of their true Greatness, when (as Pliny recordeth of his Age) there were near as many carved Images as living Men; like a noble Contention, even in point of Fertility, between Art and Nature; which Passage doth not only argue an infinite abundance both of Artizans and Materials, but likewise of magnificent and majestic Desires in every common Person of those Times, more or less according to their Fortunes. And true it is indeed, that the Marble Monuments and Memories of well-deserving Men, wherewith the very Highways were strewn on each side, was not a bare and transitory Entertainment of the Eye, or only a gentle Deception of Time to the Traveller, but had also a secret and strong Influence, even into the advancement of the Monarchy, by continual Representation of Virtuous Examples; so as in that Point, Art became a Piece of State.

Now, as I have before subordinated *Picture* and *Sculpture* to *Architecture*, as their Mistress; so there are certain inferior Arts likewise subordinate to them: As under *Picture*, *Mosaic*; under *Sculpture*, *Plastick*; which two I only nominate, as the fittest to garnish Fabricks.

*Mosaic* is a kind of Painting in small Pebbles, Cockles and Shells of sundry Colours; and of late Days, likewise of pieces of Glass, figured at pleasure; an Ornament, in truth, of much Beauty, and long Life, but of most use in Pavements and Floorings.

*Plastick* is not only under *Sculpture*, but indeed very *Sculpture* itself; but with this difference, that the Plasterer doth make his Figures by Addition, and the Carver by Subtraction: wherupon Michael Angelo was wont to say somewhat pleasantly, that *Sculpture* was nothing but a Purgation of Superfluities: For take away from a piece of Wood, or Stone, all that is superfluous, and the Remainder is the intended Figure. Of this *Plastick* Art, the chief use with us is in the graceful fretting of Roofs; but the Italians apply it to the mantelling of Chimneys, with great Figures; a cheap piece of Magnificence, and as durable almost within-doors, as harder Forms in the Weather. And here, though it be a little Excursion, I cannot pass unremembered again, their manner of disguising the Shapes of Chimneys in various Fashions, whereof the noblest is the Pyramidal; being, in truth, a piece of polite and civil Discretion, to convert even the Conduits of Soot and Smoke into Ornaments; whereof I have hitherto spoken so far as may concern the Body of the Building.

Now there are Ornaments also without, as Gardens, Fountains, Groves, Conservatories of rare Beasts, Birds, and Fishes: Of which ignobler kind of Creatures, *We ought not* (saith our greatest \* Master among the Sons of Nature) *childishly to despise the Contemplation; for in all things that are natural there is ever something that is admirable*. Of these external Delights, a Word or two.

(To be continued.)

VENTILATION, AND INTERMENT IN TOWNS.  
—Mr. Parker has given notice of his intention to bring in a bill next session, "to enforce the ventilation of workshops in certain cases;" Mr. Mackinnon has put a notice on the books, that he will "call the attention of the House to the necessity of forming some legislative enactment, in accordance with the Reports of the Committee on the Health of Towns, and of the Ecclesiastical Commission, in which the practice of interment in the large towns and under Churches and Chapels is recommended to be abolished."

\* Arist. lib. 1, Cap. 5, de part. Amin. Δὲ μὴ θυγατρὶν παιδικῶς τὴν περὶ τῶν ἀνθρώπων ζῶον ἐπισκεψάμεν. Ἐν παντί γὰρ τοῖς φυσικοῖς ἐστὶν αὖρα.



## A R B R O A T H I N F I R M A R Y .



F R O N T E L E V A T I O N .

SCALE, 50 FEET.



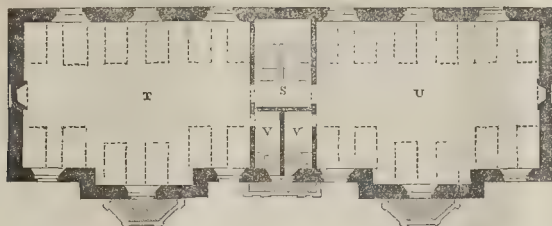
F L A N K E L E V A T I O N .



P L A N O F T H E G R O U N D - S T O R Y .

SCALE, 50 FEET.





PLAN OF THE UPPER-STORY.

This building, which is just completed, has been erected by public subscription, at a cost of about 1,650*l*. It is intended for the benefit of the town of Arbroath (Forfarshire) and the surrounding country, the object of the institution being to provide medical and surgical assistance, and other necessary means of relief and recovery for those, especially the indigent poor, suffering under accidents and disease, more effectually than these could be had in their own houses; and likewise to afford the means of separating from the healthy those who are affected with certain contagious diseases, so as to arrest the spread of contagion.

The following general description of the building has been furnished by its architect, David Smith, Esquire, 31, Reform-street, Dundee:—

"The building is erected on an elevated site at the west end of the town of Arbroath, and from which an extensive view of the surrounding country, St. Andrew's Bay, and part of the German Ocean, is obtained. The grounds belonging to the infirmary contain nearly an acre and a half,\* inclosed on three sides by a stone wall, about 7 feet high, and in front by a parapet-wall about 3 feet high, surmounted by an iron railing. The best free stone found in the district was used in the construction of the walls of the building; the front and both ends are faced externally with Ashlar-work; all the other walls are externally of the best rubble-work; the internal division-walls are constructed of brick-work. The lobby, kitchen, wash-house, dead-house, porter's-room, coal-house, and passages, are floored with Arbroath pavement; the stairs are formed of polished stone; the flooring of the wards and other apartments consists of Petersburg battens 1½ in. thick, with grooved and tongued joints, and supported by Memel timber joists. The doors, windows, and other finishings are of American yellow pine. The roof couplings are of Memel timber, the sarking of Petersburg timber,† and the roof is slated with the best Easdale slates. The walls and ceilings in the respective apartments are finished with three coats of limo-plaster, and with stucco cornices run in all the ceiling-angles.

"VENTILATION.—Ventilation is carried on in the wards by means of fresh-air-flues constructed in the walls, which are carried round at the back of the skirting-boards, which have openings in them to admit the fresh air into the wards; these flues are tempered by valves.

"The removal of the foul air from the wards is accomplished by means of ornamental openings formed in the ceilings, connected with flues, which descend in the back wall of the building, and are joined to a main flue constructed under the ground-floor, which leads to the extracting-shaft W. In this shaft there is placed a furnace, which is to be kept constantly burning for the purpose of causing the flues to ventilate by rarefaction.

## REFERENCES.

- A. Consulting-room.
- B. Housekeeper's-room.
- C. Servants'-room.
- D. Medicine-room.
- E. Ward for maimed females.
- F. Ward for maimed males.
- G. Bed-closet.
- H. Bath-room.
- I. Water-closet.
- J. Store-place.
- K. Lobby.
- L. L. Passages.
- M. Closet under stair.
- N. Kitchen.

\* Scotch, we presume. † Trusses. ‡ Slate-boardings.

- O. Porter's-room.
- P. Wash-house.
- Q. Coal-house.
- R. Dead-house.
- S. Staircase-landing.
- T. Fever-ward for females.
- U. Fever-ward for males.
- V. V. Water-closets.
- W. Extracting shaft. Servants' bed-rooms in attics, over kitchen, &c. &c.

This institution originated under the auspices of Alexander Mann, Esq., as chief magistrate of Arbroath, and through the exertions of him and others the necessary funds were soon provided. The Right Hon. Lord Panmure, the patron of the institution has bestowed upon it, towards an endowment, the munificent sum of 1,000*l*. Its management is vested in a board consisting of a patron, a president, vice-presidents, and directors. Means are now being used for procuring the necessary furnishings, and it is proposed that the house shall be opened for the reception of patients in the early part of the ensuing winter.

To the preceding description we quote the following from a Report, dated 8th of July, 1844:—"The general meeting of subscribers, held on the 6th of June, 1843, having approved of the site of the infirmary on the High Common as then proposed, the ground was shortly afterwards exposed to sale by 'public roup,' as required by law in regard to burgh property, and was purchased by the committee at the nominal 'feu-duty' or 'ground annual' of 1*l*. per annum. Possession was immediately thereafter given to the committee on behalf of the subscribers. The titles have not yet been made out to this ground, but the right is secure under the articles and minutes of roup, followed by possession and payment of the feu-duty or ground annual. Your committee recommend that a proper conveyance should be taken from the magistrate and council, and that it should be taken in favour of themselves and their successors in office in trust for behoof of the subscribers to the infirmary. By making the corporation of the burgh the trustees, perpetual succession will be insured, without the necessity of any renewal of the investiture, and the right will continue clear and complete without expense.

"While on this subject, it may be proper to mention that shortly after the general meeting of the subscribers, at which the proposed site had been approved of, objections were stated to it by the medical practitioners of Arbroath (with the exception of Dr. David Arrott, who was a member of committee), as being in a situation which, though unexceptionable in point of free air, prospect, and beauty, they yet considered exceedingly inconvenient, and tending to increased expense to the institution, on account of its distance from the centre of population. The committee gave instant attention to these objections; they communicated with the medical gentlemen in writing and by personal conference; and after discussion and mature deliberation, they continued of opinion that the site unanimously adopted by the committee, and approved of and confirmed by the general meeting of subscribers, was the best site attainable, and they still remain of this opinion without a dissenting voice. They have recorded in their minutes the objections and discussions, that reference might be made to them, if necessary.

"Having acquired the ground for the site, they lost no time in proceeding to contract for the erection of the building, agreeably to the plans and specifications that had been adopted and approved of by the subscribers. Estimates had been advertised for and received, and the

committee preferred as the most eligible the tenders for the whole work (exclusive of the enclosing wall) given in by Mr. David Murray, mason in Forfar, and Messrs. Nicol and Wallace, wrights in Arbroath, at the contract price of 1,123*l*. 10*s*. A contract was accordingly entered into with these parties. The work was forthwith commenced, and has been finished in a most satisfactory manner. The contract price has been paid, and there only remains to be settled for some extra work of no great amount, which was judged necessary, and is now nearly completed. The architect and inspector, Mr. Smith, has communicated to your committee from time to time his approval of the manner in which the contractors have fulfilled their engagements, and there is every reason for your committee reporting their satisfaction with the building.

"Early in the spring the committee procured from Mr. Smith a plan and specification for the erection of boundary walls and office-houses, with railing on the parapet wall, and gate for the main entrance to the infirmary. Estimates were taken in for this work. Mr. Murray, one of the contractors for the infirmary, was preferred as being the lowest offerer for the 'mason work,' at the sum of 135*l*; and Messrs. William Munro and Co., founders in Arbroath, were preferred as contractors for the 'smith work,' at 24*l*. 15*s*. These contracts have also been executed. The contract price of the 'smith work' has been paid; and Mr. Murray has received 125*l*. on account of the 'mason work.'"

## SUGGESTIONS ON THE MANNER OF MAKING ARCHITECTURAL NOTES.

## Professor Whewell, on Describing Churches.

By comparing actual buildings with descriptions conveyed in precise and determinate phraseology, the architectural observer will become aware how completely words alone may avail to preserve and transmit distinct and adequate conceptions of an edifice; and when he has thus begun to feel the import and value of technical language, a little practice and contrivance will enable him thus to register for himself or for others the principal features of any building which may attract his notice.

In describing a church, mention first what is the GENERAL STYLE of the work (Romanesque, Transition, Complete Gothic, Perpendicular, &c.), for this both conveys a general notion of its appearance, and modifies the interpretation of the terms afterwards used. Describe next the GROUND-PLAN, and then the VAULTING, for these being given, the number and position of almost all the members is determined, and the rest of the description will have a reference to a known arrangement of parts. In the vaulting, mention whether it is Roman vaulting, or some other form of quadripartite or sexpartite, &c.; if quadripartite, whether both transverse and longitudinal ribs are pointed, whether in single or double compartments; the ribs, where they occur, their form and mouldings; and whether the side aisles are of the same kind as the centre aisle. Describe next one COMPARTMENT of the inside, selecting that which is most frequently repeated, and noticing, first, the piers, whether they are columns, pilasters, shafts and pier-edges, clustered shafts, or piers of clustered mouldings, and what the difference is of the intermediate piers, if any, their capitals, whether Corinthian, cushion, sculpture, upright leaves, woven foliage, &c.; the aisles, whether they have pillars like those of the piers (their vaulting having been already noticed), what are the windows, and whether the wall is ornamented; then the pier-arches, whether round or pointed, and whether the arch is plain, rebated, chamfered, or with what mouldings; then the triforium, whether blank, pannelled, of detached shafts, with wall behind, or of openings; the openings, whether single or double, &c., or subdivided, and if either double or subdivided, how separated, whether by shafts, clustered shafts, pilasters, &c., and whether with round or pointed openings; then the clerestory, the windows, whether single, in pairs, or in triads; if not single, how separated, with what mouldings, what capitals to the vaulting shafts, and what mouldings are used when they offer any thing remarkable.

Afterwards notice any particularities or deviations from this compartment which ap



pear in the *apse*, the *intermediate compartments*, the *transepts*, in the supporting piers of the *crossing*, and at the *west-end*.

In describing the *exterior*, the order of description does not appear to be of much consequence. The most important points are the number and position of the *towers*, whether they are east, at the *crossing*, &c.; whether their sides end in gables, and whether these have strong or light cornices, especially the horizontal lines; how the different stories of the towers are decorated; the *apses*, whether round or polygonal, whether they have the peculiar *apsidal gallery* of the Romanesque,—the finishing of the wall, whether by a corbel table with notches, round or pointed, plain or moulded; or by a cornice, balustrade, canopies, pinnacles, &c. The *buttresses*, also, or their absence, should be remarked; what projection they have, what offsets, what termination, how ornamented. *Flying buttresses* are to be noticed, and how they are stopped and supported at the lower end. Finally the *west front* is a leading part of the building when it is ornamented, and the *porches* in the other parts; and these portions often contain the richest and most ornamented workmanship in the whole edifice. If the church has many subordinate members externally, and is remarkable in detail, it may be proper to take notes of a single *compartment* externally from the ground to the roof in order. The *windows* in particular will require attention; the mouldings of the window-sides, the drip-stones, canopies, and panelings which accompany them, and especially the *tracery*. If any one were to observe in succession a great number of different windows of the complete Gothic, he would probably be led to devise some simple and technical phraseology or notation by which the form of the tracery might be conveyed.

By adopting a method such as is here suggested in the examination of churches and other similar buildings, the architectural student might throw much valuable light upon the history of this branch of his profession, for all sound speculation must be founded on the accurate knowledge of an extensive collection of particular instances.

#### THE MAHOGANY TRADE.

THE mahogany annually exported from Honduras by British settlers may be calculated at about sixty square-rigged vessels, at 120,000 feet each, value about 400,000*l.*; and the value of Guatemalan produce, such as indigo, cochineal, &c., exported, amounts to three times as much again. It is supposed that the sales of one commercial house at Belize average 15,000*l.* currency per month, which is one-twentieth part of what is sold, and would make the sales of British dry goods imported for the supply of that colony and Guatemala, at least 2,500,000*l.* currency, or about 1,500,000*l.* sterling.

The number of ships entered inwards and outwards during the last three years has averaged 100; their aggregate tonnage being 20,000.

The inhabitants of Belize are dealers only in the raw material; the mahogany tables of their dwellings being manufactured in England, whilst the wood from which they were cut travels upwards of 15,000 miles before it reaches the spot of its ultimate destination, that being the same shore on which it grew. One of the largest of the logs ever imported into England was bought at Liverpool for 37*l.*, and was supposed to have returned to the manufacturer at least 1,000*l.* If cut into veneers, 550*l.* of this sum would be paid in wages to British mechanics.

Not long since, Messrs. Broadwood, the distinguished piano-forte manufacturers, gave the enormous sum of 3,000*l.* for three logs of mahogany! These logs, the produce of a *single tree*, were each about fifteen feet long and thirty-eight inches square; they were cut into veneers, of eight to an inch. The wood was particularly beautiful; capable of receiving the highest polish, and when polished, reflecting the light in the most varied manner, like the surface of a crystal; and from the wavy form of the pores, offering a different figure in whatever direction it was viewed.

Dealers in mahogany generally introduce an *auger* before buying a log; but, notwithstanding,

they are seldom able to decide with much precision as to the quality of the wood: so that there is a good deal of lottery in the trade. The logs for which Messrs. Broadwood gave so high a price were brought to this country with a full knowledge of their superior worth.

The cutting of mahogany at Honduras takes place at two different seasons; after Christmas and towards Midsummer. The negroes employed in felling the trees are divided into groups of from ten to fifty. The trees are cut about twelve feet from the ground, and are floated down the rivers.—*Symmond's Colonial Magazine*.

#### CHURCH-BUILDING INTELLIGENCE, &c.

On the 4th inst. the Lord Bishop of Gloucester and Bristol consecrated a new church at Eisey, near Crickdale, in place of a former one (which having become unsafe, had been taken down), within the churchyard, but on a different site. This church is a simple Norman structure, built at the sole expense of Earl St. Germans, to hold about 120 persons on open seats, which are moveable, the floor being of stone. The circular *apse* contains six windows filled with stained glass, the present of a lady, and painted by herself in diaper. The capitals of shafts, stone pulpit, corbels, and other parts, have been left entirely plain, to be enriched at future opportunities. The communion-table is of stone, detached some space from the wall, and the floor round it is laid with encaustic tiles. There is a *littern* on a single shaft, copied from an ancient example, and a small kneeling desk within the chancel; both of which, as well as the font, are plain, and well suited to the church.

*New Church in the Parish of St. Giles, Westminster.*—The steeple of this church being complete, the scaffolding has been taken down from it: the crowning spire rises from the square tower by corbelling over, and not by the use of squinches, pinnacles, and flying-buttresses. The clerestory walls are now in progress, and are supported by six detached octagonal piers, the shafts of which are of blue-lias lime-stone, which is hard and will take a rough polish.

*New Church at Crewe.*—A new church is being erected at Crewe by the Grand Junction Railway Company, for the use of their workmen. It is to be a neat blue brick structure, with stone coignes in the Anglo-Norman style of architecture. At present service is conducted in a room of the company's works. The Rev. J. Appleton has been the chaplain, but on account of ill-health he has resigned.—*Liverpool Chronicle*.

*Holy Trinity Church, Halsted.*—The style and character of this building is Gothic, with tower and spire. Accommodation is provided for 703 persons; namely, in pews 199, and in free seats 504. The first stone was laid in the month of July last year.

Her Majesty's Commissioners for Building New Churches have at the present time under consideration plans for a new church to be built in the parish of Woolwich, in the county of Kent, and at Morton and Stockwith, in the parish of Gainsborough, in the county of Lincoln.

A stone pulpit, elaborately and beautifully worked, is about to be placed in the parish church of Langford Budville, the gift of Captain Perceval, Bindon-house, Milverton; and another is in preparation for Oldridge chapel, near Crediton.

A beautiful sculptured font, of Caen stone, is about to be placed in Broadcliff church, the gift of the Hon. and Rev. Charles Courtenay and Henry Acland, Esq., son of the worthy Bart. of Killerton.

On Friday week a new church at Rotsclair, in Belgium, on which the masons and carpenters were still at work, but which was nearly finished, fell suddenly to the ground. Seven men were injured, but no life was lost.

**PUBLIC WALKS AT CONGLETON.**—We understand that John Latham, Esq., town clerk of Congleton, is in communication with the Lords of the Treasury, for the purpose of obtaining a grant for the construction of public walks in the Town Wood, which it is hoped will be successful. The plans are already made, and it is expected that workmen will very shortly be employed in carrying them out.—*Macclesfield Chronicle*.

#### RAILWAY INTELLIGENCE.

*New Branch Railway to Blackpool and Lytham.*—A special general meeting of the proprietors of the Preston and Wyre Railway, Harbour, and Dock Company, took place at Fleetwood on Friday. The purpose of the meeting was to consider and determine the propriety of applying to parliament in the next session, for power to enable the company to construct two branch railways from the Preston and Wyre line—one from near the Poulton station to Blackpool, and the other from the Kirkham station to Lytham; to consider and determine the measures to be taken for raising such further capital as may be advisable or expedient in connection with them; and for the purpose of giving such powers and authorities to the directors of the company as might be necessary in relation to these matters. Sir H. Fleetwood, Bart., M.P., and other gentlemen of influence, were present. Sir H. Fleetwood stated that the directors had procured a survey and estimate of the line from Poulton to Blackpool; and it was calculated that the total expense would be about 20,000*l.*, 24,000*l.*, or, at the utmost 25,000*l.* The consent of every land-owner, he believed, had been obtained. It was not at present contemplated to take immediate measures for the formation of the line from the Kirkham station to Lytham, at least until they were more certain as to the success of the other. It would save expense, however, to make an application to parliament for the construction of both lines. A call of 8*l.* 6*s.* 8*d.* would be necessary for both lines; but in the meantime a call of only 4*l.* 3*s.* 4*d.* upon the 6,700 shares would be necessary. Resolutions in accordance with the object for which the meeting was called were carried unanimously.

*English and Foreign Railways.*—In his evidence before the select committee of last session, Mr. Laing, of the Board of Trade, stated that the average railway charges in Belgium, for 100 miles, are for the first, second, and third-classes respectively, 10*s.* 7*s.* 6*d.*, and 4*s.* 8*d.*; in Germany, 12*s.*, 8*s.* 6*d.*, and 5*s.* 6*d.*; in France, 15*s.*, 10*s.*, and 8*s.* 6*d.*; and in England, 25*s.*, 17*s.*, and 10*s.* As one cause of the comparatively high rate in England, he states that the average cost of railways in this country is three or four times that of the German lines; double that of the Belgian, and greater by one-half than the cost of the French. Mr. Laing is of opinion that the advantage is in favour of the English in regard to speed; but that in point of accommodation the second and third-class passengers in Belgium, and on the Continent generally, have the decided advantage over those of the same classes in England.

*Proposed London and Portsmouth Atmospheric Railway.*—A very numerous meeting of the inhabitants of Portsmouth was held on Monday evening, at which the preliminary measures for a direct line between London and Portsmouth were resolved upon unanimously. The proposed line is to be an atmospheric one, and extend from Epsom (for a railway between which place and Croydon an Act had already been obtained) to Godalming, Petersfield, Havant, and on to Portsmouth. From the statement of Mr. Cubitt, the engineer, it appears that the promoters of the plan pledge themselves that the fares will not be more than two-thirds of the present fares by the South-Western route, and, in addition, the journey is to be made in half the time. The line will be about eighty miles in length.

*South-Eastern Railway.*—The South-Eastern company has declared a dividend of 10*s.* 6*d.* per share on the old shares, and 1*s.* 3*d.* per share on those issued in February last. The feature of the meeting was the discussion arising from a limited Liverpool opposition, which, however, was defeated. It was contended that a number of the Liverpool shareholders are not satisfied with the manner in which the business of the railway is conducted, particularly in reference to goods traffic; but after a stormy debate of several hours, the resolutions proposed for the appointment of committee were rejected.

*Copenhagen, Sept. 14.*—Mr. Radford, an English civil-engineer, has been chosen, and has arrived here to direct the execution of the iron railway between Copenhagen and Roskilde.



*South-Western Railway.*—A report has prevailed that the South-Western Company intended to carry on a branch from Salisbury to this city (Exeter). We believe we have authority to state that the intention has been abandoned. Mr. Locke, the engineer, has been surveying the country west of Yeovil during the past week, with the view of extending the South-Western line to Exeter, but he found the difficulties of the country so great, that the directors will not this year attempt to carry their line further than Yeovil.—*Western Times.*

*One Thousand Miles an Hour by Railway!*—M. Arago says the atmospheric pressure principle may be so applied as to insure safe transit at the rate of six leagues a minute, or 1,000 miles an hour.

## CRACK HOUSES.

In the neighbourhood of the Hampstead-road may now be seen on a large painted board, "This ground to be let for building on; *money* advanced if required." No comment is required on such a notice as this. A few

W. T. B.

T. W. M.

TO THE EDITOR OF THE BUILDER.

SIR.—Inference to an advertisement in your last number, my flues are not at "Ebury Wharf," and consequently are denounced as "spurious imitations," against which "the public is cautioned." (1.) I have manufactured the tubular flues for chimneys, for heating churches, green-houses, and the like, for *more than twenty years*, yet that advertisement calls them "an entirely new construction of chimney." Any architect who has practised in the county of Stafford during that period can prove the truth of what I have asserted. It has been my habit to make the tubes with either plain or rebated joints, also pieces to form angles and curves, and all of *proper texture*. In 1835 (I think it was) I was entrusted with an order for rebated flues for the chimneys of King Edward's School at Birmingham (Charles Barry, Esq., architect, Mr. Cowlishaw, clerk-of-works), and it was executed satisfactorily. Where was the patent for these things at that time even, not to go further back? If I can prove my facts, as I undertake to do, together with a fact to place in *juxta position*, viz., that the first cognition



about the Ebury Wharf concern dates some three years ago, the saddle will be placed upon the right horse, and the charge of "imitation" will not injure me. (2.) The oval flues for brickwork are of more recent origin, as far as I know, than tubular ones; but I formed and published the first, therefore they are public property. The first lot were used at Moreton Hall, Cheshire (Edward Blore, Esq., architect, Mr. Oliver, clerk-of-works), they were designed by Mr. Oliver, as I stated some time afterwards in the *Civil Engineer and Architects' Journal*, upon first making them public. I have regularly sold them since, and shall continue to do so, without any risk of the charge of imitation being proved against me.

Having abundant and easy means as regards the "Patent," I shall consider the word "spurious," in reference to the fabric, or mixture of materials composing these flues, and this I know to be ALL-IMPORTANT. Having then supplied them for a quarter of a century without any complaint, establishes their legitimacy and adaptation to the objects in view. From the appearance of those at Ebury Wharf, however, and referring to a letter which I received from thence in May last, I conclude that the parties have been, as they continue to be, ignorant of the fabric or mixture (the public can test both the flues and the parties easily), and consequently though their material is legitimate and adapted to drains were always cold, it would, I fear, turn out "spurious" in chimney and other flues, which are subject alternatively to so great variations of temperature, to expansion and contraction, and to the rubs and knocks of cleansing engines.

Now, as to the word "caution" offered to the public—forced as I was into extensive business at the age of fourteen by the death of my father—possessing as I now do 30 years' experience—I admit the wisdom and prudence of caution being in lively exercise. Also, I give due praise to honourable efforts to excite that caution in others. The public, however, are aware that a man may sometimes cry loudly and long "stop thief," pointing all the while in the wrong direction, namely, at his neighbour instead of himself. So, in like manner (without intending discourtesy to Ebury Wharf, or to any who are interested in it), the public will weigh the facts of the case, and do justice; they will apply the words "imitation" and "spurious" rightly. In consideration too of a firm of yesterday, all but unknown, on the one hand, compared with one who is known on the other; who was bred to the trade; who has occupied a long period in it; whose perseverance in it is acknowledged; by whose capital and skill, brought to bear upon it, not his own family merely, but the families of workpeople live in comfort, and, in more than one way, the community is benefitted; in such a comparison the public is not wont to exhaust its "caution" upon the assailed, but, in justice, reserves more than a little for the assailant.

I am, Sir, your obedient servant,  
THOMAS PEAKE.

22, Water-lane, City,  
from "The Tileries Tunstall."

#### NEW BUILDING-ACT.

Sir,—Having some ground to build about twenty pairs of fourth-rate detached cottages on, and wishing to begin them before January 1st, 1845, in order not to come under the restrictions of the new Act of Parliament, I should feel obliged if you would inform me how much footings I ought to put in to constitute the term "already built," which is expressed in the new Act.

September 16, 1844.

FELIX.

[It does not appear by the definition in section 5 of the new Act, that any considerable quantity of a building is required under such circumstances to be done; "commenced" is the term used, and a year thence afterwards is allowed for the completion of the buildings "fit for use."—Ed.]

STATUS OF NAPOLEON.—In the open space where the rue de l'Université and the Grande Chaussée of the Esplanade of the Invalides meet, workmen are employed in making the enclosure of the ground on which the equestrian statue of the Emperor Napoleon is to be erected. In a short time the works for the pedestal, on which it is to be raised, will be begun.

#### Miscellaneous.

##### THE PORCELAIN PAGODA AT NANKIN.

In a work recently published, and entitled "An Aide-de-Camp's Recollections of Service in China, by Captain Arthur Cunynghame," is an account of a visit which the author and his companions made during their stay at Nankin to the far-famed porcelain pagoda, which so many travellers have desired to see, but have been refused. The exterior and interior are covered with plates of porcelain so neatly joined together as to give the work an appearance of being made of one entire piece. "A wooden of the tower, together with a short description of it, was sold to the visitors for a few cash,\* from which I will here quote a line or two, having received a translation from a friend. The paper stated that a pagoda had been, at various times, erected on the spot where the present porcelain tower stands, records of which are still retained as far back as the second century of the present Christian era, each successively, as they fell into decay or were destroyed by fire, being replaced, either at the expense of government or by funds supplied from the generosity of some pious private individual. The credit of rebuilding the present edifice is ascribed to two very celebrated emperors. The usurper, Gong-Lo (a monarch of the Ming house), being about to remove his capital to the north, erected this pagoda in honour of his mother, the celebrated spouse of Hang-Woo, as a tribute to her worth, and called it the Pagoda of Gratitude, Paon-gan-tai, or Poant-gan-she. The pagoda, it states, was commenced in the tenth year of Gong-Lo, and was not finished until the seventh year of Lenatik, taking a period of nineteen years for its accomplishment. It was built under the direction of one Whang-ghe-tai, a member of the Board of Public Works, and cost, so says this chronicle, 2,485,484 taels of silver, or 621,371*l.* sterling. It is 329 covils four inches in height, having nine stories, with a golden globe on its top. The colours were given to the stones partly by a kind of gilt amalgam, and also by glazing, so as to be imperishable and lasting through future ages; and the best proof thereof is, that it has never required repair, with the exception of its having been struck with lightning about forty-two years since, and that it still retains all the freshness of a recently-erected building. An iron rod, of considerable thickness, towers above the whole building, encircled by rings of gold, from beneath which there are 152 chains hanging gracefully down; 140 lamps, requiring no less than 64 catty (about nine gallons) of oil for a single night's consumption, are fixed in the niches, shedding their lustre around equally upon the virtuous and the wicked, and removing darkness from amidst mankind. Gold, silver, and pearls adorn the structure, and render it an object of the highest admiration." When at the top of the pagoda, Captain Cunynghame and his companions added their names to the many Chinese autographs that were scribbled on the walls, and uncorked sundry bottles of champagne to drink her Britannic Majesty's health, and success to her arms.

PUBLIC BATHS AND WASHHOUSES IN LONDON.—A project is on foot, which, if realized, will materially benefit a large portion of the London community. It is proposed to establish baths, coupled with washhouses for clothes, on such a scale as to place the comforts of cleanliness within the reach of all. "It is contemplated," says the *Spectator*, "to begin with four foundations, three on the Middlesex, and one on the Surrey side of the river, at a total expense of 30,000*l.* The annual charge thereafter to be met by the payments of those who use them; 1*d.* for a cold, and 2*d.* for a warm bath (the use of a towel inclusive), being the rates for the bathers; while at the washhouses all appliances and means for six hours' scrubbing, drying, and ironing, are to be supplied for 2*d.* With the aid of an income to be derived from a few baths of a more expensive kind, the institutions are thus expected shortly to compass their own support. It cannot be doubted that the 30,000*l.* will speedily be raised."

\* A cash is a small copper coin with a hole in the centre, 1,200 of which are about the value of one Spanish dollar.

TESSELATED PAVEMENTS.—With all admirers of the arts and sciences, we hail with satisfaction the great improvements within the last few years in pavements, a subject so much neglected for many ages. Since the days of the Reformation our floors have been laid with little else than rude coarse flag-stones, raw boards, or at best, chequers of white and black marble, while the use of the handsome mosaics of the Romans, in the universal adaptation of classical models, seems to have been altogether overlooked, as well as the tessellated pavements of the middle ages, of which a fine remnant is concealed beneath a rush matting in front of the altar of Westminster Abbey, and a more perfect specimen still may be seen in Trinity Chapel, Canterbury Cathedral. At Great Malvern, Romsey, Winchester, Salisbury, Worcester, Rochester, and York, there are also fine specimens; but the Chapter House of Westminster Abbey, where a beautiful pavement in this style was carefully boarded over, when that building was fitted up as a record office, remains probably in greater perfection than any other extant in this country. Many of these are of great beauty; some consist of heraldic cognizances, others of figures, and others of very beautiful scrolls. They are probably as old as Edward III., who decorated the structure. Some of the first specimens of the revival of tessellated pavements may be seen in the Trinity Church and the Reform Club-house, London, and ere long Mr. Barry's good taste will be displayed in the adornment of the floors of the new Houses of Parliament with encaustic tiles. We trust that the example may not be lost sight of by those who have the superintendence of public edifices. They are also worthy the attention of architects for halls and passages even of very moderate-sized houses. Very ornamental, too, they would prove for hearths, mantle-pieces, &c. It has been thought that these pavements, on account of their cost, would be restricted to the mansions of the wealthy; but as their merits are becoming more generally known, this opinion is seen to be founded on error, for although the first outlay is more costly than some, yet, in point of economy, they must be selected in preference to every other kind of flooring.—*Nottingham Review*.

##### WHITE KNIGHT'S PARK, NEAR READING.

—In reply to the advertisement, offering premiums of fifty guineas and twenty guineas for the two best plans for laying out this beautiful place for the erection of detached villas which appeared in our columns, thirty designs were sent in. In order to prevent the possibility of complaint, the proprietor placed the decision in the hands of two professional architects, Mr. George Godwin, F.R.S., and Mr. David Mocatta, F.S.A., who, after minutely investigating the plans on the spot, selected the design marked *Albi Milites* as entitled to the first premium, and that distinguished by a drawing of a knight as entitled to the second premium. These were afterwards found to be respectively by Messrs. Scott and Moffatt, and Mr. John Barnett, of Chancery-lane. The beauties of this extraordinary place, once the seat of the Duke of Marlborough, are such as to make us grieve at its appropriation for building purposes. It will, however, afford such sites for houses as are rarely found.—*Correspondent*.

CHIMNEYS SUPERSEDED.—Dr. Arnott has recently invented an air-pump, with which it is proposed to supply a draught to furnaces, that will supersede the necessity of funnels in steam-boats, and of the costly chimneys which now demand so great an outlay in the erection of engine-houses. This pump, when worked by a weight, furnishes a draught equal to 100 cubic feet of air in a minute, in an uncompressed state. A slight transfer of power from any engine would thus suffice to create a strong draught, which can be so directed as to cause the consumption of the smoke.—*British and Foreign Quarterly Review*.

NEW CONSERVATIVE CLUB, ST. JAMES'S.—From the drawings submitted for the artistic embellishments of the interior of the new Conservative Club, the designs of Mr. Sang have been approved of and decided upon. The whole of the decorations are to be executed in encaustic, a mode which that gentleman has of late years introduced into this country, and which he has employed in the interior embellishments of the New Royal Exchange.—*Herald*.



**BRITISH ARCHEOLOGICAL ASSOCIATION.**—During the late meeting at Canterbury, Professor Buckland furnished the following facts, which, coming from so high an authority, deserve especial attention. "Two churches, the names of which he had in his possession, he had been told had been destroyed by fire in consequence of an accumulation of guano in the towers. Birds, such as pigeons, crows, daws, and other kind of winged birds, congregated in the towers of churches, and on visiting the venerable edifice celebrated as the cathedral of Canterbury, he saw fifty birds at least flying through the broken lattice of the windows. Now, he apprehended the most serious consequences from this. If that guano were allowed to accumulate, and a strong wind during a thunder-storm arose, and caused a current through the tower, it was clearly his opinion that the noble building would be set on fire."

**THE BIRKENHEAD DOCKS.**—Already the most active steps have been taken for proceeding with the formation of the new dock. Mr. Tomkinson, the contractor, has a large body of men now at work upon the land, near the entrance of Wallasey Pool. There are erecting a limekiln and a mortar mill, and a steam-engine is now being placed upon the ground. The elevated railway, which is necessary in such works for the conveyance of heavy stones from one place to another, is in a forward state, and the foundation is now being prepared to commence at once with the sea wall, extending from the intended coasting dock at Woodside Ferry to the mouth of the Pool. The men are at work night and day, as the tide answers, and the promoters seem determined to pursue vigorously the great and important work in which they have embarked.

**TRIUMPHAL ARCH AT DUNDEE.**—A general desire prevails throughout the town for having a triumphal arch, built of stone, similar to that through which her Majesty passed at Harbours. It would, without doubt, be a great ornament to the town, and we have no hesitation in saying, that a large subscription could be raised in furtherance of such an object. Dundee is very destitute of architectural beauty, and though the expense would be considerable, we entertain a belief that were public meetings of their constituents called to express their concurrence in such an undertaking, the trustees would cheerfully undertake the task, and the erection would be a lasting monument of her Majesty's visit to Dundee.—*Perthshire Courier*.

**REDLIFF NEW BRIDGE.**—The engineers appointed by the subscribers to this undertaking, Messrs. Motley and Hill, have prepared a new and very pretty model of the proposed erection, which, we understand, will be left at the Commercial-rooms for some days, for inspection. We hear that an eminent contractor has offered to complete the bridge for 3,000*l.*, and we trust, as the shares have been all taken up, that no impediment will be found to delay the speedy accomplishment of the undertaking.—*Western Times*.

**STATUE OF MR. STEPHENSON.**—The arrangements for carrying into effect this well-merited compliment to the Brindley of railways, George Stephenson, are now in active progress. A committee composed of the first names in Liverpool has been formed, and we now trust that a marble statue of this eminent engineer, from the chisel of Gibson, will, before long, be amongst the noblest ornaments of that splendid building, the St. George's Hall, which is rising opposite the Liverpool terminus of George Stephenson's first great railway.—*Liverpool Times*.

**THE LATE SIR ASTLEY COOPER.**—A statue has just been placed in St. Paul's Cathedral to the memory of Sir Astley Cooper, the eminent surgeon. It was raised by a public subscription, confined to the profession of which he was so valuable and valued a member. The greater portion of the donors were pupils of the late Sir Astley Cooper, headed by Mr. Callaway and Mr. Travers. The statue, exclusive of the pedestal, is 8 feet high, and the likeness is considered good. It is by Mr. Bailey, the Royal Academician.

**PUBLIC WALKS AT SUNDERLAND.**—A Government agent has visited Sunderland, and surveyed and approved the site selected by the Public Walks Committee as a recreation-ground for the inhabitants.

**PUBLIC WALKS IN THE OLDEN TIME.**—Alluding to the 5th or 6th of Henry VIII., Hall says:—"Before this time, the inhabitants of the towns about London, as Isledon, Hoxton, Shoreditch, and others, had so inclosed the common fields with hedges and ditches, that neither the young men of the city might shoot, nor the ancient persons walk for their pleasures, in those fields, but that either their bows and arrows were taken away or broken, or the honest persons arrested or indicted; saying that 'no Londoner ought to go out of the city, but in the highways.' This saying so grieved the Londoners, that suddenly this year a great number of the city assembled themselves in a morning; and a turner in a fool's coat came crying through the city, 'Shovels and spades! shovels and spades!' So many of the people followed, that it was a wonder to behold; and, within a short space, all the hedges about the city were cast down, and the ditches filled up, such was the diligence of these workmen. The king's council connived at the matter, and so the fields remained open."—*Knight's London*.

**IMPORTANT IMPROVEMENT IN THE MANUFACTURE OF IRON.**—Mr. Rogers, of Nantyglo, the discoverer of the black band, has, we understand, recently made an improvement in the manufacture of iron, by the discovery of a new "flux," which will almost entirely supersede the use of limestone, and diminish the general cost of making twenty per cent. The quality of the iron will be materially improved, and be the means of saving an immense quantity of coke. The "flux," we are informed, is principally composed of soda. We hope to see the discovery shortly made more public.—*Times*.

**THE LARGEST STATUE IN EUROPE.**—The summit of Banvraggie, in Sutherlandshire, is crowned by the colossal monument erected by the Sutherland tenantry to the memory of the late duke. A statue 30 feet high, and containing 80 tons of stone, stands on a pedestal 75 feet in height. The figure, we believe, is an excellent likeness, and forms the largest statue in Europe.—*Scotsman*.

**IRON TRADE OF SCOTLAND.**—At a full meeting of the iron masters of the west of Scotland, held in Glasgow, on Friday, the trade price of iron was fixed at 5*s.* on the usual terms. The speculators are, for the present, unable to cause a stir either one way or another, the late exposure having settled them in the meantime.—*Edinburgh Witness*.

At a meeting of the town council, Bridgewater, held last week, it was unanimously agreed to apply during the next session of parliament, for an Act to extend the quay, and also to make a branch railway from the said quay to the station.—*Somerset Gazette*.

Sir John Ramsden has left 20,000*l.* for improving the town of Huddersfield.

#### TO CORRESPONDENTS.

"T. K. L."—*Saw-dust might answer the purpose; but the usual and perhaps the best way is to fix between the joists strips of wood, called "sound-boarding," forming strong laths, upon which "pugging," one inch thick, composed of lime and hair mortar, is spread; perhaps some saw-dust spread over this would further deaden sound, but all such contrivances rather engender dry-rot.*

*The drawings of the antiquities of Aghadac Cathedral, Ireland, and of the Gateway of Port-ham, Wales, have been received, and are now engraving.*

"M. A. G."—*Received with thanks. His communication will shortly appear illustrated.*

#### Tenders.

**TENDERS delivered for the Erection of a House on Besely Heath.**

Bodger ..... £159 0 0  
Harts ..... 188 10 0

**TENDERS delivered for rebuilding a Cottage at Mount Pleasant.—J. Wagstaff, Esq., Architect.**

Brown ..... £300 10 0  
Fuller ..... 299 11 0  
Chesterman ..... 290 0 0

#### NOTICES OF CONTRACTS.

For supplying her Majesty's several Dockyards with Welsh and Cornish Slates.—The Commissioner for Executing the Office of Lord High Admiral, Somerset-place. October 8.

For Repairing of Witton Church.—Plans and specifications at the Offices of Messrs. Pocock and Glover. October 12.

For Carting away from off the Dock Green the whole of the Soil to be excavated from the intended Railway Dock, Hull.—Mr. W. H. Haffam, Secretary, Dock Office, Hull. October 5.

For 16,000 Larch or Baltic Sleepers, of various dimensions, for the Ashton, Staleybridge, and Liverpool Junction Railway.—Secretary, at the Manchester and Leeds Railway Office, Palatine-buildings, Hunt's-bank, Manchester. October 8.

For such Bricklayers, Carpenters, Masons, and other Works, in the Cleansing, Building, and Repairing the public Sewers and Drains for the City and Liberty of Westminster.—Mr. Lewis C. Herslett, Clerk, 1, Greek-street, Soho, October 15.

For the various artificers' works in the erection and completion of National Schools and Master's House, at Almonbury, near Huddersfield.—Drawings and specifications at 42, West Parade, Huddersfield; Mr. Wm. Waller, Architect. Sept. 30.

For the erection of the New Recovery House at Leeds.—Plans, specifications, &c., at the offices of Messrs. Hunt and Moffatt, Architects, 17, Albion-street, Leeds. Oct. 2.

For ten third-class Carriages for the Manchester and Birmingham Railway Company.—Secretary of the Company, Manchester. Oct. 3.

For Sewering, Paving, &c., several streets at Charlton-upon-Medlock, Manchester.—Plans and specifications at the office of Mr. Langtry, Surveyor, Town Hall, Charlton-upon-Medlock. Sept. 30.

For Sewering, Paving, &c., several Streets at Ardwick, Manchester.—Plans and specifications at the office of Mr. Langtry, Surveyor, Town Hall, Charlton-upon-Medlock. Oct. 3.

#### COMPETITIONS.

**PREMIUM of 20*l.*** for the chosen Design for a new Church at Winchester, to hold about 1,000 persons on the floor, cost not exceeding 4,000*l.* Further information from Rector and Churchwardens. 10th Oct.

#### Current Prices of Wood and Metals.

September 24, 1844.

	£.	s.	d.	£.	s.	d.
BOX, Turkey, per ton ....	2	0	0	6	0	0
CEDAR, Pencil, per foot ..	0	0	3	0	0	4
Cuba .....	0	0	3	0	0	4
N. S. Wales ....	0	0	3	0	0	4½
Green, per ton ..	5	5	0	9	0	0
EBONY, Ceylon, large ....	6	0	0	8	10	0
small ....	5	0	0	5	15	0
Madagascar, small ..	5	0	0	6	0	0
Dyes, &c.						
LIGNUM VITÆ, Jamaica ..	3	0	0	5	0	0
St. Domingo ....	8	0	0	12	0	0
MAHOGANY, Cuba, per foot	0	0	7	0	1	4
St. Domingo ....	0	0	7	0	1	6
Honduras .....	0	0	4½	0	0	10
Jamaica .....	0	0	0	0	0	0
TIMBER:—						
Teake, African, per load ..	6	10	0	10	10	0
Oak, Quebec .....	3	15	0	4	10	0
Fir, Riga .....	3	17	6	4	0	0
Dantzic and Memel ..	3	10	0	4	5	0
Swedish .....	0	0	0	3	12	6
Pine, Quebec, red, per load	0	0	0	3	15	0
yellow ....	0	0	0	3	0	0
N. Brunswick .....	0	0	0	0	0	0
Miramichi & St. Johns	2	15	0	4	10	0
Wainscot Logs, 18 ft. each	4	10	0	5	5	0
Lathwood, Memel, &c. fm.	0	0	0	12	0	0
B. America .....	0	0	0	0	0	0
Deals, Gefle, 14 ft. 3 in. by 9	29	0	0	31	0	0
Stockholm .....	25	10	0	26	0	0
Gottenburg, 12 ft. 3 in. by 9	0	0	0	0	0	0
Christiana, 1st & 2nd	27	0	0	29	0	0
St. Petersburg, Memel,						
Dantzic, 12 ft. 1½ in. by 11 in.	16	0	0	18	0	0



Quebec Yellow Pine,					
first quality .....	17	0	0	18	0
second ditto .....	10	0	0	11	0
White Spruce, 120.	16	0	0	17	10
Dantzic Deck, each..	0	18	0	1	6
Plank, Dantzic Oak, load..	9	0	0	10	0
STAVES, Baltic, per 1200.	160	0	0	0	0
Quebec Pipe, 1200	50	0	0	52	10

COPPER—Brit. Cake, p. ton	0	0	0	84	0
Tile .....	0	0	0	83	0
Sheet, p. lb.	0	0	0	0	9½
Bottoms ..	0	0	0	0	0
Old .....	0	0	0	0	8½
South Amer., ton	73	0	0	74	0
Foreign Cake ..	0	0	0	0	0
Tile ..	0	0	0	0	0

IRON, British.....	0	0	0	0	0
Bars .....	5	15	0	6	0
Rods .....	0	0	0	6	5
Hoops .....	8	0	0	8	5
Sheets .....	0	0	0	8	15
Cargo in Wales, Bars	4	10	0	5	0

IRON, Pigs No. 1, Wales ..	3	10	0	4	0
No. 1, Clyde ..	2	0	0	2	10
Russian, COND .....	0	0	0	16	0
PSI .....	0	0	0	0	0

Archangel .....	0	0	0	0	0
Swedish .....	9	19	0	10	0
Gourieff's .....	0	0	0	0	0
LEAD—British, Pig, p. ton	16	10	0	17	0

Sheet, milled ....	0	0	0	17	15
Bars .....	0	0	0	0	0
Shot, patent .....	0	0	0	19	15
Red or Minium ..	0	0	0	21	10
White .....	0	0	0	23	10

Litharge .....	0	0	0	20	0
Pig, Spanish .....	16	0	0	16	10
American .....	15	10	0	15	10
STEEL—English .....	0	0	0	0	0

Swedish Keg ....	16	0	0	16	10
Faggot .....	0	0	0	17	0
TIN—in blocks, p. cwt. ..	0	0	0	3	12
Ingots .....	0	0	0	3	12

In Bars .....	0	0	0	3	16
Bunch .....	3	6	0	3	7
Strait .....	3	4	0	3	5
Peruvian .....	0	0	0	2	17

Plates, p. box, 225 shts.—					
No. I. C. 134 by 10 in.	1	7	0	1	12
I. X. ....	1	13	0	1	18
I. XX. ....	0	0	0	0	0

IXXX. ....	182	lb.	0	0	0
IXXXX. ....	203	0	0	0	0
No. II. C. 134 by 9½ in.	105	0	0	0	0
II. X. ....	133	0	0	0	0

III. C. 12½ by 9½ in.	98	0	0	0	0
III. X. ....	126	0	0	0	0
SDC .....	200	shds.	188	0	0

SDX .....	15	by 11	209	0	0
SDXXX. ....	230	0	0	0	0
SDXXXX. ....	251	0	0	0	0
C. 16½ by 12½ in.	98	0	0	0	0

X. .... 100 sheets	126	0	0	0	0
XX. ....	147	0	0	0	0
XXX. ....	168	0	0	0	0
XXXX. ....	189	0	0	0	0

Jeggars, 14 by 10 in.	—	0	0	0	0
SPELTER—On the spot, ton	0	0	0	21	5
Delivery .....	0	0	0	21	0
ZINC, English Sheet .....	0	0	0	30	0

PLATINA ORE .....	0	0	0	0	0
ORSIDEW .....	0	0	0	0	3
QUICKSILVER .....	0	0	0	0	4

## ADVERTISEMENTS.

TO ENGINEERS, DRAUGHTSMEN, &c.  
**STEPHENS' RULING AND MECHANICAL DRAWING INK**, for Engineers, Artists, and Designers. This article will be found superior to the best Indian ink for the above purposes. It does not smear with Indian-rubber, or wash off with water. It flows freely from the drawing-pen, and never corrodes or encrusts it. It may be used on a plate or slab, with a camel's hair brush, gliding it with water, or thickening it by drying, as required. It has the advantage of being ready for immediate use. It is sold in conical-shaped Bottles, convenient for using from without any stand, by the Inventor, Henry Stephens, 54, Stamford-street, Blackfriars-road, and by Booksellers and Stationers, 6d. each.

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**ALWAYS ON SALE, a LARGE ASSORTMENT OF DRY PREPARED FLOORING BOARDS AND MATCHED BOARDING of all sorts, planned to a parallel width and thickness, from 4 inch to 14 inch thick. Rough Boarding for Flats.**  
**TIMBER, DEALS, OAK PLANKS, SCANTLINGS, SASH SILLS, &c.**  
 Apply at W. CLEAVE'S Timber Yard, Smith-street, Westminster.

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A. R., in calling the attention of builders and consumers, confidently presumes on his being able to supply them on such advantageous terms, as will ensure and merit their favours and approbation.

**GRANITE.—ORDERS** intended for the **FOGGIN TOR QUARRY**, from which the Nelson Pillar, the Graving Dock at Woolwich, and the embankment for the new Houses of Parliament were supplied,—to be addressed to Mr. Hoar, the Town Manager for the Company, at GROSVENOR WHARF, MILBANK.  
 Pinthas, Bases, Monuments, &c. are furnished with finished labour, or Stones supplied scabbled to size.

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 Or at their other stations—  
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 Wisbeach, Cambridgeshire;  
 Will be immediately attended to.

## CUNDY'S MARBLE AND STONE WORKS, PIMLICO.

**SAMUEL CUNDY** begs to inform Architects, Builders, &c., that he is supplying **VEIN MARBLE BOX CHIMNEY-PIECES**, Opening 3 feet square, and 7 inch piers, for **FORTY-FIVE SHILLINGS!**

**STONE BOX CHIMNEY-PIECES**, opening 3 feet square, and 7 inch piers, Twelve Shillings; do., do., with MOULDED CAPS, and 8 inch piers, **FOURTEEN SHILLINGS.**

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Masons' Work, Monuments, &c., &c., at equally Low Prices.

## SEYSSSEL ASPHALTE COMPANY.

"CLARIDGE'S PATENT."

ESTABLISHED 1838.

This ASPHALTE is a Bituminous Limestone, obtained from an inexhaustible Mine at Pyrmont, in the Jura Mountains.

Previously to its introduction into this country, in 1838, the Material had been used for many years in France, and from its great utility was extensively patronized by the Government of that Country.

Among the various uses to which it can be applied, the following may be enumerated:—For Foot-Pavements, public and others; in the Carriage Approach to Mansions, Garden-walks, and Terraces; the flooring of Kitchens and other basement offices; also of Coach Houses and Stables, Dog Kennels, Barn Floors, Cow Houses, Piggeries, Poultry Houses, Tan Rooms, and Maltings. For Roofing, covering of Railroad and other Arches, the Lining of underground Cellars near Rivers to prevent the ingress of the Tides; also in Covering the ground-line of Walls, to prevent damp rising (this application of the Asphalt of Seyssel is particularly recommended by the Commissioners on the Fine Arts), thereby rendering the basement stories in the worst situations both dry and warm. It is an excellent Cement, as applied to Docks, Breakwaters, or Walls built for resistance to the encroachments of the Sea. For lining of Tanks, Fish-Ponds, and other Hydraulic purposes.

J. FARRELL, Secretary,

Seyssel Asphalt Company's Works, "Claridge's Patent," Stangate Depot, London.

## COMMISSIONERS OF FINE ARTS' REPORT ON THE MEANS OF PREVENTING DAMP IN WALLS.

THE DIRECTORS OF THE SEYSSSEL ASPHALTE COMPANY have much pleasure in recommending to the notice of Architects, Builders, and others, the application of **THE ASPHALTE OF SEYSSSEL** as the only effectual means of preventing DAMP rising in WALLS.

The following account of its application is extracted from "The Appendix to the Commissioners of Fine Arts' Report," page 18.

"In 1839 I superintended the construction of a house of three stories on the Lac d'Engien. The foundation of the building is constantly in water, about 194 inches below the level of the ground-floor. The entire horizontal surface of the external and internal walls was covered, at the level of the internal ground-floor, with a layer of Seyssel Asphalt, less than half an inch thick, over which coarse sand was spread.

"Since the above date no trace of damp has shewn itself round the walls of the lower story, which are for the most part painted in oil of a grey stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is only about 2½ inches above the external surface of the soil, and only 194, at the utmost, above that of the shore of the lake.

"The layer of Asphalt having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been since remarked at the base of the door-posts."

## GLASS SHADES.

**ROUND, OVAL, or SQUARE**, for the preservation of Clocks, Albaster Ornaments, &c. &c. &c.

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## PATENT PLATE GLASS.

## SHEET WINDOW GLASS.

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## COLOURED AND PAINTED GLASS.

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**PAVING AND ROOFING TILES**, and numerous other articles manufactured from the blue Terra Metallic Clay which are, in point of durability and hardness, nearly equal to cast-iron, and very cheap in price at WYATT, PARKER, and CO., Albion-wharf, Holland-street, Blackfriars-road.—Also a large quantity of Stourbridge Lamps and Tiles.

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CHARLES F. TILSTONE, Sec.

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**SALISBURY GLUE 60s. per Cwt.**; fine Scotch do. 50s.; Town do. 48s.; and 45s.; Best Glass Paper 104d.; Second do. 9d.; French Polish and Spirit Varnishes 19s. per gallon; Naphtha do. 10s.; Genuine White Lead 26s.; See ml do. 2½; and 2s.; Improved Stucco Paint 2s.; White Green and Blue Colours 2s.; 1½ Green, and all Colours used in House Painting, prepared by a new process to dry in six hours, 6d. per lb.; Turpentine 2½ 6d. per gallon; Linseed oil 2½ 6d.; Fine Copal Varnish 20s.; Quick Drying Carriage 14s.; Oak do. 12s. and 10s.; Paper 14s., 10s., and 6s.; Turpentine Varnish 3s.; Dry Brunswick Green 3d., 4d., and 6d. per lb.; Lamp Black 3d.; Emerald Green 1s. and 1d.; Vindling 1s. 3d. per cwt.; Stockholm Tar 18s. per barrel; Pitch 10s. per cwt.; Gilder's Gold Leaf, Ladders, Bronze, Dutch Metal, Patent Gold Paint, Dies and Die-woods, Acids, Alkali, Gums, and Salts of every kind and description at equally low prices. W. NIXEY'S Old-Established Warehouse, 23, MOOR-STREET, SEVEN-DIALS, LONDON.

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**McKIBBIN'S improved ROOFING FELT** is peculiarly applicable as a substitute for Slate, Zinc, Tiles, and other articles used for Roofing, from its **ECONOMY, LIGHTNESS, and DURABILITY.**

The advantages attending other materials used in roofing, prevailing in agricultural districts, many useful houses and sheds being erected or rendered waterproof, it is submitted that the improved Roofing Felt will in a great measure—and in some instances altogether—obviate them, and prove most serviceable from its lightness, durability, and impermeability to water and damp, in covering Houses, Cattle-sheds, Workshops, Rope-walks, &c. and for the sides, as well as roofs, of light structures for plants, being likewise a non-conductor of heat; besides its economy in repairs, the timber where it is used may be so light as to save its whole expense; it requires no other coping, and may be applied by any person of common ingenuity; being flexible and portable also, it is free from breakage, the expense of carriage is inconsiderable in comparison with slates, tiles, &c. and it is not liable to contraction like zinc.

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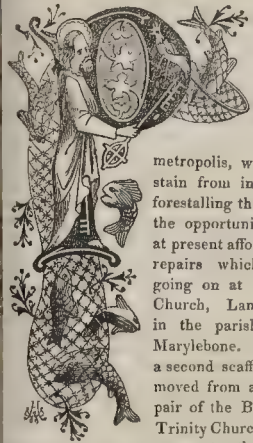
\* \* \* The "Improved Roofing Felt" will be found much more durable than the common Felt made in length, and not subject, like it, or continuous sheets of other material, to be stripped by storm; it can also be more easily repaired, and from the simple mode of application recommended, the wet cannot percolate through nail-holes, being only fastened down at the overlaps.



# The Builder.

NO. LXXXVII.

SATURDAY, OCTOBER 5, 1844.



R I O R to giving our intended survey of the Bath stone masonry of the

metropolis, we cannot abstain from in some sort forestalling the subject by the opportunity which is at present afforded by the repairs which are now going on at All Saints' Church, Langham-place, in the parish of Saint Marylebone. Hardly has a second scaffold been removed from a second repair of the Bath stone of Trinity Church, at the entrance to the Regent's

park,—hardly have the balusters, cornices, and other parts of the wretched Bath stone masonry of that ill-fated church, which forms one of the only two or three buildings in which Sir John Soane ever could be perverted from prudence and economy into the use of such a mean and spendthrift material,—hardly have its perished tower-plasters been chopped away for the admission of a new facing of the same treacherous material, leaving the remainder of the stone-work of the edifice to be renewed in a very few years hence,—hardly has this occurred at one end of Portland-place, when to the church at the other end of it, a scaffolding is raised to effect a much more extensive repair to the fabric of another building erected hardly twenty years ago. Of this the balusters of its parapet are altogether rotten, many of its cornice-stones are entirely perished, of some their "drip" being totally gone, and some having scarcely any surface left; of the portico of the church the column-shafts appear to have suffered violent disease, half their component blocks having lost their wrought exterior, many are peeling or excoriated, and all exhibit the most lamentable and indecent marks of decay, as though the portico of a temple should bear more marks of mortality than the deceased conveyed beneath it to the funeral service; the column-bases are in many places so weather-worn, as to have lost even all semblance of moulding; the frail masonry of the church-tower is miserably broken with hundreds of cracks; the string-courses and window-sills are alike gone, to return no more.—How long, we ask, is such a state of things to last? How long is an architect to covet the immortality which soft stone-peelings and Bath quarry-dust can give? How long are chapels of Portland-stone to be superseded by mean edifices decorated with trumpery which hardly lasts the periodical intervals between one white-washing and another, of the tenderest plaster? How long are we to hear of the advantageous induration of Bath stone,—while scarcely one block of it in a hundred thousand will stay to harden, disappearing like the sparrows, which "may be caught by salt, if they will stay to have it placed on their tails."

We shall drop this subject at present, to be hereafter more amply resumed, only making the observation that we cannot account for the mean prostration of feeling which will prompt a man to adopt a kind of masonry bringing with it so little honour, and so extravagant an ultimate cost. We, fifteen years ago, were prevailed upon to use a little of it in three instances—in each case the decay which has ensued is miserable.

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## NEW METROPOLITAN BUILDING-ACT.

THE dread of the next year's operation of the new Metropolitan Building-Act has produced no small activity within its future range; this is not confined to its new territorial extension, where feeble spurious buildings are rapidly arising, but within the limits of the present statute, porches, and other projections are arising, where it may be doubted if they could be erected next year. The raising of buildings is also another subject upon which alarm has been felt, and houses are receiving additional stories which might otherwise have remained the next seven years without them. No doubt the panic, which seems to have seized the public or builders, is in a great measure of an unnecessary, or at least, of an exaggerated nature, and for much of it no cause will be found. The most serious alarm is that which is felt by proprietors who have estates in close neighbourhoods, who, if they attempted after this year to replace their tenements by new ones, would find the sites have fallen a sacrifice to the requirements of the new Act for the leaving of open space for the public health.

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## INCONVENIENCE OF RAILROAD CONVEYANCE.

WITH the convenience of railroad conveyance, we must complain of the very insufficient accommodation which the public receives by reason of the long intervals which occur between the starting of the different trains, particularly about the middle of the day; and having often to travel short distances, under twenty miles, we, in common with multitudes of other persons, lose much more time from waiting for the next trains, than if we were left only to the use of the worst of the old jog-trot conveyances; while the leviathan nature of the railroad system puts out of the question the most remote idea of our being served by any ordinary conveyance, so that on very many occasions we are far worse off than if railway travelling were not in existence. Last year, we had the most urgent business down the North-Eastern line (one in general most excellently managed, and upon which we do not remember that any accident has happened to passengers); it happened to be a gala-day, upon which many applicants were all being served by only one attendant, the occasion, if we remember correctly, some Cockney pony-racing at Lea-bridge. After waiting ten minutes, our turn came, when upon tendering a sovereign, change was refused to be given, and while we were obtaining it at the nearest house of merchandize, the door was shut, and we were refused passage; and there being no other train for several hours, and no other public stage conveyance, we were reduced to the necessity of hiring a post-chaise to go fourteen miles, and arrive an hour after time, or to have lost an appointment altogether. We are sure it would be to the interest of all the companies to re-consider and re-appoint all their time-tables, and not bother and inconvenience their passengers in the present reprehensible manner, and cause the waste

of their most precious possession—TIME. The day will come when the machinery of railways will be so perfected, that passengers will safely, and by statute *may demand*, at any hour or half-hour from sun-rise to sun-set, conveyance to any station they may please. The destruction of the coach system imperiously demands this for the public convenience; and we cannot see because the attendants may require two or three hours for dinner in the middle of the day, why those who dine at no such time should be so troubled and annoyed. If in providing for the right attention to public convenience, safety could alone be insured by the adoption of the atmospheric, or the wire-rope system, then should the use of one or other be legislatively compelled. By the latter system, transit to every station might be safely performed at every quarter of an hour, instead of at half a day's interval, as now occurs at some of them, even near London, as at the Edmon-ton one during part of the year.

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## INCREASE OF HONOUR AND PROFIT TO ARCHITECTS!

THE following advertisement has appeared in the *Manchester Guardian*:—

"TO ARCHITECTS.—St. Simon's Church, Salford.—Persons desirous of sending in Plans and Specifications for Building the above Church, are requested to forward the same, as soon as possible, to Huitson Dearman, Esq., treasurer to the committee, Springfield-lane, Salford."

To questions asked relative to which advertisement the following answer has been sent:—

SIR,—In reply to your letter to Mr. Dearman respecting the church proposed to be erected in Salford, I beg to inform you, that 3,000*l.* is the sum to be expended. The accommodation required on the ground-floor for 800 people; the site in a level open field; a handsome church of stone, without galleries, but so arranged as to admit of their being hereafter constructed, will be required; and all plans to be in with the treasurer in fourteen days hence. THE SUCCESSFUL COMPETITOR WILL BE EXPECTED TO SUPERINTEND THE BUILDING, AND NO REMUNERATION IS PROPOSED TO BE GIVEN TO HIM.

I am, Sir, yours very respectfully,  
WALTER ATKIN HAYMAN, Sec.  
9, Wellington-square, Salford, 27th Sept. 1844.

## GREAT IRON BRIDGE FOR THE NEVA FORMED AT LIVERPOOL.

THE fact of the Emperor of Russia having commissioned our townsmen, Messrs. Bury, Curtis, and Kennedy, the celebrated engineers, to construct at their extensive establishment an immense iron bridge to cross the Neva at St. Petersburg, has excited considerable interest in the engineering world. The river Neva, in the most central part of the capital named, is at present crossed by a bridge of boats—the Pont D'Isaac—over which there is a prodigious traffic, interrupted only in the night for the passage of ships through one compartment of the bridge, which can be shifted or removed for the purpose. In the spring, however, huge masses of ice, disengaged by the thaw, drift down the stream with such force, that it is necessary to let the bridge loose at one end and permit it to swing round at the other, so as to lie alongside the quay, and even this precaution is occasionally unavailing to preserve it from the destructive effects of icebergs—the boats last year, for instance, being carried away from their anchorage, and with them the superincumbent carriage and footway, into the Gulf of Finland, whence they were recovered piecemeal by steamers. To obviate such occurrences, as well as to carry out the imperial designs for beautifying and improving the capital, the Czar has resolved to erect a bridge of solid iron, on piers of Finland granite, and, impatient of delay, has intrusted the castings to Messrs. Bury, who, when their new furnace, now being built, shall be completed, will be enabled to cast at the rate of 150 tons a week, so that by the time the masonry is finished, the iron-work may be



forthwith fixed upon it, the whole project being to be perfected in two years, when the bridge will be opened with great éclat.

The structure will consist of seven arches. The span of the centre one will be 156 feet, and of the three arches on either side 143 feet, 125 feet, and 107 feet respectively. Another arch will be devoted to a species of swing bridge, 70 feet wide, for the admission of ships to and from the Custom-house. The buttresses of the piers will present to the current a sharp inclined plane, so that a descending iceberg running upon them will fall to pieces from its own gravity. The bridge will be very flat, there being a fall of only seven feet from the top of the centre arch to the end of the last arch on either side. The average depth of the water in the Neva here throughout the year is about 30 feet, and as the river is a tideless one, there is little variation, except where the wind sets strongly up towards the gulf, when the waters rise considerably in some instances, doing irreparable damage. As the shores of the Neva on either side are extremely low, the height of the crown of the centre arch from the water's edge will be only 21 feet; the spring of the arch but 6 feet. The extreme length of the bridge from one abutment to the other will be no less than 1,078 feet. The weight of iron above will be nearly 8,000 tons! independent of the lamps and superb balustrades with which it is the emperor's intention to adorn it, and which together will probably weigh from 1,000 to 2,000 tons more.

An idea cannot yet be formed of the cost of the whole undertaking, but the price of the iron part alone will probably exceed 100,000*l.*; much of the labour to be bestowed upon, and the machines to be constructed expressly for it, being very expensive. The segments of the arches have to be placed with the greatest precision, and the best possible workmanship devoted throughout the details. The weight of iron will exceed by nearly five-fold that consumed in the construction of the Menai Bridge. Altogether, the Neva Bridge will be a most surprising evidence of what the skill and enterprise of a private British firm are able to accomplish, and that such an undertaking should have devolved on a Liverpool house, constitutes an epoch in the commercial progress of the locality. There are three boat bridges on the Neva, and it is highly probable they will be replaced with iron ones, when that under notice shall have come into use.—*Abridged from the Liverpool Journal.*

#### THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The first meeting of the general committee was held on the 25th ultimo at the Council Chamber, in the Guildhall, York. The chair was taken by the Right Hon. the Earl of Rosse, the President at the last meeting at Cork, who was supported by the Marquis of Northampton, Earl Fitzwilliam, the Earl of Enniskillen, the Deans of Ely and Manchester, Professor Whewell, the Master of Trinity, the Rev. W. Vernon Harcourt, the Rev. Dr. Scoresby, and most of the leading members. On no previous occasion was the attendance more numerous and efficient.

Colonel Sabine, the general secretary, read the Report of the council for the past year. In reference to a recommendation of the general committee at Cork, meeting last year, an application had been made to the Board of Ordnance requesting their aid in making experiments with captive balloons, and from which orders had been issued to the commandant at Woolwich to afford every facility for carrying out their plans. Another recommendation to her Majesty's Government respecting the Ordnance maps in Ireland now in progress had also been attended to. It was to introduce a series of contour lines, which, shewing the elevation of the surface of the country, would be useful to a variety of mechanical and engineering purposes. Amongst other cases of their probable utility was that of subserving mining operations, being instrumental in the formation of cheap roads and the improvement of farms; in facilitating drainage and irrigation, and improving the sanitary condition of towns; in sinking artesian wells, and expediting the formation of roads, railways, and canals, and other purposes of public utility. If such were introduced now, by means of the large and efficient disposable staff which the

survey had at command, it would save a great expense in the future special surveys for public works and the undertakings of private enterprise. The additional expense to be incurred would not exceed 10,000*l.*, and it was suggested that the electrotype manipulation might be easily adapted to the purpose. An interview which a deputation from the council had held with Sir G. Clerk on behalf of her Majesty's Government, respecting the publication of the results of Professor Forbes's dredging in the Ægean Sea, had also been successful.

Colonel Sabine, in the absence of Mr. J. Taylor, F.R.S., read his accounts as treasurer. They announced the total receipts of the past year as 2,657*l.* 15*s.*, of which amount there had been received from life compositions, 160*l.*; annual subscriptions, 466*l.*; ladies' tickets, 160*l.*; sectional tickets, 33*l.*; compositions for book subscriptions, 66*l.*; sale of reports, 131*l.* 9*s.* 11*d.*; dividend on stock, 165*l.*; balance at the last report, 496*l.* 5*s.* 1*d.*; and the sum of 1,000*l.* received from her Majesty's Treasury. There had been expended by the treasurer at the Cork meeting, and for incidental expenses, 317*l.* 3*s.* 3*d.*; printing the reports, 34*l.* 12*s.* 6*d.*; engraving, 42*l.* 7*s.*; salaries for the secretary and accountant, 450*l.*; and on various grants, 1,047*l.* 10*s.* 8*d.*, leaving a present balance of about 460*l.*

The active business of the various scientific sections commenced the following morning. As usual on the first day of meeting, the communications were neither numerous nor very important. The sectional rooms were very well attended, but much inconvenience was experienced by members from their want of proximity to each other, owing to the city being somewhat limited in its means of accommodation. Amongst the arrivals on the first day, were Sir Thomas Deane, Sir Isambard Brunel, Sir John McNeill, the Dean of York, Professors James and Edward Forbes, Professor Adam Sedgwick, Dr. Du-Hamel, from St. Petersburg, Mr. Leonard Horner, F.R.S., Professor Latham, Sir T. D. Legard, Archdeacon Wilberforce, Professor Walker, of Oxford, &c. The sections commenced at the usual hour of 11 o'clock.

Section G.—Mechanical science, President, Mr. G. Rennie; Vice-presidents, Mr. E. Hodgkinson, F.R.S., Mr. J. Scott Russell, F.R.S.E., and Mr. J. Taylor, F.R.S.; Secretaries, Professor Vignolles and Mr. T. Webster.

The communications made were—

1. Mr. Wylson, on a new Scantometer.
2. Remarks by Sir Thomas Deane on the Construction of Buildings for the Accommodation of Audiences.
3. Mr. E. Hodgkinson, on the Law of Defective Electricity of Iron and Stone.
4. Mr. J. S. Russell, Report on the Forms of Ships.
5. Mr. Russell, on the Resistance of Railway Trains.
6. Mr. J. Bateman read a paper on the Collection of Water for the Supply of Towns.
7. Mr. Bridges read a paper on Wooden Railways. The author contended that the introduction of wood for the purpose of railways would materially diminish the cost of their construction, but there were two essentials to be attended to.—1. The chemical transmutation of the fibres of the wood into a more durable, hard, and almost incorruptible substance; and, 2, the employment of a level guide-wheel fixed at an oblique angle before and behind each carriage, as a substitute for the flange, which is the main cause of the wear and tear in existing railways. By means of this guide-wheel the bearing and carriage-wheel would be quite flat, obviating all abrasion of the wood as well as tendency to oscillation, each acting independently, as with the wheels of an ordinary carriage. The process by which the wood is chemically transmuted is the injection of two alkaline and metallic salts, which, as it were, fossilizes the wood. The advantages of its introduction into Ireland were particularly alluded to.
8. Mr. Bevan described an improved Life-boat.
9. Mr. Birmingham read a paper on Turning Canals into Railways. His views were more particularly directed to the Royal Canal in Ireland, with the purpose of connecting the river Shannon with Dublin by that means. He proposed to construct a railroad in the canal and make sewers in the centre at the bottom, by which the waters of the country

could be brought away, and in their progress from the summit levels to the Shannon on one side, and the sea at Dublin on the other, to make use of this water at each of the present locks to assist the trains in surmounting the inclined plane which he proposed to form in their stead.

10. Mr. Bowness described a plan for drawing coals from pits without ropes. The principle was similar to that of drawing water the coals being brought up by buckets, through the instrumentality of a scale down the centre and a slide on each side, put into impulse by the steam engine.

11. Professor Oliver Byrne described a new set of compasses, invented by M. Le Sire Lebrun, which comprised within themselves a whole case of instruments.

12. Professor Byrne described a new invention by M. Le Dru, of Paris, of cold-drawn iron pipes, specimens of which were exhibited at the late exposition at Paris.

13. Mr. Perigal read a paper on a process supposed to have been used in the construction of the Pyramids. A similar plan has previously been mentioned as that by which Stonehenge was erected, by considerable manual power being employed in their conveyance on rollers.

14. Dr. Greene described Mr. Nasmyth's steam-hammer, an ingenious invention in the fabrication of wrought iron. The one referred to was five tons weight, which, in a fall of seven or eight feet, made one hundred strokes in a minute on an anvil of seven or eight tons weight. It was much admired for its simplicity as well as ingenuity.

15. Mr. Fairbairn read a paper on the combustion of smoke. To shew the importance of the removal of this nuisance, it had been calculated that in Manchester alone a saving of 300,000*l.* per annum in the cost of soap alone would be effected, if this were accomplished.

#### SECTION G.—MECHANICAL SCIENCE.

WYLSON'S SCANTOMETER.

President—George Rennie, F.R.S.

Mr. J. Scott Russell, F.R.S., Ed., and one of the vice-presidents of this section, read the first paper on the list, "On a New Scantometer." Mr. Russell said this was a communication which had been sent in by Mr. Wylson, a gentleman of the architectural profession, and who unfortunately was not present. The scantometer is the result of an attempt to meet a deficiency which exists as to the means of ascertaining the scantlings (or depths and thickness) of timbers used in buildings, and which is of this nature:—None but men of mathematical acquirements can calculate the exact depths which, in a timber of a given thickness, is requisite for a given span, or the exact thickness necessary for one of a given depth to the same span, or the length which may just, with safety, be spanned by one or both of a given depth and thickness. And for those who have not the advantage of possessing this branch of education, there is but one way of acquiring the capability of determining questions of this description, namely, long experience and observation of what has been sufficient in similar cases. But of those who have occasion for such knowledge, the portion who have thus overcome the want of the more legitimate method is considerably the smaller; and the remainder, consisting, perhaps, chiefly of the rising generation of carpenters, but including also, in no small degree, men following the professions of architecture and house-surveying, have neither the one way nor the other of resolving, by themselves, the true requisites in these frequently recurring cases. It is mainly for the use of these, then, and also to obviate the necessity for calculation, to those who solve their questions by that means, that this contrivance is intended. This instrument has been invented for giving the scantlings of joists and rafters only, these having a relation to each other, and being of more frequent occurrence than the other timbers in carpentry, but for which similar provision can without difficulty be made. It consists of two diagrams or scales, both of which are generally wanted; the upper one comprehends timbers of the minimum thickness and maximum depth, embracing bearings up to 25 feet; the lower one gives equivalent scantlings from the minimum up to the maximum of thickness. The scant-



ings given had in view the joists of dwelling-house floors, and rafters carrying medium sized slating, the material fir, the distance under 12 inches, and the rate of weight assumed supposed to be similar in all cases, and diffused uniformly throughout. In the diagrams exhibited, the base line of the upper scale shewed what should be the respective depths of level joists of the thickness of an inch and a half, or bearings, up to 25 feet, the concentric curves bringing the bearings which were set out on the right-hand boundary line, to measure on the scale of inches. The radiating thread gave, on the same principle, the depths of sloping rafters of like thickness, to any pitch up to 60 degrees, the point of intersection with the concentric curves of bearing shewing the measure on the scale of inches produced upwards. It would be remarked, observed the author, that the higher the pitch of the rafter, the less is its depth to the same bearing; the principle of this would once be understood when it was remembered that the load being a downward pressure, the cross section of the timber was to be considered vertically, not at right angles to its inclination. The mode of using the lower scale was explained by an example. Suppose that in seeking the scantlings for a 16 foot rafter of the pitch of 25 degrees, to which the upper scale of inch-and-half thicknesses assigns a depth of 12½ inches, they wanted the thickness to be 24 instead of 1½, it was only necessary to slide the vertical scale of inches till 12½ coincided with the left-hand termination of the 16 foot curve, and they found that the intersection of the latter with 2½ inches of the scale at the top produced downwards, was at the level of 11 inches on the vertical scale, and which was the equivalent depth required.

Mr. Scott Russell said the description of his instrument was given in a simple and intelligent manner, and with perfect accuracy. For the purpose of ascertaining the scantlings of timbers this was an exceedingly practical and useful invention. It was, in fact, a mathematical calculation rendered mechanical, and whilst it would be found advantageous to those who were not mathematicians, it would also assist those who were, ascertaining whether their calculations were right.

The Chairman and Sir Thomas Deane also expressed their approval of the invention, the latter gentleman moving a vote of thanks to the author, which was carried by acclamation.

## LONDON AS IT WAS, AND AS IT IS IN 1844.

(Continued from p. 492.)

As we are not giving the history of clubs existing in the present day, which alone would fill three octavo volumes, we pass on to *The Senior United Service Club*: this building holds little credit to its very favourable position; it has a poor and insipid appearance, and its interior is cold and comfortable, the barn-like dimensions of the principal rooms finding no relief to the dull, monotonous walls and ceiling, except by a sprinkle of lace jackets on a gala day.

*The Athenæum* is another specimen of architectural taste, having all the appliances of situation in its favour. This edifice was erected soon after the removal of Carlton House; the club was ostensibly formed for literary men; several eminent architects are now members of it.

*The Travellers' Club*, built by Messrs. Lee, after the design of Mr. Barry. This was the first bold step made by an English architect to break through the trammels of custom. Its interior is fitted up with the elegance suited to a limited number of gentlemen of the highest standing in society. The original estimate for building it was 19,000*l.*, the ultimate cost 29,557*l.* 16*s.*

It is foreign to our purpose in this review of the Clubs of London to enter into the history and adventures of each, our primary object being to afford to the reader a slight but amusing panoramic view of this our celebrated city, such as it was and is, whereby all may judge how far we have improved by change in our manners and customs, and how far we keep pace in the arts and sciences, with the general increase of wealth and numbers. Prior to 1800, we had no building of any magnitude in the form of a club-house; nor was it then at all necessary, for the social bond of good fellowship

was so lightly drawn, as to render it rather the object of ambition than of satiety. Men meet occasionally for the purpose of amusing and being amused—of instructing and being instructed—without reference to the rank and fortune of each other, wit and scholastic or travelled learning being the chief recommendations; and in departing from this amiable simplicity of the older clubs, the spirit by which they were animated has been wholly extinguished, giving place to a system altogether different. In the new order of things, the definition of Johnson is no longer applicable; clubs are no longer associations of good fellows, but associations of men united according to caste, political or other feeling, and governed by certain rules and regulations. The first and most important object of all, as previously observed, is to unite the economy of a chop-house with the superior accommodation of a first-rate hotel; the minor objects of many are to supply the want or necessity of a town-residence, to form a *locus standi* in society, to kill time, to learn the news, to discuss politics, polemics, or war, the sports of the field or of the town, the merits of the last new work or play, or opera-dancer, the chances of a ribbon, or of a vacancy in court or camp, church or state, being bound together like man and wife for life, or so long as they continue to pay the tax levied on themselves.

In thus dividing into castes, they have assumed a character of greater exclusiveness than the older clubs, which is still further promoted by many men of rank and wealth being members of several clubs at the same time, to the exclusion of those who are desirous of becoming members, and to whom, during their winter sojourn in the metropolis, such places would be beneficial. Again, the clubs degenerate into an abuse, when, as is often the case, men use them as the current coin of their respectability; and there are instances in some of the minor clubs, of men about town who live entirely on the strength of their club-card, backed by the fallacious appearance of a black servant, an elegant saddle, watch, or rings. Numbers of these men might be seen during the speculating mania, figuring at the head of bubble companies, and joint-stock adventures, having no other stock of their own but that of assurance, not readily put down even by exposure.

The clubs, apart from these considerations, have benefited London by contributing to increase its magnificence; to the first tasteless samples of architectural feebleness have been gradually added others, which, for taste and magnificence, give way to none in Europe. Pall Mall, St. James's-street, and St. James's-square, give promise of becoming continuous ranges of magnificent palazzos, rivaling each other in their internal and external decorations.

Behind the clubs, and fronting towards St. James's Park, are two ranges of lofty houses, divided from each other by the Duke of York's Monument; they are raised on a substructure, which contains their kitchens and domestic offices, forming a terrace 50 feet wide, adorned with Pæstum-Doric columns surmounted by a balustrade. The superstructure consists of three stories, ornamented with Corinthian columns. Resuming our review: the Haymarket in 1735 was full of inns and houses of entertainment, especially on the west side. The Opera House was erected by Sir John Vanbrugh for the purpose of Italian operas. The prices given at that period were considered very expensive, varying from 1,000 to 1,500 guineas per annum; and the celebrated Farnelli is said to have netted 2,000 guineas at his benefit. What would our ancestors say to present prices?

In 1645, the precinct of Covent Garden was separated from St. Martin's, and constituted an independent parish, which was confirmed after the Restoration, in 1660, by the appellation of St. Paul's, Covent Garden. The church in Covent Garden has at its eastern front a plain but noble portico of the Tuscan order, having four massive columns, the two extreme ones square, and those between them round, and the intercolumniations being wide.

The ground on which the greatest part of Covent Garden parish stands was anciently a large garden belonging to the abbot and convent of Westminster; which garden, after the dissolution of religious houses, was bestowed by King Edward VI. upon Edward, Duke of Somerset. Upon his attainer, Edward, on the

6th May, 1552, granted it, together with a field contiguous to the north, denominated the Seven Acres, but from its length vulgarly termed the Long Acre, to John, Earl of Bedford. This earl erected a house for his town residence on the north side of the Strand, at the bottom of what is now Southampton-street; by which was a mean wooden building inclosed by a brick wall, remained till the year 1704, and had a garden whose northern boundary was the southern side of the present market. The estate being greatly improved, Francis, Earl of Bedford, in 1640, employed Inigo Jones to build a chapel-of-ease to St. Martin's for the convenience of his tenants; his sons were allowed 7,000*l.* on account of this building and endowment of this church by Oliver Cromwell, out of the fines they were liable to pay by virtue of his Act to prevent the multiplicity of buildings in and about the suburbs of London. The building and adornment of Covent Garden Market as it now appears were a boon conferred upon the surrounding inhabitants, and particularly to the temporary occupants of the buildings over the piazzas; they have not only added to the usefulness of the market and the accommodation of the fruiterers and market-gardeners, but they have also been the means of clearing away an abominable nuisance of heaps of putrid vegetables, and scenes of drunkenness, and abuses now pretty nearly concentrated within the pale of Billingsgate. Covent Garden was formerly an arena in which to pass through the ordeal of pillory, for when the will to punish was not wanting, there was no lack of rotten eggs and garbage to furnish the material.

(To be continued.)

## OPENING OF THE ALBERT BRIDGE, MANCHESTER.

On Thursday, the 26th of last month, the Albert Bridge, a fine new structure, which is just finished, and which connects the boroughs of Manchester and Salford, was publicly opened by the authorities of the two boroughs, and the magistrates of the county. The bridge has been built at the expense of the county, and is a very substantial erection thrown across the river Irwell by one arch. The carriage and footways of the bridge measure together 18 yards from within the battlements.

About one o'clock the magistrates arrived, and were loudly cheered by a very large number of persons who had assembled at each end of the bridge to witness the ceremony. They were shortly followed by the mayors and corporations of the boroughs of Manchester and Salford, each body forming a separate procession, headed by the military bands now stationed in the boroughs, and followed by a large number of the most respectable inhabitants of both townships. The Salford procession was joined by the churchwardens and sidesmen.

Amongst the gentlemen present we noticed Sir Thomas Potter, Knt.; James Kershaw, Esq., late mayor of Manchester; R. S. Sowler, Esq., barrister-at-law; W. Garnett, Esq.; W. Wanklyn, Esq., of Pendleton; J. H. Wanklyn, Esq., of Pendleton; Joseph Brotherton, Esq., M.P., &c. Mr. Charles Carrington, the bridgemaister for this county, and Mr. Broadhurst, treasurer to the borough of Manchester, had provided an excellent supply of wines, &c., which were laid out on a large table, temporarily fixed on the north-easterly side of the bridge for the occasion. The two bands stationed themselves in front of the company, and played several airs during the proceedings.

W. Garnett, Esq., chairman of the bridge committee, addressed the company at considerable length, pointing out the advantages that would be derived to both boroughs by the new bridge. He congratulated the authorities and the gentlemen present on the rapid improvements that were going on in the towns of Manchester and Salford. He called attention to the condition of Manchester, now with its wide and spacious streets, in which only a few years ago two carts could not pass each other. He well recollected the time when there was but one bridge for carriage across the Irwell, and now there were five, some of which were ornaments to the town. After some other observations, he christened the new structure "The Albert Bridge," which was received with loud cheers. Mr. Garnett afterwards gave, "The Queen," "Prince Albert and the



Royal Family," "The Corporations of Manchester and Salford," "The Bridge Committee," "The Boroughs of Manchester and Salford," "The Bridgmaster," "The Towns and Trade of Manchester and Salford."

These sentiments were loudly cheered and

severally responded to by the Mayors of Manchester and Salford, Mr. Brotherton, Mr. Addison, and Mr. Wooliam.

At the close of the ceremony the authorities and gentlemen again formed themselves into procession, and proceeded to their respective Town Halls, where they separated.

Immediately after the departure of the authorities, a large number of coaches, carts, waggons, &c., loaded with people, passed over the bridge, amidst the cheers of the multitude assembled.—*Herald*.

#### MONUMENT TO LORD COLLINGWOOD.

It affords us pleasure to learn that the committee of the subscribers to the monument proposed to be erected to the memory of the late Vice-Admiral Cuthbert Lord Collingwood have resolved upon completing the undertaking with all convenient speed, in reliance on the public for the inconsiderable amount of money yet deficient. Although no subscription list has for some time been advertised, and but little publicity given of late to the proceedings that have taken place, it appears that upwards of 2,000*l.* have been already placed at the disposal of the committee, and it is calculated that another 1,000*l.* will be amply sufficient to finish the work in a style befitting the character of the illustrious individual, the renown of whose brilliant actions it is designed to perpetuate and extend. The architectural design is by Mr. Dobson, and the execution of the colossal figure has been intrusted to Mr. Lough, a native artist, who has had the honour of being selected by Royal patronage to chisel the bust of her Majesty, to be placed in the niche above the entrance of the Royal Exchange, in London. It was at one time contemplated to place the monument in the Castle-yard at Tynemouth, but a much more eligible site has since been fixed upon, near to the entrance of the river, the requisite ground having been generously given by the Duke of Northumberland, in addition to his Grace's noble donation of 500*l.* It will form a striking object to mariners navigating our coast, and the land immediately surrounding it will be laid out as pleasure-grounds, with public walks.—*Newcastle Journal*.

#### TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLLSON.  
(Continued from p. 483.)

96. **ASH.**—This tree, the "Venus of the Forest," is a native of Europe and the northern parts of Asia, and abounds in Great Britain: it is a forest-tree of the first class, both in beauty and magnitude, yielding to the oak in girth of trunk and in circumference, but frequently over-topping it in height. Being prolific in ripening its winged seeds, it disperses itself on the winds pretty generally over the face of the British Isles; and is frequently found adorning the crumbling ruins of ancient buildings, beautifying, while, by the sinuosities of root and branch, amongst cracks and crevices, it hastens the period of their downfall: it also places its bright verdure in contrast with the arid and sterile aspect of loose and slaty rocks, where, especially in mountain-scenery, it appears to peculiar advantage, waving its slender and graceful foliage over precipices, or from inaccessible clefts, affording it the scantiest foothold. It is, nevertheless, much better when planted by itself for timber or underwood, and should neither be permitted a place in hedge-rows nor on pasture lands, for its numerous roots spread widely on the surface, engrossing the nutritive moisture within its reach, to the total deprivation and consequent destruction of surface-plants. It is rapid in growth and of a towering nature, capable of attaining, on rich gravelly loam, a diameter of four or five feet; but trees of even less than this bulk are often found to have begun to rot at the core, and it is therefore seldom allowed to arrive at full maturity; besides which, the circumstance of the young being in fact more valuable than the old wood, conduces, with its extreme usefulness for many purposes, to its being made available at a more early age: it rarely lives

to 500, and the age for felling is between 50 and 100 years,—the season, winter, when the sap is still, it being very liable to worms if felled when abounding in sap.

97. The quality of the timber is very much dependant on the situation and soil on which it is raised: it delights to grow in the woods, but will, on good soils, flourish in open grounds; and a clayey soil and northern exposure seem to be the most proper for producing it in perfection. Its general form and appearance too are determined by these circumstances; for it is found that when grown singly or unconfined, its leading stem not only shoots up, but throws out, at acute angles, numerous side branches, which, when advanced in age and increased in foliage, take that graceful sweep that obtains for the tree, when full-grown, so much admiration: when planted on the margin of some lake or stream, they take so much of this elegant pendent character, as to acquire a resemblance to the weeping willow. Its foliage consists of light, thin, pale-green pendent leaves, generally winged—having an odd one at the end, with five or six pairs of small ones; the seed-bud, which is oval and compressed, changes into a long membranaceous vessel, containing a single seed; many trees produce profusely bunches of long thin seeds, called keys, giving a singular and not unpleasant appearance, whilst others have hardly any. It is one of the latest trees in donning its vesture of green, and amongst the first to relinquish its leafy honours to the nipping influence of autumn winds. The seeds should be gathered in autumn, and the sowing in the nursery-beds may either be done immediately, or deferred till spring. When the seedlings are five or six inches high, they should be planted out in rows, to strengthen, until finally transplanted. In order to raise timber of the best quality, a piece of land, of the nature already referred to, should be thickly sown or planted—by placing the trees about two feet apart: when these have risen (which they do rapidly) and appear to be choking each other, one-half of the poles should be withdrawn, and the remainder left to attain a marketable growth of from 40 to 60 feet in height and from 8 to 12 inches diameter.

98. Besides the common ash here treated of, there are other species in America and elsewhere. There is a variety, indigenous to Italy and abundant in Calabria, grown in England, seldom exceeding 20 feet in height, which, as well as another, we believe, furnishes the honey-like concentered juice or gum called manna, that is given to infants and young children as a mild aperient. This production, which is of a granular form, about the size of coriander seeds, and of a brownish white in colour, has a sweetness and a degree of sharpness which render it agreeable. In heats, unaccompanied by rain, towards the end of July, it is obtained by slitting the stem of the tree horizontally, when the liquid gum exudes from the wound and is conveyed from it by straws, or the foot-stalks of the leaves, and received in cups formed of leaves of the maple; this exusion continues for about a month. Besides this, there are several others, one of which, a variety of the common ash, is the creeping-branched, and forms, by engraving high on the tall stem of the common ash, a rather ornamental weeping tree; others are the yellow-barked, curled-leaved, and various-leaved, with many more which are exotics. Very interesting results have been obtained by grafting the common and Persian lilacs on the common ash; and it has been suggested that the pendulous ash would form a beautiful object having its branches grafted with the Persian species. The scions are recommended to be taken off in January or February.

99. The mountain-ash, fowler's service-tree, witch-wood, or rowan, though of the smaller class, is yet an interesting object and worthy of notice. It is very common throughout Britain, particularly in mountainous districts; in the wild and rugged scenery of the Scottish Highlands, many picturesque specimens are seen, and it imparts to woodland and suburban gardens an equal beauty, whether in spring, when bearing its cream-white and sweetly-scented flowers, or in autumn, loaded with its coral-red clusters of berries. It has much of the graceful pendent tendency of its species, with elongated branches drooping under their light and lively verdure. Superstition invested the rowan tree with a mysterious and preternatural character,

but intelligence is fast dispelling it, averting the "evil eye" which its potency was wont to cope with. It is raised from berries, which may either be sown immediately they are ripe, or kept till spring in some cool place, amongst sand. The wood is, from its comparative smallness, seldom made available for purposes of manufacture; but it is good in quality, fine-grained, hard, and susceptible of a high polish, and on these accounts is used by the turner, and for the handles of cutlery and for other small purposes. It is likewise employed in the manufacture of crates, baskets, and hoops, and makes capital poles.

100. In the common ash, the wood of young trees is, in colour, a brownish white, with an inclination to green; that of old trees is something like oak, but more streaked with dark veins; the annual rings are very distinct, being porous in one part and compact and darker in the other: there are no larger transverse septa, and therefore no flowers. The substance and quality of the wood are pretty uniform throughout, but the outer part is, in some degree, the toughest: that in which the fibre is straightest is generally accounted the best. It is difficult to work, particularly the young wood, which exceeds the old in toughness, and, indeed, is tougher and stronger than oak; the old wood has a tendency to brittleness; the wood is tasteless and inodorous.

101. With respect to seasoning, it must be observed that the ash loses substance and weight by long steeping in cold water; but, for timber that has been felled in spring (in which, it may be remarked, the pores have a reddish tinge) water seasoning is very beneficial. In consequence of its great toughness and elasticity, wherein it excels every other British timber, and which render it valuable for purposes where great strains and sudden shocks have to be sustained, it is very extensively used both by the coach-maker and cartwright in making vehicles of conveyance, also for machines, ploughs, and other implements of husbandry, dairy utensils, turnery, tackle-blocks, &c., for which no wood is better adapted; and although very subject to rot when at rest and exposed to the vicissitudes of the weather, it will, when applied as above, kept in constant use, and taken proper care of, last a very long period: it is only in peculiar cases that it can be introduced in buildings, and then there should be facilities for its reinstatement in case of decay. It is too flexible for posts, and beams, but ought to be useful for ties; though tolerably durable, however, when kept dry, it is not sufficiently so for the general purpose of the house-carpenter.

102. We have now, in the description of timber-trees, reached the limit to which, in the opening of our subject, we promised to confine our attention; namely, the consideration of such only as were within the meaning of the term "building-materials:" but there are, besides those described, so many trees which, either from their actual use in the more ornamental or in the minor purposes of building, or their eligibility for being so applied, are objects of more than mere passing interest, that we need scarcely apologize for touching on them. Accordingly, before passing to the next stage of the subject in hand, we proceed to notice the leading features of some of them, whether or not yet introduced into the British Sylva.

103. **YEW.** This tree is believed to be the most ancient in Great Britain; indeed, there appears reason to think that it is, of all European trees, the one capable of attaining the greatest age: there are now individual examples in England respecting which no doubt can exist of their having been trees at the Christian era, and at least one that has considerably exceeded 3,000 years. This tree is in full health, and is perhaps the most ancient specimen of vegetation in Europe; it is also of remarkable magnitude, being about 27 feet in diameter. The yew is indigenous to Britain, grows naturally in many parts both of England and Scotland, and is hardy enough to endure the inclemencies of our severest seasons: it is most frequently grown as an ornamental shrub, and is valuable where sheltered by surrounding trees as an underwood, shooting up more rapidly and with a cleaner stem than when grown alone. Its dark foliage affords an advantageous contrast to trees of a livelier character; it has also much beauty of its own, being indeed considered by some as one of the most beautiful of our evergreens: during its growth, and till



it is several hundred years old, it is of a broad, perfectly conical shape, but arrived at full maturity, its peaked summit begins then to decay, and it assumes gradually the round-headed form: its stem is of stout proportions, stiff and erect; its branches strike out horizontally, beginning very close to the ground; and both are rough, being grooved or indented lengthwise. Its leaves are small, long and slender, of a needle form, and very close: it bears cones, also a scarlet, sweet, and glutinous berry, which incloses a small hard seed or nut, the kernel of which is not unwholesome; but the bark or wood of the tree itself would appear to be otherwise, for at Crediton, a farmer having cut down a yew-tree, and left two or three faggots lying where four bullocks had free access, and these having been for some time deprived of green fodder, they ate them with great avidity, and very soon died—the poison having, as it was proved, acted on the brain and nervous system, producing congestion in the membranes of the former, and other symptoms resembling apoplexy. The yew will grow in most soils, but it loves a sandy loam, and chalky situations are very favourable to its success: it is propagated by the seeds, sown in autumn as soon as ripe.

104. The gloomy associations connected with the yew, its qualifications for the adornment of places consecrated to solemnity, its ancient dedication to such purposes, its own sombre appearance, and the tardiness of its growth, conspire greatly against its cultivation, and leave it almost entirely to its old and appropriate haunt, the church-yard: the examples of ancient yews of great magnitude in such situations are numerous, and contain incontrovertible evidence of their having necessarily existed before either Roman or Christian had interrupted the sacrificial rites of Druidism; and a conclusion has therefore reasonably suggested itself, that this solemn evergreen was, from the suitableness of its shade, and its enduring nature, especially cultivated by the Druids in forming their sacred circles, and that the promulgators of Christianity, in superseding Druidical worship, erected their churches, and set out their church-yards, in the very groves which they desired to consign to oblivion. Of the superstitious estimation in which it has been held, we read that dead bodies were covered "by shroud of white, stuck all with yew," and that, in some parts of England, to preserve them from putrefaction, they were rubbed over with an infusion of its leaves.

105. In olden times the wood of the yew was held in high estimation, as furnishing the material for the long bow, the pliant and trusty weapon of the hero of merry Sherwood; and which contributed so greatly to securing the splendid victories of Cressy, Poitiers, and Azincourt; indeed, so highly was it esteemed, that statutes were enacted for its preservation, and for preventing the wood from being exported. It was also the law of the land that every man should have a bow made of it, or of some similar wood; the introduction of firearms, however, had the effect of deteriorating its value in a great measure, and the tree came in course of time to be regarded chiefly as an object of ornament; in which capacity, in the parks and lawns of our nobility, as well as in hedges, it was subjected to the vilest whims of fantastic imagery, being clipped into the most grotesque and ridiculous chimeras, vestiges of which are extant even at the present day. The wood is hard, compact in texture, fine and close in grain, elastic, susceptible of a very high polish, and unequalled in durability: it is therefore valuable and highly appropriate for the cabinet-maker's art, especially when cut into veneers, so as to bring out to advantage its veins and various shades of colour, which are very beautiful. It is also obviously desirable for axle-trees, but for which its scarcity must preclude it being made available.

(To be continued.)

#### COLOSSAL COLUMN IN RUSSIA.

THE Alexander Column is viewed with very justifiable pride by the Russians, because it is the most remarkable of the kind in the whole world; neither ancient nor modern times ever saw so large a piece of stone fashioned from one quarry. (?) But then art has done its best to spoil the effect which this work produces.

The column is surmounted by a gigantic figure of Hope, holding the cross, and pointing upwards, but in attitude so unfortunate that, seen from two sides, the exceedingly small head of the heavenly handmaid, which is unaccountably poked forward, is hidden by the perpendicular of the cross, and gives the appearance of a headless figure, reminding one irresistibly of the favourite English sign of the "Original Good Woman." "How is it," was observed to a certain Russian, whose family was notorious for its wit, which it appears was hereditary,—"How is it that this figure of Hope is without a head?" "Would Hope itself," he replied, "dare to take up its abode beneath the withering glance of a Russian emperor, *si elle n'avait pas perdu la tête?*" The very anecdotes connected with this column would fill a volume, and are highly illustrative of the state of things in Russia. A recent traveller relates that orders were given to procure a piece of granite eighty-four feet long; in place of which, the director having found one nearly one hundred, cut off the superfluous length, in literal obedience to his instructions. *Si non e vero e ben trovato.* \* \* This splendid pillar was found to contain a deep crack, which was hastily filled up with cement, and the whole polished over; but when raised to its present position, a few summers and winters rendered the crack again apparent. That the column was cracked there could be no doubt; that the crack will ever spread in a stone so durable as red granite is another question. But in Russia nothing belonging to the government can be admitted to have even a flaw. The imperial vanity was touched, and a commission of admirals, generals, and counsellors of state, was formed, to proceed to the top of the column by scaffolding, and verify the existence or non-existence of the alleged flaw, which stared all St. Petersburg in the face. Whether the commission endeavoured to deceive the emperor by reporting as he wished—for it is always an ungracious task to be the bearer of any tidings which disturb the serenity of the spring-head of the state—or whether they had their cue to deceive the public, is difficult to determine; but they unanimously agreed, "that it was an optical delusion, occasioned by the imperfect polish of that part." &c. We cannot charitably admit that all the members of the unanimous commission were themselves deceived, unless they were more than St. Thomas like: because two of them were previously heard to admit that they had themselves put their fingers into the crevice before the column was raised up at all.—*Travels in Russia, 1844.*

#### LECTURES ON ARCHITECTURE AND ANTIQUITIES.

##### Lecture V.

##### ROMAN ARCHITECTURE.

(Continued from p. 484.)

LEAVING the Arches and Temples of Rome, we have now to contemplate her single columns erected in honour of some of the emperors, and styled emphatically *Triumphal*, as the inscriptions testify. The first which comes under our notice is the COLUMN of TRAJAN, erected A.D. 114, from the design of Apollodorus. It rose in stately grandeur in the midst of a magnificent Forum which bore the emperor's name, and some fragments of the columns which composed it still remain. An extensive excavation discovered that the original pavement of the Forum was 15 feet below the level of the modern streets; and a wall is now built, by which means the whole of the Trajan column is fully developed. The Forum must have been very splendid; the part excavated shews a length of 170 feet, and it is said to have extended to 1150 feet; the width was 180 feet, divided by four rows of columns into five aisles, the central avenue being 83 feet wide. The whole of this area is supposed, from careful investigation, to have been under cover; as the marble pavement is only 1½ inch thick to those parts which were under cover, whilst it is 4 inches in thickness where exposed. This pavement was laid out in squares of different marbles, viz., white, veined, giallo antico, and pavonazzetto. In the centre of the Forum stood a noble equestrian statue of Trajan; and the top of the poricoes was adorned with equestrian and other statues, and with military ornaments, chiefly in bronze.

The Forum was surrounded by a library, a basilicon, a temple, and a triumphal arch. The column is of white marble, the pedestal is 20 feet 3 inches square, and composed of seven pieces of marble. The shaft of the column is in nineteen pieces, the lower diameter is 12 feet 2 inches; the stairs are cut out of the solid blocks; the pedestal is 17 feet 11 inches high, and the column 97 feet 9 inches. The ancient crowning pedestal is 9 feet 6 inches, on which formerly stood the statue of the emperor, which was taken down to make room for the statue of Saint Peter, placed there by Pope Sixtus V. The ashes of the emperor were contained in an urn placed on the summit, an honour, as Eutropius observes, which had never been decreed to any before him.\* This column is Roman-Doric in its style (though by some called Tuscan), having the ovolo under the abacus carved with the Ionic egg and anchor ornament, and a member below that cut into the bead enrichment. This capital is in one block 14 feet square and 5 feet deep. The shaft of the column, with the exception of about 1 foot at top which is fluted, is entirely covered with sculptured figures which proceed in a spiral direction from the base to the summit. These reliefs represent the exploits of Trajan in his different wars. The pedestal is ornamented with trophies and arms, and crowned with festoons supported by four eagles.

The ANTONINE column was erected by the emperor Marcus Aurelius, in commemoration of victories obtained over the Germans, Armenians, and Parthians, as the inscription records, and dedicated to Antoninus Pius.† It stands in a square called from it the Piazza Colonna. The height of the column itself is only 6 inches less than that of Trajan, but its diameter at the base is nearly 1 foot more, and the upper diameter is only 1 inch less than the lower diameter of Trajan's column. It has therefore rather a clumsy appearance from the want of sufficient diminution. Though the two columns are so nearly of the same height, the pedestal of the Antonine exceeds that of the Trajan considerably. The earth has accumulated around it and buried about 10 feet of it, the remainder is 25 feet 10 inches high, exceeding the pedestal of Trajan's column by eight feet. The whole height from the present doorway to the top of the capital is 123 feet, an excess of about 8 feet above the other column. It was, like that, sculptured with figures, in a spiral direction, in high relief, but not so well executed; the sculptures represent the victories of Marcus Aurelius. This column, being much ruined, was in 1589 repaired by Pope Sixtus V., who cased it with travertine stone, and placed on the summit the statue of St. Paul, instead of that of the Emperor Antoninus. To this displacement of the imperial effigies to make way for those of the Saints, Lord Byron alludes in "Childe Harold" (C. IV., s. 110):—

"And apostolic statues climb  
To crush the imperial urn whose ashes slept  
sublime."

The pedestal is quite plain at present, but was originally adorned with sculpture.

The column of PHOCAS is of Greek marble; it is simply a fluted Corinthian column 4 feet in diameter, and the whole height, including the pedestal, is 54 feet. It is supposed to have been erected in honour of the emperor in his lifetime (he died A.D. 610), and to have had a statue on the summit, as inferred from a restored inscription which purports that the column and statue were erected by the Patrician Smaragdus, Exarch of Italy, and Provost of the Imperial Palace. Phocas rendered himself so odious by his vices and tyranny, that Heraclius was recalled from Africa, by Priscus, son-in-law of the emperor, to rid the country of such a monster.

We have noticed some of the finest structures of Rome, in her triumphal arches, her temples, her honorary columns, but

"the greatest is behind."

\* "He was more  
Than a mere Alexander, and, unstain'd  
With household blood and wine, serenely wore  
His sovereign virtues,—still we Trajan's name adore."  
BYRON.

† M. Aurcius, Imp. Armenis Parthis Germanisq. Bello maxime Devictis, Triumphalem hanc Columnam rebus gestis insignem Imp. Antonino Pio Patri Dedicavit.



## INTERIOR SECTIONAL VIEW OF THE REMAINS OF THE COLISEUM, AT ROME.



The mighty Coliseum now comes under our consideration. Notwithstanding nearly half of its walls have been destroyed for the sake of erecting other buildings,\* it still presents to view one of the most magnificent and interesting ruins of antiquity:—

"A ruin, yet what ruin! from its mass  
Walls, palaces, half-cities, have been rear'd;  
Yet oft the enormous skeleton ye pass,  
And marvel where the spoil could have appeared.

Hath it indeed been plunder'd, or but clear'd?"

CHILDE HAROLD, C. IV. S. 143.

This immense edifice, called sometimes Colosseum from its vastness, (or from an enormous figure of Nero placed on or near the site, and which was 120 feet high,) was commenced by the Emperor Flavius Vespasian, (and from that circumstance it is frequently spoken of as the *Flavian* amphitheatre,) and finished by his son Titus about A.D. 79 or 80. It was built over the marshes of Nero, as appears from the lines of Martial (Epig. 2):

"Hic ubi conspici venerabilis amphitheatris  
erigitur moles,  
Stagna Neronis erant."

But it was built from a *part* only of the materials of Nero's Golden House, which was demolished by Vespasian as being too splendid even for an emperor.

This amphitheatre is of an oval form, one diameter (the conjugate) being 620 feet, and the other (the transverse) 513 feet; the height is 157 feet, it is nearly 1,800 feet in circumference, and occupies a space of about six acres; the longer diameter of the arena is 287 feet, and the shorter is 180 feet. The external wall is decorated with four orders of Roman architecture, the Doric, Ionic, Corinthian, and Composite, rising one above the other, with arches in the three lower stories to the number of eighty in each tier, between the columns which are engaged; the arches of the second and third stories were originally filled with statues:—

"Arches on arches! as it were that Rome,  
Collecting the chief trophies of her line,  
Would build up all her triumphs in one dome,  
Her Coliseum stands."

CHILDE HAROLD, C. IV. S. 128.

\* The Farnese Palace, built for the nephews of Pope Paul III. from the design of Michael Angelo, was erected from the travertine stone taken from the Coliseum, and so was the Palace of the Cancellaria from Bramante's design; and the Palace of Saint Mark was supplied from the same noble quarry. Pope Benedict XIV. checked the plan of spoliation by erecting altars around, and a cross in the centre, and consecrating it out of respect to the blood of the Christian martyrs who perished in its arena during the persecutions.

On the occasion of dedicating this vast amphitheatre, which could contain 109,000 spectators, Titus exhibited shows to the people for 100 days, 5,000 wild beasts were slaughtered during this period by fifty in a day (Suetonius), and battles on foot and in boats were represented by gladiators. (D. Cassius.)

This mighty fabric has no parallel in the world for size and immensity; even the huge Pyramids of Egypt cannot compare with it, for they diminish at once from their base to nearly a point, whereas the Coliseum rises perpendicularly for 157 feet 6 inches. According to an early writer, it was finished in two years and nine months, "Biennio post ac menses novem amphitheatri perfectio opere." (Victor.) Well, therefore, might the Roman poet exultingly declare that every other labour must yield to that of the imperial amphitheatre:—

"Omnis Cæsareo cedat labor amphitheatro;"  
(MARTIAL.)

and from the time of its erection down to the present day it has been looked upon as one of the greatest marvels of art, and has furnished for centuries an exhaustless theme alike for the rapture of the antiquary, the pencil of the artist, or the glowing description of the poet. But in contemplating the structure we can never lose sight of the inhuman purposes to which it was devoted; the recollection of the blood of men, of Christians, slaughtered to make a Roman holiday, must always be associated with the aspect of

— "those scarce mortal arches,"

Pile above pile of everlasting wall!  
The theatre, where emperors and their subjects  
(Those subjects Romans) stood at gaze upon  
The battles of the monarchs of the wild  
And wood, the lion and his tusk rebels  
Of the then untam'd desert, brought to joust  
In the arena, (as right well they might  
When they had left no human foe unconquer'd,)  
Made even the forest pay its tribute of  
Life to their amphitheatre, as well  
As Dacia men to die the eternal death  
For a sole instant's pastime, and 'pass on  
To a new Gladiator."

LORD BYRON'S DEFORMED TRANSFORMED.

The practice of giving shows to the public, in which wild beasts were engaged with each other or with men, and those men Christians,\* and the gladiatorial fights between single com-

batants or in large numbers, was continued by the emperors until the year 404 A.D., when an Eastern monk, Almachius, or Telemachus, (and under the latter name he was sainted,) rushing into the arena to separate the combatants, was slain, and the inhuman shows were abolished by Honorius. But it ought to be remembered that a Christian poet, Procopius, had previously exhorted Honorius to put an end to this dreadful sport,

"Where man was slaughtered by his fellow-man."

The space devoted to the arena was an ellipsis whose longer diameter was 287 feet, and the shorter 180 feet; the remainder of the immense inclosure was occupied by the seats rising in range above range, disposed in the most admirable manner for every one to see (hence such buildings were called *visoria*), and accessible by corridors and passages communicating with staircases, arranged with such consummate skill that the immense numbers of citizens could find their allotted stations easily and without delay.

The lowest seats, on the podium, which were of marble, were the most honourable, being reserved for the emperor, senators, ambassadors, magistrates, and persons of the highest distinction; above these to the top of the second story, the seats, also of marble, were occupied by the knights (equites) according to their rank, the civil and military tribunes; in the upper rows were persons of inferior rank; and the common people filled the highest seats of all, which answered to the galleries of modern theatres, and placed at some distance above the rest. To protect the spectators from the heat or rain, the whole of the immense circle was at times covered by an awning (velarium) stretched from 240 masts or poles which were placed on the outside of the upper story, passing through the cornice, and resting upon corbels. This awning was commonly of woollen cloth, and sometimes of silk; on one occasion Nero caused a purple velarium to be extended across a theatre, representing the heavens, with stars of gold, and his image in the centre, seated in a car, in imitation of the sun.

The Coliseum suffered frequently from lightning; and when the Christian faith was established, on the downfall of paganism, the sports of the arena were discontinued, and, as a consequence, the building itself being neglected, fell into decay. In the year 1084, Guiscard, the Norman, pulled down one half of the Coliseum, lest it should be used against him as a citadel; to which purpose it was actually

\* Many learned commentators, as Drs. Whitby and MacKnight and Schlegel, consider that the words of St. Paul, 1 Corinthians, xv. 32, refer to an actual combat in which he was engaged with beasts at Ephesus.



appropriated during the bitter contests of the Guelphs and Ghibellines, being held as a fortress by the Frangepani family, until wrested from them by the rival faction of the Anibaldi family.

G. R. F.

(To be continued.)

#### DECORATIVE ART SOCIETY.

ON Wednesday, 25th ult., a paper "On Gilding" was read by Mr. Proctor, explaining the various processes adopted respectively in gilding metal, wood, and composition; with remarks on the use and abuse of the art in interior decoration.

The paper was followed by an animated discussion.

On Wednesday the 9th inst., the first part of a paper "On Paper-hangings" will be read.

#### THE EMBANKMENT OF THE THAMES.

THE following is a copy of a letter from the Earl of Lincoln to the Lord Mayor, with the plan for the embankment of the River Thames between Battersea and Vauxhall Bridges:

"1, Whitehall-place, August, 1844.

"My Lord,—As chairman of the Commissioners appointed by her Majesty 'for inquiring into and considering the most effectual means of improving the metropolis, and of providing increased facilities of communication within the same,' I have the honour to transmit to your Lordship herewith, for the information of the corporation of London, as the body intrusted with the conservancy of the river Thames, a plan which it is their intention to recommend to the favourable consideration of her Majesty for the embankment of its northern shore, between Battersea and Vauxhall Bridges; and I am to add, that it will be very satisfactory to the Commissioners to have the concurrence of the conservators in a measure which has been framed as much in reference to the improvement of the navigation of the river, as to the many other advantages of which an embankment in that locality is obviously susceptible.

"I have the honour to be, my Lord,  
"Your Lordship's most obedient servant,  
"LINCOLN."

#### IMPROVEMENTS IN THE TOWER.

AFTER considerable delay, preparations commenced last week for the extensive improvements about to be made in the Tower, agreeably to plans submitted to, and approved of, by the Government. Barracks are to be built on the site of the small armouries which were destroyed by fire in 1841, but as their width will be greater than the late buildings, the frontage of the new barracks will encroach several feet upon the consecrated ground extending eastward from the Royal Chapel of St. Peter, in which are deposited the mortal remains of many distinguished and respected personages. Their hallowed remains are, however, to be carefully raised and placed in a vault at the rear of the Royal Chapel, and for that purpose a wooden barricade, to be covered, is now in course of erection (to prevent the idle gaze of the public) on the parade at the White Tower. When this solemn duty is completed, the erection of the barracks will commence, along with many other improvements in the garrison, for which a grant of money was included in the estimates last session of Parliament. The alterations in the Jewel-office proceed with small-space rapidity, to the great disappointment of strangers visiting the Tower desirous of viewing the Crown jewels, &c., recently deposited in the Haymarket. Notwithstanding the abolition of fees from visitors to the warders, in lieu of which they receive full compensation, these worthies seldom or ever refuse to accept a gratuity when it is tendered to them; they, in fact, expect something, and if disappointed, their snarling propensities are not unfrequently exercised. We believe his Grace the Duke of Wellington, who is Constable of the Tower, is totally ignorant of these illegal practices. The member for Montrose (Mr. Hume), who exerted himself in getting the charges for the admission of the public to the Armouries and Jewel-office greatly reduced, and the warders' perquisites entirely abolished, should inquire into the matter.—*Times*.



HAMBURG MEDAL, COMMEMORATIVE OF THE FIRE IN 1842.

THE above is a representation of a medal, lately struck by order of the authorities of Hamburg, to commemorate the dreadful fire which took place there on Thursday, the 5th of May, 1842. The impression, which has been kindly forwarded to us, was, as the inscription on the edge of it states, "Struck out of the copper from the tower of the church dedicated to Saint Peter in Hamburg." On the obverse is a representation of St. Peter's Church as it existed before the fire, with an inscription, of which the following is a translation:—"The design of benevolent patrons accomplished the first building of this church in their lifetime," or "The piety of our Forefathers built three in their lifetime. 1342—1516."

The reverse represents the same church in ruins, as it appeared after the fire, and has this inscription:—"United powers (or public feeling) will worthily restore thee" (i.e. the ruin), to which is added, "Destroyed by fire on the 7th of May, 1842," and the artist's name, "Wilkins, Bremen."

As a specimen of die-sinking, it is beautiful and finished. If our information be correct, copies of the medal have been sent to those persons who took the most lively interest in, and most liberally relieved the sufferings of, the distressed inhabitants during their severe trials while destitute of home, food, and clothing.

St. Peter's Church was considered one of the finest specimens of ecclesiastical architecture in northern Germany. It was situated in the north-west corner of the cathedral place, and was built between the years 1139 and 1195. Its length was 225 feet, and its breadth 135 feet. The steeple, which was begun in 1342, and finished in 1516, was 416 feet high. It had two chimies of bells, one of which was put in motion by the clock machinery, and played every half-hour; the other was played by means of keys at certain times of the day, and on particular occasions, by a person specially appointed for that purpose. Downes, in his "Letters from Mecklenburgh and Holstein," 1822, while describing Hamburg, thus refers to these bells: "I was awakened by the sweetest of all sweet harmonies issuing from the belfry of one of the churches. It was neither ringing nor chiming, but a regular piece of composition, first and second."

The interior of the church was overloaded with monuments, paintings, carvings, and stained windows. The subject of one of the oldest paintings was Hamburg in the 15th century, in the foreground of which was represented the sacrilegious attempt of Heliogorus; it hung behind the pulpit, and had been there ever since 1554. In the nave hung portraits of Martin Luther and his friend Melancthon. Near the font was another painting of Hamburg in 1250, on which might be perceived three churches, two convents, and St. George's Hospital. The altar-piece was painted by S. Bendixen, in 1814; it represented our Saviour appearing to Peter while performing his devotions.

The calamity which Hamburg sustained by the awful fire in 1842, was unequalled in extent except by the fire of London: the heart of the town was reduced to a heap of ashes. Many years must elapse before the damage can be repaired, and

the traces of it effaced. The conflagration broke out in the Deichstrasse, near the Elbe, on Thursday, May 5, from what cause is unknown, and raged until the following Sunday, in spite of all efforts to oppose it, spreading, and widening as it spread, until it had involved in destruction two sides of the Alster Basin, levelling almost all the buildings, public and private, over an area of 18 acres, nearly in the form of a triangle, sweeping down 1,749 houses, 61 streets, besides courts and alleys, and even crossing the broad canal of the Alster. The attempts made to arrest the flames, when the engine had proved useless, were, first to pull down the houses; but in unroofing them, the timbers and rafters were laid open, and more readily caught fire from the sparks lodged in them; artillery was next employed to batter them down, but the balls only made holes in the walls, and passed through. Finally, the plan of blowing them up with gunpowder was resorted to, and this useful but dangerous task was executed by the English engineer Lindley, who fortunately for the town was present at the time, and understood the proper mode of proceeding. The first check was given to the fire by blowing up the Rathhaus, in whose cellars were deposited all the treasures of the state in silver bars. The churches of St. Peter, St. Nicholas, and St. Gertrude were severely consumed. The New Exchange, though surrounded by the flames, by a miracle escaped almost uninjured. The sympathy caused by this event in all parts of the globe was proved by the voluntary subscription raised for the sufferers, amounting to 270,000*l.*, of which England contributed 41,000*l.*

Hamburg will profit to a certain extent, by the calamity, in the improvements which will be introduced in laying out the new buildings, the widening of streets, the construction of sewers, and the fitting up of some of the stagnant fleeths or ditches.

The plan of these improvements has been prepared by Mr. Lindley. A new and handsome Rathhaus is to be built on one side of a new square, fronting the Borse. Another improvement is the drainage and conversion into a new quarter of the town of a low marshy tract on the right bank of the Elbe called Hammerbrook. It has been intersected by canals, the water pumped out by a steam-engine, the surface raised 4 feet over a space of an English square mile.

A correspondent, in a letter dated Hamburg, September 27, 1844, thus writes on the improvements now making in the city:—"Hamburg is progressing daily; new streets continue to be marked out, and new buildings arise so rapidly, that it is necessary to perambulate the city frequently to keep up one's topographical knowledge. A custom prevails amongst the builders, on completion of the shell of any house, to give a kind of *fête* within it to the workmen employed. The building is hung over with flags and festoons, and a band of music is engaged for the occasion. The workpeople are plentifully regaled with the good things of this life; they eat and drink to the sound of the fiddle, bass viol, and sundry horns, and then begin their favourite waltz; the reel is not attempted until it is time to depart, and it is then the favourite dance of all as they wend their way through the streets homeward."



LIST OF NEW PATENTS RELATING TO  
ARCHITECTURE, ENGINEERING, &c.,  
GRANTED FOR ENGLAND.Furnished by Mr. A. Prince, of the Office for  
Patents of Inventions, Lincoln's-Inn Fields.

[SIX MONTHS FOR ENROLMENT.]

Powell, Arthur, and Powell, Nathaniel, of Whitefriars' Glass Works, glass manufacturers, for improvements in the manufacture of quarries and other panes of glass for windows. July 30.

Stratton, Benjamin Tucker, of Bristol, agricultural mechanist, for improvements in welding sheet iron for ship-building, and other uses. August 1.

Cormack, William, of Dagleish-street, Commercial-road, East chemist, for a new method or plan for purifying coal gas. August 15.

Heaton, Thomas, of Chorley, Lancaster, colliery agent, for certain improvements in hydraulic machinery, which is also applicable to raising other liquids. August 15.

Ewing, Alexander, of Dumbarton, Scotland, glass-splitter, for certain improvements in the manufacture of crown glass. August 15.

Turner, George, of Gateshead, Durham, Doctor in Philosophy, for an improved mode of directing the passage of, and otherwise dealing with, the noxious vapours and other matters arising from chemical works in certain cases. August 22.

Williames, Pryce Binkley, Legodig, North Wales, for certain improvements in the manufacture of artificial stone. August 29.

Newton, William, of Chancery-lane, civil engineer, for improvements in the means or apparatus for preventing shocks or accidents on railways, or in lessening the dangerous effects arising therefrom. (Being a communication.) August 29.

Palmaert, Jean Albert, of Brussels, for improvements in the means of economizing and applying heat obtained for known processes. (Being a communication.) August 29.

Poolo, Moses, of London, gentleman, for improvements in pumps. (Being a communication.) August 29.

Smith, James, of Queen-square, civil engineer, and Jolly, William Gairdner, residing at Endrick Bank, Scotland, for certain improvements in the form of tiles for draining, in implements for manufacturing thereof, and in the modes of manufacture. August 29.

Richard, Hipolyte Auguste, of Skinner's-place, Sise-lane, gentleman, for a certain improved apparatus for heating and lighting. September 5.

Chanter, John, of London, civil-engineer, and Lodge, George, of Leeds, engineer, for improvements in furnaces, fire-bars, hot-air generators, and flues. September 12.

Clark, Charles Wearg, of Westbourne-grove, Paddington, surveyor, and Reed, James, of Hamworthy, Dorsetshire, brick and tile maker, for improvements in the manufacture of bricks and tiles for chimneys and flues, and for other uses. September 12.

Handcock, Elias Robison, of Rathmoyle-house, Ireland, for certain improvements in mechanism applicable to a method of propelling vessels on the water. September 12.

Flockton, Webster, of the Spa-road, Bermondsey, turpentine distiller, for certain improvements in machinery or apparatus for sweeping and cleansing streets, roads, or ways. September 12.

Newton, William, of Chancery-lane, civil engineer, for improvements in machinery to be employed in the manufacturing of nails, rivets, screws, and pins. (Being a communication.) September 19.

Cassell, Edwin Edward, of Millwall, Poplar, merchant, for a material or combination of materials suitable for paving, piping, roofing, and most other purposes to which wood and iron are applicable. September 26.

Carter, James, of Delabole, Cornwall, gentleman, for improvements in cutting slate for roofing and other purposes. September 27.

Quincey, John Harcourt, of Old-street, gentleman, for improvements in the manufacture of blinds and shutters. September 27.

Nearly 1,000l. has already been subscribed towards the costs of erecting a suitable monument to the memory of the late lamented Earl of Lonsdale.

## CHURCH-BUILDING INTELLIGENCE, &amp;c.

*New Chapel at Walpole, St. Peter's.*—A new chapel-of-ease for the fen-end parts of Walpole parish, which has been some time building, was consecrated by the Bishop of Norwich on Thursday the 26th ultimo. It has neither steeple nor side aisles, is built in the Norman style, and is 46 feet long by 25 wide, with a circular apse at the east end, and a small vestry adjoining the north side of the apse. The front is plain, consisting merely of a door surrounded with a circular arch and zig-zag moulding, and two windows in the same style above, surmounted with a turret, in which two bells are hung under zig-zag arches. The roof, which is of a very high pitch, is covered with scale-tiling, and the ridge is crowned with an open *fleur-de-lis*. Four small windows on each side of the chapel are divided by plain flat buttresses, and five spaces in the apse are similarly divided. The only attempt at ornament in this part of the chapel is the introduction of a series of heads and carvings, rudely executed, beneath the nave of the roof. The first thing that strikes the eye on entering the chapel is a very heavy font, raised on three steps. An inscription in Latin round the top—"Wash me, and I shall be whiter than snow"—is almost the sole ornament of a very heavy and lumbering feature, which every one must wish were greatly reduced in size, or entirely removed from its present position. The seatings, which fill the entire chapel, leaving only a small space up the chapel, are all open, and terminated by a finial carved in oak by the hand of Mr. Moore, the rector, which consists generally of clustered leaves disposed somewhat like a trefoil. The floor is composed of tiling with raised figures and inscriptions—*Vigilate ad Orate*—copied from some found among rubbish in one of the Norfolk churches, whose name we have forgotten. Between this part of the chapel and the apse is a fine arch spanning nearly three parts the entire breadth of the chapel; and the twinkle of one of the small stained glass windows beyond it has a very pretty effect at the entrance. The pulpit, which is let into the wall on the north side of the chancel arch, is of Caen stone, and is in much better taste and design than the font. A small reading-desk of oak, well executed in open work of the perpendicular style, stands below it, and though in itself a very chaste and beautiful specimen of carving, is to our mind in very bad taste. The roof is open, consisting of plain timber, with leg beams resting on plain brackets. Immediately beneath the roof is one of the most singular features of the chapel—a moulding by no means Norman, which is gaudily painted in ribbons and gilt with stars, and along its centre course are eight verses of the "*Te Deum*," in Latin, beginning with "Holy, Holy, Holy, Lord God of Sabbath." We now come to the apse, or chancel, which is very small—being about 15 feet by 12; a space hardly big enough for an oratory. A stone altar-table, mounted on three steps, and surrounded at the upper edge by a kind of dog-tooth quatrefoil, and an unintelligible ornament at the centre, is the most conspicuous object here, and is one of the worst deviations from style that the chapel contains. Four small windows of stained glass, containing figures of St. Catharine, St. Peter, the Virgin, and an incomprehensible saint, twinkle down on the floor of beautiful encaustic tiling, and lead the eye upwards to the roof, composed of four broad flat groinings, radiating from a central boss. A startling piece of Christian furniture meets the eye on each side of the altar-table, that to the south being a piscina on a twisted column, and to the north a credence-table on a bracket. Two stone niches, intended for seats, face the entrance to the vestry on the north side. We have now noticed every particular point in the architecture of this little chapel. We understand the expenses are limited to some fourteen or fifteen hundred pounds; a perfect building is not therefore to be expected. To the enthusiastic feeling of Mr. Moore, the rector, who has himself worked as hard as any labourer, much credit is doubtless due; and the specimens of carving, both in wood and stone, which the chapel displays, will be lasting evidences of his skill and industry. Except in a few minor details, the building is pretty regular in its style; but the finials of the seats, the reading-desk, and the

altar-table, all remind us of other periods than that which the rest of the chapel furnishes. It is true we know nothing of Norman fittings; but we know that the fittings of Decorated churches were composed of Decorated designs, and we might therefore, with some presumption, compound the ornaments of a Norman church with details from Norman architecture. Mr. Moore, or rather Mr. Buckle, who is the architect, is not blameable for this, as we know not that any architect has yet been bold enough to do otherwise, and the ordinances of the Camdenists are too strict to allow any of its members to innovate Christian architecture with any thing like invention. We are grateful for what has been done, and visitors, who are sure, will be surprised to see a chapel adapted for only 400 persons with so many interesting features of architectural taste about it.—*Cambridge Chronicle*.

*Norwich.*—Opening of *Lakenham New Church*.—This building, erected in one of the populous parts of the city, where no place of worship, connected with the Established Church, before existed, was opened on Wednesday last. The church is dedicated to St. Mark. It is a Gothic pile, having a nave and chancel, and a beautiful tower with an embattled parapet, and containing a fine ring of bells lately hung by Mr. Thomas Hurry, of Norwich. The interior is tastefully fitted up, and a flight of stone steps leads to a commodious gallery. The Bishop, the Hon. and Very Rev. the Dean, Canon Wodehouse, and about a hundred of the clergy of the city and county, attended on this occasion. The choir from the cathedral was in attendance, and sung their part of the service with extraordinary effect; after which the Hon. and Very Rev. the Dean preached an appropriate sermon from the 6th chap. of the 2nd Book of Chronicles, and the 18th verse: "But will God in very deed dwell with men on the earth? Behold, heaven and the heaven of heavens cannot contain thee: how much less this house which I have built!" It was stated that the whole 5,000l., the cost of the present erection, had been raised by public subscription, with the exception of 200l., and this addition, at the termination of the service, was nearly contributed. The sittings are mostly free, this being a part of the city where large numbers of weavers and other very poor persons reside.—*Ipswich Journal*.

A district has been formed at Barnstable, under the provisions of the Church Endowment Act of last year. It is called the district of St. Mary Magdalen. The minister, when licensed, is to have 100l. a year from the Church Commissioners, and 150l. as soon as the church is built. This is understood to be the first district thus formed, in this diocese.—*Somerset Gazette*.

*Burton Agnes Church.*—This ancient edifice has recently been completely renovated, and now presents a beautiful model of a village church. The chancel has been nearly all renewed; the roof is entirely new, being fine stained oak, tastefully arranged. The east window is also wholly new, and extremely elegant; it is of stained glass, by Wailes of Newcastle, having the commandments underneath on tablets in gold letters. Around the arch of the chancel is a fine scroll bearing the inscription:—"This is none other than the House of God—This is the gate of Heaven." Stalls are placed in the chancel; they are of oak, finely carved by Mr. G. Peck, of Saville-street, Hull. The floor is laid with encaustic tiles, from Minton, in Staffordshire. The west window has been entirely restored, at the expense of Sir Henry Boynton, whose arms are tastefully introduced in the stained glass. The painting and staining of this beautiful temple are by Messrs. Binks, of Hull, and the work is the admiration of all who have seen it. Messrs. Binks have lately had the ornamental and general painting of several churches in this neighbourhood, and have now acquired a high reputation in that walk of the profession. The stone work of the windows, &c., which is all very beautiful, has been executed by Messrs. Myers and Wilson of this town, who have also done some very superior work in churches lately. This restoration has been effected at the instance of Archdeacon Wilberforce, to whose piety and taste it is a splendid monument. There are daily services in the church, as well as on the Sabbath; and these opportunities, we understand, are gratefully embraced and appreciated by the parishioners of Burton



Agnes, by whom their reverend pastor is much beloved.—*Hull Packet*.

*St. Mary de Crypt Church*.—We are most happy to announce that the restitution of the chancel of this our parish church is proceeding in a most satisfactory manner; a portion of the stalls has been erected, which, although still in an unfinished state, have an appropriate and ecclesiastical appearance.—*Gloucestershire Chronicle*.

*New Church at Besthorpe, near Collingham*.—The above church, dedicated to the Holy Trinity, was consecrated on Wednesday, the 11th instant, by Dr. Kaye, Bishop of Lincoln. The sum of 37*l*. 8*s*. 3*d*. was collected after the service, which, added to the amount received for tickets and subscriptions sent in the afternoon, made a total of nearly 50*l*. The whole of the inhabitants of the village were regaled at the expense of the Rev. G. C. Gordon. The children had tea at 4 o'clock, the females at 5, and the labouring men were supplied with plenty of good beef and ale. J. E. Denison, Esq., M.P., subscribed 10*l*. on this occasion.—*Doncaster Gazette*.

*St. Olave's Church, Southwark*.—This church is now all but complete. The tower is finished in the same style as the original edifice, and the clock, which demands, from its novelty of construction, a passing remark, will be, before the week is over, placed in its destination. The machinery of this clock, although it will regulate with the minutest accuracy from dial-plates, is all encompassed under one action, and the most delicately-poised wheels are set in motion by a pendulum, the rod of which is 14 feet in length. The side escapement is a most beautiful piece of mechanism, and is acknowledged to be, by numbers of scientific persons who have inspected it, as accurately formed as the minutest portions of a chronometer; indeed, it is this department which most startles the uninitiated—the "pallets," as they are termed, being jewelled, fall upon the escapement with such precision, that the best time-piece for a number of days tells no departure from its exactitude.—*Globe*.

#### RAILWAY INTELLIGENCE.

*The Eastern Union Railway*.—We are informed that in the course of next week the excavators will commence the work upon this line, in the parish of Tattingstone. The works have hitherto been delayed in consequence of legal impediments respecting the Brantham Hall property, upon which, as constituting the only heavy work upon the line, it was arranged with the contractors the operations should commence. It is not expected that the present delay will at all retard the completion of the line within the appointed time, and the shareholders have reason to congratulate themselves that the directors have not encouraged those monstrous extortions which have been the bane of other railways. With respect to the Bury extension, we are glad to learn that committees have been formed at Bury, Newmarket, and Cambridge, to forward the views of the projectors, and surveys are going on between Bury and Cambridge, which, together with that of the Norwich line, will shortly be laid before the Board of Trade. Several lines have been surveyed between Ipswich and the other lines, but we cannot at present speak as to the route to be taken, as so much depends upon the concurrence of the landowners and the issue of negotiations with other interests. A prospectus of a railway from Diss to Colchester has been issued, under the joint patronage of the Eastern Counties and Norwich and Brandon Companies. This scheme merits little notice, except as being designed as an impediment to the Eastern Union Company. By omitting altogether the town of Ipswich, and separating it virtually from the traffic hitherto flowing towards it, the project will never meet the approval of an impartial tribunal. But by admitting that the local traffic is sufficient to support a railway, the projectors have given the best testimony to the probable productiveness of the direct Norwich, Ipswich, and London railway. We see no reason to doubt that the Eastern Union will triumph over this coalition, as it succeeded on a former occasion against the Eastern Counties and West Suffolk opposition. A meeting is called at Sudbury, on Thursday next, to consider the resuscitation of the Halsted line, in opposition to Mr. Eagle's scheme of the Thetford and Stanstead junction;

but as both these lines have serious difficulties to overcome, we see no prospect of either being adopted by any public company.

*Railway Works*.—Operations for carrying on the line of the Eastern Counties railways are gradually extending in this neighbourhood. The work appears to be judiciously divided into sections, at considerable distances from each other, from which the working parties by degrees approach each other. A party is now employed a short distance from Whittlesford Mills, where a depot for materials has been formed, and preparations are being made for forming a bridge across the river. At Great Shelford also, some cottages which stood in the way of the intended line have been taken down. Their proprietor has received notice to clear their former site by the 26th instant. The price given for land for the intended line is considered to have been on a liberal scale, and generally satisfactory to those who disposed of it.—*Cambridge Chronicle*.

*French Railways*.—Contracts for 34 locomotives, with their tenders, were awarded yesterday at the office of the Minister of Public Works, in three lots. The first was ceded to M. Cave, at 44,800*fr*.; the second to M. Alette, at 47,000*fr*.; and the third to Messrs. Derosne and Caille, at 49,000*fr*. per locomotive, with its appurtenances. A contract for 608,000 iron bolts was awarded to Messrs. Labruet and Grefix, at 487*fr*. 45*c*. a ton.—*Galignani of Thursday week*.

*A Railway on Fire*.—The suspension, bridge erected for the purpose of the Middlebrough branch of the Stockton and Darlington Railway, where it crosses the Tees, a little above Stockton, having proved insufficient, a handsome one has recently been completed, under the direction of Mr. Robert Stephenson, civil engineer, consisting of longitudinal girders resting upon solid masonry. The centre arch, or water way, is probably the widest span upon this construction extant. In forming the embankment at the east end of the new bridge, a large quantity of small coal, brought from 25 to 30 miles from the pits, has been made use of, and spontaneous combustion has taken place in this mass; the progress of the fire is not rapid, but such is the hold it has obtained, that a complete deluge of water has proved useless. Measures are now using to put in clay backs, that is, walls of wet clay, and this there is no doubt will prove effectual. In the meantime, the passenger-trains (10 each way), goods-trains, and coals, say 3,000 tons (to which if we add coal-waggons both ways, we shall nearly double the total), run daily without any inconvenience or interruption.

*Leeds, Huddersfield, Bradford, Dewsbury, and Halifax Junction Railways*.—We are authorized officially to announce, that after a careful examination of the country, and several meetings, it has now been determined to bring before parliament, in the next session, a combined plan for forming new railways between the towns of Leeds, Huddersfield, Dewsbury, Bradford, and Halifax, in connection with the Leeds, Manchester, and Liverpool Railways. This is the result of the union between the Leeds and Manchester Railway Company and the Leeds and Bradford Short Line Company, with other parties. The details of this important measure, and the effect which it will have on the Leeds and Bradford Short Line promoters, and others co-operating with that body, will appear forthwith in a prospectus, now in course of preparation under the direction of the committees which have been formed for the purpose. These arrangements will place in the centre of the manufacturing districts of the West Riding new lines of railway communication between thirty and forty miles in length, give increased facilities to the inhabitants of Yorkshire and Lancashire, materially shorten the route between those great counties, and the great manufacturing towns therein, and essentially promote the interest and convenience of the trade and population of Liverpool, Manchester, Leeds, Huddersfield, Bradford, Dewsbury, Halifax, Pudsey, Heckmondwike, Birstal, Batley, Cleckheaton, and the numerous other manufacturing and mineral districts of which Lancashire and Yorkshire are composed.—*Leeds Mercury*.

A meeting of the provincial committee of the Wilts and Somerset Railway was held on Wednesday week, at Trowbridge, Walter

Long, Esq., in the chair. The meeting was attended by gentlemen from every part of the country through which the projected lines were intended to pass; but it is now proposed that there shall be an extension from Frome through Bruton and Castle Cary to Yeovil, with a view to a further extension to Weymouth. This object attained, there will no doubt be a line from some point of the Bristol and Exeter Railway to Yeovil and Dorchester. Captain Scobell and other gentlemen attended as a deputation from the Somerset collieries, and it was determined to form a coal branch from Frome to the neighbourhood of Radstock. The capital required for the whole of the lines is estimated in round figures at 1,000,000*l*. The prospectuses in course of circulation will therefore be called in, amended, and re-issued. Mr. Ravenhill was very desirous that there should be a branch from Bradford to Bathford; but the impracticable nature of the soil, &c., and the enormous expense it would entail, having been pointed out by Mr. Brunel, the meeting were satisfied it could not well be carried into effect.—*Wilts Independent*.

*Midland Railway*.—A special general meeting of the proprietors of this railway will be held on the 8th of October next, at Derby, to consider certain very important propositions for the formation of three lines of railway in connection with the North Midland, and also for considering and determining upon the propriety of amalgamating the Sheffield and Rotherham Railway Company with the Midland Railway Company.

The circular of Messrs. John Raiton and Son, share-brokers, Manchester, states that the thirty-one railway acts passed in parliament last session will require a capital of 11,761,717*l*.

The Maidstone branch railway was opened for public traffic on Tuesday week. The distance from London to Maidstone per rail is 55 miles, 46 of which is travelled on the Dover line.

*The Eastern Counties Railway*.—A new street from nearly opposite the Eastern Counties, Shoreditch station westward, to join the Great North road, is contemplated. We need hardly say, it is what is much wanted, and will be a great benefit to the company and to the public.—*Railway Times*.

*American Railways*.—An extraordinary performance, equal to the greatest railway achievements of Great Britain, is recorded in the American papers. The government express, which left Boston for New York with letters, mails, and passengers, on the arrival of the Acadia from England on the 18th of August last, were conveyed the distance of 238 miles in six hours by railway.

#### Correspondence.

TO THE EDITOR OF THE BUILDER.

HYDRAULIC CEMENTS.

SIR,—By devoting a line or two of your work in giving an answer to the following question, you will much oblige.

Yours, &c.,

DISCIPULUS.

What is the best and quickest method of proving whether a cement be hydraulic, or not?

[The finding immediately the fact of rapid setting or the continuance in a soft state. We shall have no objection to receive communications upon the chemical part of the subject, whether after quickly setting hard, any particular limes be such as will stand the dissolving and abrading powers of water.—Ed.]

BROCKHAM NEW CHURCH.

SIR,—The inhabitants of Brockham, in the county of Surrey, are erecting a new church upon the green, according to plans designed by Messrs. Smith and Armstrong. A sum of 1,000*l*. was left by the late Henry Goulburn, Esq., for the purpose of endowing the church, and it is with pleasure I add that Henry Thomas Hope, Esq., of Deepden, near Dorking, in addition to a liberal contribution, has presented the inhabitants with a clock, formerly belonging to the Mansion standing in Chart Park, which was some time since demolished, and the park laid to the already extensive domains of Deepden, and at the same time he stated that he would contribute 30*l*. towards putting it in working order. It is from such acts as



these that the great must live in the memory of the people, and I do trust that you will aid the good work by presenting the public with a cut and a short detail of the building. I forgot to say that the church is intended to hold about 300 persons, and I regret to say that the chief material is to be a friable sort of chalk stone; I say regret, because the county contains plenty of clay, which makes a beautiful red brick. A sum of 1,800*l.* has already been collected. Wishing that you will notice the building, I remain, Sir, yours, &c.,  
A MASON.

London, Tuesday, October 1st, 1844.

[We cannot say whether we can give an engraving of the church without we see the design.]

LATH-WOOD.

SIR,—Your correspondent "M. L. B.," in last week's *BUILDER*, may very justly complain of the high price of lathwood in London, which is no doubt owing to the demand being good. In many instances we have imports here from Petersburg of 6*ft.* wood, which may be readily bought at 9*l.* per fathom, and in some instances much lower; the same description of wood, I am informed, would sell in London at 14*l.*, and in some instances 16*l.* per fathom. If the importers here can afford to sell at 9*l.*, the importers into London must realize large profits. OBSERVER.

Newcastle-on-Tyne, Sept. 26, 1844.

CRACK HOUSES.

SIR,—I am not at all surprised that my remarks are unsatisfactory to "W. T. B.;" he is, I think, one of those individuals who seldom allow they are wrong. I must, however, in justice to myself, correct a mistake which he has made. In alluding to my former letter, he writes, "'Scrutator' says the party investing his capital in houses does so on his own opinion, and therefore he is justly punished." This is very different from my observation, which was to the effect, that if persons, by following their own opinions, risked, or sometimes lost their money, it was partly their own fault in neglecting to procure a professional one, which I neither imagine offers a justification for the builders, or allows that all persons necessarily buy houses, trusting to their own judgments. "W. H. B.," very cleverly assures me, that the majority of persons do procure a competent opinion on the houses they are about to purchase; this at once overthrows his own argument; he objects to the use of stucco and paint *only* when used as a deception; admitting, therefore, that professional persons are generally employed to examine into the stability and worth of the buildings, he must allow that the purchaser buys them, with the full knowledge of their defective state; consequently, clearing builders and stucco from the crimes of fraud and deception. This further proves the correctness of my observations, which were, that the capitalist was most to blame for the spread of speculative building; if crack houses could not be readily sold, they would soon discontinue to be built; and I certainly cannot wholly blame the builder for not building houses which, as a "Looker-on" remarks, he would be unable to sell. If, as "W. T. B.," says, the majority of purchasers are retired or retiring tradesmen, it is rather puzzling to account where so many cits of fortune can spring from.

Another instance of the garbled and incorrect quotations of "W. T. B." is the following: he says, "the sources of speculative building are evidently not confined to constructing houses for the poorer classes; nor can all the odium of building crack houses be confined to the smaller classes of builders, or to those who undertake the task being no builders at all." I flattered myself that the meaning of my remark would at once have been apparent; I find, however, that "W. T. B." requires a further explanation; my observation was, that one (not all) of the sources of speculative building was to be traced to the number of houses being required for the poorer classes, and in consequence of much finish not being required, was an additional inducement to defective building, which being not so often observed, required to be brought more prominently into notice. He further adds, that one cause is the necessities of the

builders, thus admitting the correctness of my argument. It is for him to shew in what manner the honest portion of builders, by forming themselves into a society, can prevent the scamping part from satisfying the present wants of capitalists.

Whether "W. T. B." supposes me touched "on the raw," because I requested the explanation of an unmeaning phrase, and exposed a statement, which, in the absence of any explanation from him, I consider as of very questionable veracity, I am not aware; the extreme vulgarity of the simile will, I fear, unfortunately for him, only produce feelings of disgust in the minds of your readers at the depraved taste of the author, and effectually tend to suppress any feelings of admiration they may have experienced for the perspicuity and wit he has displayed.

I remain, yours, &c.,

SCRUTATOR.

London, October 1st, 1844.

### Miscellaneous.

NEW CONCERT HALL, LIVERPOOL.—Measurements are in progress for the erection of a new concert hall in this town. The shares are in great demand, and it is apprehended that there will be a difficulty in satisfying all the applications. Somewhere about 5,000*l.* of the required capital has been already subscribed.—*Gore's Liverpool Advertiser*.

KING'S COLLEGE HOSPITAL.—The authorities of this institution have it in contemplation to remove it from its present highly objectionable site to one that will be more appropriate. Some months since they made application to the Duchy of Lancaster, and the vacant space on the east side of Wellington-street, near Waterloo Bridge, was selected, but in consequence of a memorial from the inhabitants of Lancaster-place opposite, representing the deterioration of property that would ensue from the erection of an hospital in that locality, the Chancellor of the duchy refused his consent.—*Observer*.

EASY MODE OF MAKING ROADS OVER ROCKS.—In South Africa, Mr. Pringle succeeded in making a very excellent road by the removal of enormous blocks which frequently obstructed the only practicable line of road through a large extent of wild country, by the following simple operation:—"He kindled a large fire of wood upon and around the mass of rock he wished to get rid of, and when it was well heated, the fire was swept off, and several buckets of cold water were immediately thrown upon it, which, by causing an instantaneous change of the temperature in the mass, generally split it into a number of manageable fragments." Mr. Pringle, in a note of the same page of his work, "Narrative of a residence in South Africa," says, in allusion to this mode of removing rocks, "I afterwards found that this mode of splitting rocks had been practised with great success by Captain Stockenstem at Graaf Reint, in constructing an aqueduct along the side of a hill for the use of that village. The same process is also well known in Haiti, and is employed on a large scale there by the negro engineers, as I am informed by my intelligent friend, Mr. Richard Hill, of Jamaica, who, on recently travelling through that interesting island, found magnificent public roads carried through some of the most difficult passes of the mountain by this simple operation. In a country like ours, where wood and water abound, rocky roads may soon be made smooth, and inequalities of surface disappear by the use of fire and water, which, in their application to road-making, will be found less destructive of human life than steel jumpers and gunpowder.—*Jamaica Paper*.

NEW POLICE COURT AT KENNINGTON.—The above building in the Kennington-road is likely to be delayed some time, owing to a misunderstanding existing between the ground landlord, Mr. Allnutt, and the Home Department, respecting part of the premises belonging to the Lamb and Hare public-house, which are required for the entrance for the van and the section department for the police. Mr. Allnutt requires 600*l.* extra for about three feet frontage in the Kennington-road. The building for the police-court is erected, but will not be finished until some time after Christmas. There is likely to be some litigation respecting the ground required.—*Morning Post*.

LIVERPOOL NEW DOCKS.—The new dock works, north-end of Clarence Dock, are already actively progressing. Nearly all the ground is fenced in, and the eastern boundary wall as far as Bullen's Mill is erected. The several occupants of the houses to be pulled down have received notice to quit. At the south end of the Brunswick dock, also, active preparations are making to commence operations.—*Ibid*.

THE OLDEST TREE.—The monarch of trees, the emblem of age in the forest, is the cypress which stands near Santa Maria del Tule, in the province of Oaxaca, republic of Mexico. This tree was measured by Baron Humboldt, and found to be 118 feet in circumference. This makes forty feet in diameter. This tree has no sign of decay, though its foliage is less lively than that of smaller trees, and calculated by all the data applied to the age of trees, this patriarch of the forest has lived 4,000 years, perhaps from the creation.—[A highly respectable gentleman, recently from Gambia, mentions that he there saw a tree 132 feet in circumference.—*Salem Gazette*.]

RIGHTS OF LANDLORDS.—There is a provision in the new Insolvent Debtors Act affecting the rights of landlords which seems to have escaped notice. By the 67th section it is provided that no landlord of any tenement let at a weekly rent shall have any claim or lien upon any goods taken in execution under the process of any court of law for more than four weeks' arrears of rent; and if such tenement shall be let for any other term less than a year, the landlord shall not have any claim or lien for more than the arrears of rent accruing during such terms or times of payment. This enactment was necessary to prevent fraudulent contrivances to protect property as well as the person, which cannot now be touched for debts not exceeding 20*l.* Under the next clause, a claim by a landlord or other person to recover property can be investigated by the judge of the court out of which an execution by a creditor has issued, which provision was adopted to prevent law expenses in actions under the Interpleader Act.—*Sunday Times*.

An Architectural Society for Lincolnshire is about to be established at Louth, having for its object the "promotion of the study of church architecture, and the preservation and restoration of ecclesiastical antiquities;" the Lord Bishop of the Diocese, the Lord Lieutenant of the county, and several influential clergymen and laymen, have signified their approval. The Rev. Irvin Eller, rector of St. Clement's, Saltfleetby, has issued a circular, inviting members to join, and detailing the proposed regulation.

Government has appropriated a sum of between 40,000*l.* and 50,000*l.* to the repairing and alterations of the fortifications at Fort George, and to the construction of works of defence on and near the island.—*Guernsey Star*.

THE NEW HOSPITAL AT BROMPTON FOR CONSUMPTION, &c.—The newly-designed erection at Brompton, which is, as soon as possible, to supersede the present establishment at Chelsea, is now proceeding as rapidly as possible, the western wing being under the immediate direction of Messrs. Bird, of Brookgreen, Hammersmith. From the plans submitted to his Royal Highness Prince Albert in June last by Mr. Frederick John Francis, the architect, on the occasion of the laying the first stone of the noble edifice, there can be little doubt that this will rank among the first of the metropolitan establishments which reflect so much honour upon the religious and benevolent feelings of the country.—*Herald*.

BRIDGE AT WARSAW.—The progress of the great bridge over the Vistula, which has been retarded from the deficiency of funds, has received an accelerated movement, owing to a very curious circumstance, which, in the days of superstition, must have conferred a character of great sanctity on the work; the saints themselves have provided the needful. In proceeding to the demolition of a small and very ancient Catholic chapel, to clear the approach on the Warsaw side, two barrels filled with bars of fine gold have been discovered. The value is estimated at about a million and a half of florins (upwards of 150,000*l.* sterling), and the whole has been appropriated to the completion of the bridge.



A curious fact may be mentioned with reference to the artesian well now boring at Calais, which has reached a depth of 322 metres: the water by which it will be supplied will be derived from England!

Mr. W. Dorward, of Montrose, has recently given 2,000*l.* towards the endowment of Trades Schools of Montrose, which will henceforth bear the name of Dorward's Seminary.

STRATFORD-UPON-AVON LITERARY INSTITUTION.—The meeting which was held on the 9th ult., for the establishing of a Literary and Scientific Institution, and adjourned to the 23rd, took place, as appointed, at the Town Hall, when it was agreed to form the Institution; a Provisional Committee was formed, and nearly all present became members. Dr. Thompson most handsomely offered the use of nearly 500 volumes of books, and some very liberal donations were made.—*Coventry Herald*.

NEW PRESBYTERIAN COLLEGE.—The Irish General Assembly has determined to break with the Belfast Academical Institution, and to set on foot a college of their own for the education of their clergy. For some time past there have been differences between the Orthodox Presbyterians and the Unitarians, respecting the management of the Belfast Institution, which receives a Parliamentary grant.

WOODEN PAVEMENT.—On Saturday last it was agreed to unanimously, at a vestry held in the parish of St. Marylebone, that part of the wooden pavement in the said parish should be removed, and that a granite pavement should be substituted.

The Liverpool Polytechnic Society proposes to give prizes for communications of adequate merit on the following subjects:—A medal for the best essay on any subject connected with the objects of the society; a medal for the best mechanical or architectural drawing; a medal for the best mechanical or architectural model, shewing the latest improvements. All essays, models, and drawings will be returned. The prizes will be confined to the members of the society, their sons, and apprentices of members.—*Liverpool Standard*.

HUNTERFORD SUSPENSION BRIDGE.—The works at the above bridge are nearly at a stand still, owing to the intention of the directors to apply at the next meeting of Parliament for a bill to allow them to throw a railway across the Thames adjoining the suspension bridge, and to erect railways to Richmond, the terminus of the South Western, and Brighton and Dover Railways. For some days past surveyors have been employed in measuring the ground from Goding's Brewery to London-bridge, taking the proposed line through Ann-street, Waterloo-road, across the latter road at the rear of the south side of Stamford-street, across Blackfriars-road, through Church-street, across Green-walk, Holland-street, Southwark-bridge-road, at the rear of Barclay's Brewery, to St. Saviour's Church-yard, where it will join the Brighton and Dover Railways.—*Globe*.

IMPROVEMENTS IN PICCADILLY.—On Monday, by direction of her Majesty's Commissioners of Woods and Forests, workmen were employed in the erection of a pillar upon the summit of the western portion of the gate at Hyde-park-corner, which is intended for the reception of an illuminated clock. The clock will have two dials—viz., one facing Hyde-park, and the other fronting Grosvenor-place. This, doubtless, will be as useful as it will be ornamental, a public time-piece having long been wanted in that immediate locality. The plan for widening the road has also at length been begun; it is said, however, that it will not be completed until the ensuing spring. The removal of Lady Gordon's house, and the garden which belonged to it, together with the appropriation of a small portion of the Green-park, will occasion that section of the important thoroughfare to be of equal width, from the residence of the Duke of Grafton to the archway at Hyde-park-corner. A further improvement is in contemplation, that of removing the remainder of the brick-wall which is standing between Albert-gate and Kensington, and substituting iron palisades. The parish of St. George, Hanover-square, agree to keep the roadway in repair as far as the encroachment on the Green-park is concerned.—*Times*.

Preparations are being made to crown the Arc de Triomphe in the Champs Elysées. A statue of France is to be placed on an antique car; around it, on foot, will be the genii of the French nation. All these works are to be of colossal size, and in bronze. A pasteboard model will be shortly erected.

VICTORIA DOCK.—Yesterday, persons were employed in staking out the ground for the extensive eastern dock. Mr. Hodgson has obtained the contract for making the bricks for the project.—*Hull Packet*.

PUBLIC IMPROVEMENTS.—The *Leamington Spa Courier* states that there is a project for forming a beautiful lake, with islands, pleasure-grounds, and swimming-baths, &c., in the ground at present occupied by the muddy river and the marshy meadow between the new and old towns.

PUBLIC BATHS AND PARKS.—Measures will shortly be adopted for taking the opinion of the inhabitants generally on the establishment of baths and parks. Several gentlemen are ready to aid the cause by liberal subscriptions, one of whom has promised 50*l.* when the matter shall be fairly set afloat.—*Birmingham Journal*.

MONUMENT TO THE LATE ADMIRAL SIR THOMAS M. HARDY, BART.—The tender of Mr. Henry Goddard, of Bridport, for this monument, to be placed on the summit of Bladon Hill, has been accepted by the committee, and this national testimonial will be speedily proceeded with.—*Somerset Gazette*.

STATUE OF HER MAJESTY.—The package which was landed at the St. Katherine's Dock, out of the ship *Effort*, from Leghorn, and which her Majesty's agent requested might remain unexamined until her pleasure should be known on the subject, was removed to Windsor Castle yesterday, in charge of an officer of the customs, and there opened and examined. The package in question contained a full-length marble figure of the Queen, and was executed in Italy by, it is understood, the same English artist, Wolff, the sculptor of the statue of his Royal Highness Prince Albert, which was imported from Leghorn and removed to Windsor Castle about a month since.

The shares in the New River Water Company for supplying London were originally 100*l.* each: they now sell, whenever they are sold, which is a thing of rare occurrence, for 15,000*l.* each.

The lovers of antiquity will be gratified to learn that the King of Naples, with the view of perpetually preserving the *Alfresco* paintings, disinterred from the ruins of Pompeii, the lustre of whose colours are known to fade on exposure to the air, has employed artists of the greatest celebrity to imitate them on the walls of his own palace at Naples.

THE ROAD FROM PARIS TO GENEVA.—The piercing of the Faucille tunnel has been decided on, and the works are to commence in the beginning of spring. When this important improvement shall have been completed, the road from Paris to Geneva will be shortened by several leagues. The tunnel between Domange and Mauvage, to connect the canal of the Marne with the Rhine, is also in course of execution; it is to be 5,000 metres in length.

INJURIOUS EFFECTS OF CHIMNEY BOARDS.—The practice of closing fire-places in bedrooms is so pernicious, that mothers of families cannot be sufficiently warned against it. It prevents the admission of pure air required to replace the air that has been deprived of the vital principle by respiration; the blood thus passes the lungs without imbuing the requisite portion of oxygen for healthy circulation; and the foundations of debility and disease are gradually laid in the system. For this reason all sleeping apartments without fire-places and chimneys are unhealthy; and to close them up with fire-boards and chimney-boards cuts off the communication with the external atmosphere, and renders them useless. The origin of consumption and other pulmonary complaints might probably be often traced to the close and impure air occasioned by chimney-boards. The chimney itself, when deprived of circulation, becomes a shaft for foul air; and life is shortened, if not sacrificed, for the sake of keeping out the little dust or soot that may fall from the chimney, and which might be prevented by sweeping it more frequently.—*Leeds Mercury*.

PILATE'S DEATH-PLACE.—Near Vienne stands a tall square Roman tower, called the *Tour de Mauconsel*. The legends of the country affirm that this was the abode of Pontius Pilate, and that in a fit of despair and frenzy he threw himself from its windows into the Rhone, where he perished. This point the good Catholics must settle as they can with the Swiss, who maintain that he drowned himself in a little Alpine lake on the mountain, which bears his name; and that the storms, by which it is frequently agitated, are occasioned by the writhings of his perturbed spirit.—*Hughes's Itinerary*.

### Tenders.

TENDERS delivered for Building Three Houses for Mr. Thomas, in Southampton-street, Camberwell.—Mr. Henry Jarvis, Architect, 32, Trinity-square, Southwark.

Rider and Son.....	£1,750
Goodwin.....	1,746
Thompson.....	1,673
Jacobs.....	1,650
Tombs.....	1,636
Cooper and Davis.....	1,590
Wilson.....	1,534

TENDERS delivered for Four Houses, High-street, Deptford.—Mr. W. H. Holland, Architect.

Buzzell.....	£1,360	9
Crowhurst.....	1,329	0
Harnden.....	1,220	0
Coleman.....	1,214	0
Hubble.....	1,105	0
Smith.....	1,095	0
Williams.....	900	9

### NOTICES OF CONTRACTS.

For supplying her Majesty's several Dockyards with Welsh and Cornish Slates.—The Commissioner's for Executing the Office of Lord High Admiral, Somerset-place. October 8.

For Repairing of Wotton Church.—Plans and specifications at the Offices of Messrs. Pocock and Glover, Architect, Huntingdon. October 12.

For 16,000 Larch or Baltic Sleepers, of various dimensions, for the Ashton, Staleybridge, and Liverpool Junction Railway.—Secretary, at the Manchester and Leeds Railway Office, Palestine-buildings, Hunt's-bank, Manchester. October 8.

For such Bricklayers', Carpenters', Masons', and other Works, in the Cleansing, Building, and Repairing the public Sewers and Drains for the City and Liberty of Westminster.—Mr. Lewis C. Herslett, Clerk, 1, Greek-street, Soho, October 15.

For Building a Church at Birch, near Manchester.—Mr. Derick, Architect, Hanover-chambers, Buckingham-street, Strand. October 9.

For Building a Sewer in Robin Hood-court and New-street-square, London.—Joseph Daw, Sewers Office, Guildhall. October 15.

For the works connected with the Building of National and Infant Schools for Trinity district, Mile-end, London.—E. W. Symons, Secretary. October 9.

For re-Building of Shotter's Mill, in the Parish of Linchmere, Sussex.—The Royal Farmers' and General Fire, Life, and Hail Insurance Office. October 24.

For British Iron.—James C. Melville, Secretary, East India House, London. October 9.

For Surveying, Levelling, and Mapping of all lands lying within certain districts in Lincolnshire. Work to be completed on or before May 1, 1845.—M. Dudding, Clerk of Sewers, Lincoln. October 16.

For Excavating and Completing of several miles in length of new Water Courses, and Erecting a number of Bridges, Culverts, &c., connected therewith.—Messrs. George Leather and Son, Civil Engineers, Leeds. October 15.

For 250 Tons of the true Red Roman Pozzolano, from the works of Carlo Nepoti, called the Cave of St. Paul, near Civiti Vecchia. W. H. Huffam, Secretary, Dock Office, Hull. October 15.

For Paviers' and Masons' Work from time to time, to be required by the Commissioners of the Whitechapel-road sides, &c. David Jennings, Clerk to the Commissioners 71, Whitechapel-road, October 10.

### COMPETITIONS.

PREMIUM of 20*l.* for the chosen Design for a new Church at Winchester, to hold about 1,000 persons on the floor, cost not exceeding 4,000*l.* Further information from Rector and Churchwardens. 10th Oct.



[Advertisement.]

## JOHNS &amp; Co.'s PATENT STUCCO CEMENT.

Architects, Builders, and Plasterers, have now an opportunity of seeing the effect of this beautiful invention in course of application on the entrance front of Messrs. Magnus and Co.'s Slate Works, in Upper Belgrave-place, Piccadilly.

The Cement is here seen in its original self-contained Colour, without the application of paint or wash of any kind, of which it has the great advantage of being quite independent.

A lower tint than is here seen can be given to the work by selecting a darker coloured sand for mixing with the fluid cement, the uniform colour of which is that of pale stone. Remarkable adhesiveness, total freedom from the vegetative discolouration, extraordinary powers of resisting damp, and its never having been known to crack or blister, form the leading advantages of this Cement. We are referred also, by Messrs. Mann & Co., the Agents for the Patentees, to the following instances, amongst many others, where this Cement has been introduced, and may be inspected.

The entire front of the St. Ann's Society Schools, Brixton Hill.

The Mariner's Insurance Office, immediately opposite the Monument, Arthur-street, London Bridge.

The West-Wing in the grand Entrance to Guy's Hospital in St. Thomas-street, Southwark.

Doctor Sutherland's Asylum, Blacklands House, Chelsea.

The Superintendent's House at the Haggerstone Gas Works.

The Interior of St. Peter's Church, Cornhill, now in course of completion.

A portion of the Interior of the New Church on Hearn Hill, and the only portion which has borne out infallibly the enriched decorative painting of that edifice.

The Private Residence of F. W. Russell, Esq., No. 19, Westbourne-street, Hyde-park Gardens, the Columns in the Portico of which are particularly referred to.

## TO CORRESPONDENTS.

We have not at present by us materials sufficient for a complete memoir of Peter Nicholson, but should be happy to receive any communications upon the subject.

A. E. I. Z. — We know of no architectural "lending library" available; books we believe, however, may be so obtained from the Mechanic's Institution. We recommend application to the British Museum, where any book may be seen, and perused.

To a Correspondent inquiring, "Do you know of any gentlemen willing to give evening instruction, so as to enable a person to take out quantities and make contracts for plans?" Our answer is, we do not, but we may be the medium of furnishing an answer to this inquiry.

MR. THOMAS SMITH's fresh query will be answered in our next number.

## ADVERTISEMENTS.

AT THE ANNUAL MEETING of the ROYAL SOCIETY OF ARTS AND SCIENCES, held in London, on the 10th of June, 1844, his Royal Highness Prince Albert presented to Mr. ROBERT BROWN the medal awarded by the said Society for his invention of the ORNAMENTAL GROOVED RIDGE TILE.

The Grooved Ridge Tile was invented by Mr. Robert Brown, in 1840, and first used by Mr. Kemal, architect. The Tile being now used by architects generally, the inventor has been induced to establish a manufactory for the same at Surbiton, Surrey, and trusts, that being the inventor, that architects and builders will give him the preference, he being enabled to supply them at the lowest possible rate. The merits of the Grooved Ridge Tile consist in its forming of itself an excellent ridge, whilst the groove along the top enables the architect to introduce whatever outline of ornament he may think proper, at a cheap rate.

Ornamented Plain Tiles, which are now used by architects generally as an elegant covering for buildings, instead of the common square plain tiles, can be supplied at the manufactory at nearly as cheap a rate.

Two kinds of Serrated Plain Tiles, the round end and the pointed, have long been used in the county of Surrey, but not as a covering for roofs, only as an ornamental covering for walls of houses, such tiles being placed vertically thereon.

The great excellence of the Serrated Common Plain Tiles as a covering for roofs consists in this, that when put on the building they are made to lap over each other, something in the manner of the scales of a fish, by which means they form an excellent protection against either heat or cold, a most important element of consideration. By Mr. Brown's plan the tile can be made of almost any desired colour at a trifling expense.

Orders to be addressed to Mr. ROBERT BROWN, Tile and Pottery Works, Surbiton Hill, near Kingston, Surrey.

## PREPARED FLOORING BOARDS.

ALWAYS ON SALE at A. ROSLING'S, SOUTHWARK-BRIDGE-WHAUF, BANKSIDE, and Old-Barge-Wharf, Upper Ground-street, Blackfriars, a very large stock of well seasoned Floor Boards of every variety.

A. R., in calling the attention of builders and consumers, confidently presumes on his being able to supply them on such advantageous terms, as will ensure and merit their favours and approbation.

## PREPARED FLOORING BOARDS.

ALWAYS ON SALE, a LARGE ASSORTMENT of DRY PREPARED FLOORING BOARDS and MATCHED BOARDING of all sorts, planed to a parallel width and thickness, from  $\frac{1}{2}$  inch to 1 1/2 inch thick. Rough Boarding for Plats.

TIMBER, DEALS, OAK PLANKS, SCANTLINGS, SASH SILLS, &c. Apply at W. CLEAVE'S Timber Yard, Smith-street, Westminster.

## BUILDERS' AND CARPENTERS' IRONMONGERY WAREHOUSE,

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## FOR THE EXCLUSIVE SUPPLY OF PARTIES ENGAGED IN THE ABOVE TRADES.

THE Proprietor of this Establishment has, by his connections with the most extensive Manufacturers, selected the largest and best-suited Stock of Builders' Ironmongery yet offered to notice. It includes every article in Ironmongery suited to Building purposes, such as Locks, Nails, Screws, and every requisite for internal fittings, finishing, and decoration; also, Rain Water Pipe, Sash Weights, and all kinds of Castings, and combines (being entirely new) all modern improvements in principle and design. The Prices throughout, even in the most minute article, have been the object of the strictest economical consideration, the profit of the undertaking being anticipated only by a large return. From this Stock every article may be selected, exactly adapted for its intended use, of any required quality or quantity, at a moment's notice, and Catalogues of Prices had free, on prepaid application.

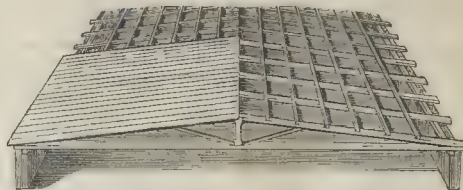
JOHN YOUNG, Jun., Proprietor.

By Her Majesty's



Royal Letters Patent.

## PATENT ASPHALTE ROOFING.



THE above material has been used and approved by the Nobility, Gentry, and Agriculturists generally, as a Roofing and Covering to sides of Farm Buildings; its advantages are—Lightness, Durability, and Economy. Being a non-conductor it has been proved an excellent "Protective Material" to Plants, and is now in use at the "Royal Horticultural Society's Gardens, Chiswick." It can be had of any length, 32 inches wide, at One Penny per superficial foot.

THOS. JOHN CROGGON, 6, Ingram-court, Fenchurch-street, London.

A Discount to the Trade.

## CHEAP AND DURABLE ROOFING.

By Her Majesty's



Royal Letters Patent.

## TO ARCHITECTS, SURVEYORS, BUILDERS, &amp;c.

F. McNEILL and Co. of Lamb's Buildings, Bunhill Row, London, Manufacturers and only Patentes of IMPROVED PATENT ASPHALTE FELT, for Roofing Houses, Verandahs, &c. beg to call the attention of the Trade to their ROOFING FELT, which has been exhibited at the great Agricultural Shows of England, Scotland, and Ireland, and obtained the prize, for being the best and cheapest article for Roofing, to supersede slates, tiles, &c. It has been very extensively used by Noblemen, Gentlemen, and Tradesmen, in all parts of the kingdom, from whom the most flattering testimonials have been received. Its advantages are lightness, warmth, durability, and economy. It is impervious to rain, snow, and frost, and a non-conductor of heat and sound. The Felt can be cut to any length, by 32 inches wide.

The price is only One Penny per Square Foot.

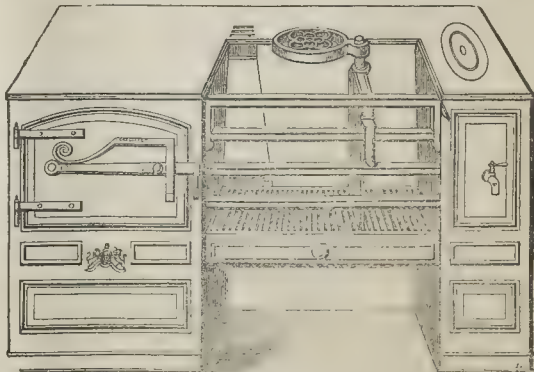
Samples, with full directions as to its use, and the manner of applying it, with testimonials from Noblemen and Gentlemen who have extensively used it, sent free to any part of the town or country. A Dry-hair Felt, for covering Boilers, &c., is also manufactured, by which a saving of about 25 per cent. in fuel is effected.

A liberal Discount allowed to the Trade.

Patent Felt Works, Lamb's Buildings, Bunhill Row, London.

## THE FANKLIBANON IRON WORKS,

WHOLESALE AND RETAIL, 58, BAKER STREET, PORTMAN SQUARE.



ARCHITECTS, BUILDERS, and Others, about to supply STOVES and KITCHEN APPENDAGES, will find at this Establishment the most unique and elegant assortment of STOVE-GRATES, FENDERS, and FIRE-IRONS ever offered to the Public, at prices considerably below the usual charges. The Proprietors at the same time beg to invite attention to their extensive Stock of FURNISHING IRONMONGERY, Tinned Copper, Tin and Iron Cook Vessels, Black Tin Dish-Covers, Japanned Ware, Table Cutlery, and especially their Sheffield Plate and German Silver Ware, embracing every Article suitable for the Table, comprising Dish and Plate Covers, Liquor Frames, Epergnes, &c. &c. The plan adopted by the Proprietors of affixing the price to each article for cash, enables all purchasers to have the same advantage. The Patent Thermo Stove is in daily operation. THORPE, FALLOWS, & COMPANY, 58 Baker-street, Portman-square, London.



# The Builder.

NO. LXXXVIII.

SATURDAY, OCTOBER 12, 1844.



N no other parts of modern habitations is there, perhaps, so much failure as in

chimneys, which so often refuse to act properly, and cause instead the apartments, which they are intended to render healthful and comfortable, to be clouded, and, consequently, neither comfortable nor salubrious. We venture to say this defect arises most frequently from

chimney-shafts being stunted in the endeavour to hide them, which is entirely vain; or if a chimney be externally concealed, surely the appearance of smoke issuing from the roof, though the edifice were on fire, is a most needless mode of management. One, therefore, of the methods to be adopted for the cultivation of true taste, founded upon use, in this branch of domestic architecture, is the invention of lofty graceful patterns of chimney-shafts. It is true there are already in existence many patterns which may be used; these, however, are mostly Gothic or Elizabethan. The grand fault has been the classicalizing, or rather temple-izing, modern domestic dwellings; omitting, as nearly as possible, that is not to be found in ancient, Grecian, or Roman temples. But as the fashioning of a house without obvious chimneys is about as ridiculous as the fashioning of a statue without head, or some principal feature, we maintain that chimneys should be so treated as to appear at which they really are, honourable and necessary parts of such structures. Instead, therefore, of perforating the entrance-front of a country house with a multitude of window-openings, by which all that approach the street can offensively pry into the principal apartments, and be themselves offensively used at in their coming,—we on that front make scarcely an opening besides the doorway, creating the principal adornment of the facade by means of two great chimney-stacks, projecting as to appear picturesque externally, and save loss of internal space. These stacks we surmount by very high detached shafts of some kind of new invention, to which there is no limit. Between these, the principal portal can be carried to any altitude, and may be finished with any degree of decoration. Thus the entrance-front of a house may be made in every respect ornamental, while subserving to every required use. We may be allowed hereafter to give some patterns for chimneys. After their first requisite of utility, their next is solid construction; their third, pure outline; their fourth, freedom from superfluous ornament, so that, while shewing fancy, they appear elegant and stable. In moderate dwellings, they may rise six or eight feet above the roof-ridges; and in park mansions

they should be carried as high as they can with safety, so as to overcome as far as possible the tendency which high surrounding trees have to cause chimneys to smoke.

We should recommend our correspondents to collect drawings of fine examples of chimneys wherever they are to be found, and to transmit them to us for publication.

Brick-work and terra-cotta are perhaps, on the whole, the best materials for chimney-shafts of ordinary domestic buildings; these may be mingled together, and occasionally some good stone-work may be added; plaster we rarely recommend, as not sufficiently sound. The manufacture of bricks we are convinced may be so improved as to prevent the necessity for much cutting of the material. The chief elements of chimneys which are not absolutely Gothic, are tall shafts, clustered, in rows, disposed cross-wise, sometimes set diagonally, sometimes winged; and of square, hexagonal, octagonal, or four-square chamfered plans; intervening spaces, either plain or arched; cornices, plain, dentiled, or bracketed so as not to hurt the outline; surmounting pots, generally rather low, either round or polygonal, or round with polygonal heads. Among their minor details may be animal heads and armorial charges. Sometimes two or four groups of chimneys may be united by arches, with some kind of balustrade or more fanciful breastwork between them, which may serve to protect the edges of a prospect-flat. Occasionally chimney-shafts may be rusticated, where the general style of the building, to which they are adjuncts, partakes of the same fashion; and in some instances they may be pyramidal, which will render them, if single, of an excellently sound construction; occasionally they may contain arched and other paneling; and the invention of the designer will, at times, fashion them with divers minute peculiarities, without descending into pettiness, or sacrificing good taste; in this branch of decoration all really good architects have succeeded, and it forms the peculiarity of their styles.

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## THE NEW METROPOLITAN BUILDING-ACT.

THE Commissioners of her Majesty's Woods and Forests have just issued a notice that they have appointed Sir Robert Smirke, James Pennethorne, Esq., and Thomas Cubitt, Esq., to constitute with the official referees a Board for the examination of persons who may present themselves for the purpose of obtaining certificates of qualification for the office of District Surveyor within the limits of the New Metropolitan Building-Act. All communications for the said examiners are to be addressed to the Registrar of Metropolitan Buildings, at his office, No. 3, Trafalgar-square. The notice is dated the 4th inst., and was inserted in the *London Gazette* last Tuesday.

## SPECIAL PREMIUMS CONNECTED WITH ARCHITECTURE, &c.

Offered by the Society of Arts, Adelphi, London.

1. THE Gold Medallion is offered to the candidate who shall produce the best original design for a town and county hall, containing the requisite accommodations for holding assizes, a large room for public meetings, and offices for magistrate's clerk, &c.; to be sent in on or before the third Tuesday in January, 1845. The expense of the building not to exceed 40,000*l*. The drawings to consist of two plans, one or more geometrical elevations, and two sections, drawn to a scale of  $\frac{1}{4}$  inch to a foot; also a perspective view.

2. *Acton Premium*.—In the year 1837, a gift of 500*l*. was made to the society by Mrs. Hannah Acton, of Euston-square, for the pur-

pose of enabling the society to offer an annual reward for the promotion of practical carpentry, applicable to civil, naval, and military architecture. In compliance with the terms of the above donation, the society offers a Gold Medallion for the best design for a roof of 100 feet span and 150 feet in length, with the walling necessary for its support. Each design to consist of a plan, and two sections, neatly outlined in Indian ink, and tinted, with a scale annexed; also a model of one bay, or larger portion (as the candidate shall see fit), should accompany the design. The model and drawings to be sent in on or before the third Tuesday in January, 1845; and to become the property of the society if the candidate be successful.

3. The Gold Medallion is offered for the best design for the hull-timbers of a steam-vessel of 1,000 tons burden. Such design to consist either of a model or of a plan, section, and other drawings sufficient to explain the same. The model or drawings to be sent in on or before the third Tuesday in January, 1845; and to become the property of the society if the candidate be successful.

4. For the best original design as a subject for modelling or carving, adapted to furniture or internal decoration, by an operative mechanic in either of these branches of art—the Silver Medal and Five Pounds.

## INTRODUCTORY LECTURE ON THE ARTS OF CONSTRUCTION IN CONNECTION WITH CIVIL ENGINEERING AND ARCHITECTURE.

Delivered on Tuesday last, October 8th,

BY PROFESSOR HOSKING,

At King's College, London.

GENTLEMEN,—The printed paper already in your hands\* gives a general statement of the matters to which I shall have to direct the attention of the student, and I believe that every man who has had to learn these things for himself will readily admit that any instruction in them, however imperfect it may be, may become of the greatest practical value, by supplying, as a groundwork for professional study, that which has had too often to be learned in practice, and what, oftener still, is never learned at all.

We cannot hope here to make young men carpenters or masons, but we hope to make them better qualified to compose, describe, estimate, and direct works of carpentry and masonry than they can be without such assistance as that we offer them. In becoming proficient as a carpenter, a mason, or a smith, a young man is apt to overlook the importance of other handicrafts in favour of that in which he has acquired confidence; but a sound, and indeed a somewhat extensive, practical knowledge of the modes of operating in all the leading crafts, of which the three I have mentioned, together with the bricklayer's craft, are the most prominent, is essential to the civil engineer, who only exists independently of the architect on the one hand, and of the machinist on the other, through his presumed superior practical skill in applying the operations of the carpenter, mason, bricklayer, and smith, in connection with those of the navigator or earthworker and miner.

The late Mr. Telford attained the highest eminence in his profession from the most humble commencement; and late in life—with the experience of more than half a century—he thus recorded his own history and impressions:—"The early part of my life," says Mr. Telford, "was spent in employment as a mason in my native district of Eskdale, in the county of Dumfries. Wherever regular roads were substituted for the old horse-tracks, and wheel-carriages introduced, bridges, numerous, but small, were to be built over the mountain-streams; these, however, furnished considerable employment to the practical mason, and I thus became early experienced in the requisite considerations and details. In such works," Mr. Telford goes on to say—"in farm-houses and in the simple parish churches of the Scottish Border—convenience and usefulness only are studied, yet peculiar advantages are thus afforded to the young practitioner; for, as there is not sufficient employment to produce a division of labour in building, he is under the necessity of making himself ac-

\* A syllabus of the course.



quainted with every detail—in procuring, preparing, and employing every kind of material, whether it be the produce of the forest, the quarry, or the forge; and this, although unfavourable to the dexterity of the individual workman who earns his livelihood by expertise in one operation, is of singular advantage to the future architect or engineer, whose professional excellence must rest on the adaptation of the materials, and a confirmed habit of discrimination and judicious superintendence.”

Such was the early education, and such were the matured opinions, of the man who has left hardly a corner of our island without some important work to record his name;—of the man who made the Highland and Holyhead roads, with their centuries of bridges—who drained fens, and built docks and harbours—who carried the Emsmere Canal over the vale of Llanollen, and the Holyhead road over the Straits of Menai—who connected the Irish Sea with the German Ocean by the Caledonian Canal, and the German Ocean with the Baltic Sea by the Götha Canal;—for Telford’s advice and assistance were sought by foreign nations, and Norway, Sweden, Russia, and Poland bear witness to the skill and fame of the Eskdale Mason!

It may not be devoid of interest, and it may help to give a distinct perception of what the practice of civil engineering includes, if I trace the circumstances out of which it grew.

Many of the works and operations now included in the practice of the civil engineer are themselves of late origin, and a large proportion of them was formerly within the practice of architecture, and was known, when distinguished at all, as hydraulic architecture. The basis of the practice, however, and the etymology of the term, are to be found in the operations for the defence and attack of strongholds, as military places or positions. Architects built the walls and towers of towns and cities, as well as the temples, theatres, and mansions which they inclosed; and the permanent constructions, as bridges over rivers, the aqueducts which fed the cities with water, and the roads which led to and from them, were under the same superintendence and direction. But the machines used in the attack or defence of strong places were in the hands of the military, and as such machines, or, as we now term them, engines of war, became more complex, and as their range and application were extended, they obtained, in latter ages, the designation, in bastard Latin, of *macchine d’ingegno*, from the ingenuity displayed in them and in operating with them, and the officers to whom their management and direction were intrusted were hence called, in the same *lingua franca*, *ingegneri*. Upon the introduction of that terrible *macchina d’ingegno* which rendered castles and walls of but little use for defence without outworks, these were made, as they were required, by the *ingegneri*, whose *ingegni*, or engines, as they take the word through the French, no longer demanded their attention, being superseded by the gunpowder artillery, which in its turn required a class of officers to be formed for its own particular service. Modern fortifications, or fortifications having reference to ordnance, consist in a great degree of earthworks, and, through the practice of forming them, military engineers became skilful in the disposition and working of earth, in draining for the exclusion, and in forming conduits and sluices for the admission, of water. As the advance of modern civilization required operations similar to those practised by the military engineer, for protecting lands from rivers and from the sea by embankments, for draining low lands, for supplying towns, and for feeding canals with water, the peculiar designation of the military officer was adopted by the civil practitioner, who thus became what is known as the civil engineer. Throughout the continent of Europe the services of the architect had been still in requisition in aid of the military engineer, in directing the constructions for which he had occasion, and we thus find some of the finest works of many of the Italian architects, from the thirteenth and fourteenth centuries down to the present time, in the gates of fortified places. In England, however, almost ever since the introduction of gunpowder, the fortification of towns and cities, fortunately, has not been necessary, and the British architect has therefore had no practice in connection with the military engineer. Hence the almost

total deficiency of architects in this country in hydraulic constructions; so that, when a demand arose for works which imposed such constructions in connection with earthwork formations, the millwrights and masons, who had built the flood-gates and sluices with their wing and head walls for, and had learnt to direct the formation of the earthworks from, the Dutch embankers and drainers, were called upon to undertake them; and thus the hydraulic architect is found in conjunction with the formator or embanker and drainer, who brought to the profession, thus compounded, the designation of civil engineer.

Roads as now made, and railways, are late additions to the practice of the civil engineer. Roads brought bridges with them, and railways have brought many other varieties of construction that can hardly be called hydraulic; for, although their frequent connection with earthwork exposes them for the most part to the action of water, they are generally so situated as to demand the architectural dispositions which may be classed under the head of decoration. To be an accomplished civil engineer, a man must therefore be a good architect, in the ordinary acceptance of that term, as well as skilled in the sciences and arts of construction, far above what architects commonly are.

I have said that civil engineering and architecture are connected by the use in common of the most important of the arts of construction, and by the demands upon both architect and engineer, in the course of practice, for many services and duties that would rigidly be placed within the practice of the other; and I have said also that the range of the engineer within the domain of the architect might be considered as limited to constructions influenced or affected by water,—constituting him the hydraulic architect. I may draw this further general line, by defining the practice of the civil engineer to be in uncovered or uninclosed constructions, and that of the civil architect to be constructions that are inclosed and covered by a roof or otherwise. The works classed under one branch of practice, and under the other, are thus in general easily distinguished; and classes of works may be formed in accordance with such a line; but it must, nevertheless, be sufficiently obvious that the independent general practice of civil engineering, in its more distinguished works especially, requires of the practitioner that he should be as well skilled in architecture on the one hand as in practical mechanics on the other; and in the same manner of the architect, that every thing relating to constructions, at the least should be as familiar to him as to the engineer. As between the two branches of practice, the only works that can be called exclusively of civil engineering are those in which earthwork formations are the most prominent, as canals and reservoirs, and the bases or formations of roads and railways, embankments from rivers and from the sea, with their accessories, to protect or recover land, or to form ports and harbours. It may be thought that every thing relating to hydraulics must fall within the province of the engineer, but we find that, although the engineer brings water into the streets of towns, the architect directs the laying of it on for use;—the engineer drains land and clears the courses of rivers, but the drainage of towns and cities—the building and conservation of drains and sewers—are, as I have already remarked, in the hands of the architect. In like manner, civil architecture may be said to embrace exclusively all classes of constructions for the personal and social accommodation, convenience, and delight of man. This latter practice thus includes many arts which are hardly known in that of civil engineering, but these are rather decorative than constructive, so that there are really but few things to which I shall have to direct the attention of the engineer student that are not equally essential to the intending architect. The arts of construction are the same to both, and a knowledge of them in general and in detail is as necessary, nay, as essential, to the one as to the other. The treasury of a church, or of a theatre, may be defrauded by the formation of an extravagant bill for extra works, or by the overcharging of walls and timbers with useless materials, as that of a nation in an ill-composed and therefore infirm breakwater, or that of a dock or railway company in overloaded walls and arches, or in clattering rails—

whilst the responsibility of the architect in the influence of his works upon human life is hardly less great than that of the engineer.

In promising you information and instruction that will be useful to you in the pursuit of your professions respectively, I must beg to be understood not to promise to qualify you here to practise as architects or as civil engineers. We offer you information whereby you may become qualified to avail yourselves more effectually of the practice of the engineer’s or architect’s office, and thereby to become better architects and better engineers, to your own confidence, comfort, and advantage, and for the advantage of society, to whom your services will be hereafter offered, than you would have been without such instruction and information as we offer. The medical student comes here versed in pharmacy and in the simpler surgical operations, and he finds his field of study and practice complete between the lecture and dissecting rooms of the college, and the wards and the operating theatre of the hospital; but to you, who come to us unskilled in carpentry and masonry, the pharmacy and surgery of your professions, we have the deficiency to supply, as well as to teach the science which those humbler arts aid you in applying; but your hospital must be walked in mud-boots, and your operating theatre found on the stage of the carpenter and on the scaffold of the mason and bricklayer. The young sailor may and should learn navigation on shore, and how to rig a ship and to reef and steer in harbour; but he must go to sea to become a sailor: and the young architect or engineer may and should, in like manner, acquire the theory, and learn, as far as may be, the practical arts, of his intended profession, in a preliminary education; but he must place himself with the active practitioner, through whom he may have facilities for seeing works in progress, and opportunities of assisting to forward them, together with the means of acquiring the technicalities of practice, to become himself an efficient practitioner of architecture and engineering.

But why, I may be asked, if the practice of an office, and the observation of actual works are essential after you have expended time and money here,—why not go from school or college at once to a practical office? I answer, that, without such preliminary education in science and the arts as that afforded you here, the practice of an office will be in a great degree lost upon you: you may learn by rote, but you will not know the meaning of the words; you may have opportunities of seeing works, but “seeing you will not see, and hearing you will not understand:” the characters may be clear, and the meaning of the words obvious, but to you they will be unknown, and therefore unintelligible.

Architects, or those who profess themselves to be such, we know do blunder on, and make designs that cannot be executed because of false construction, and write specifications that they do not themselves understand; but if architects do thus with impunity, those who practise civil engineering cannot. Peculiar circumstances, arising from the prejudice of a class, may enable a few men to establish themselves in a peculiar practice, notwithstanding the absence of proper qualifications for it, but this cannot operate in favour of a new generation.

However ordinary architectural works may be directed vicariously, hydraulic architecture cannot be practised successfully by any but practical men acting upon their own responsibility; and if you do not bring science backed by practical skill to your work, you will find yourselves driven from the field by masons and millwrights, whom the time will call from obscurity to perform the duties for which you will have shewn yourselves unfit. I would say then, acquire superiority over the merely practical man,—the rule-of-thumb engineer,—by the attainment of sound scientific knowledge, in addition to the mere practical skill with which he tenders his services; but do not depend upon scientific knowledge alone, if you propose to become civil engineers, and hope to gain your bread by the practice of civil engineering as a profession; for it may be truly said,—paraphrasing the beautiful language of an inspired writer,—you may have all learning and all science, but if you want this practical knowledge of which I speak, you will be but “as sounding brass or a tinkling cymbal.”



## LONDON AS IT WAS, AND AS IT IS IN 1844.

(Continued from p. 503.)

The houses in Bedford-street, King-street, and Henrietta-street, were then chiefly occupied by mercers, lacemen, drapers, &c., this being the extent of their peregrinations without the walls.

St. Mary's Church, in the Strand, was consecrated in January, 1723. An old church in that parish is mentioned in the year 1222, when it was called St. Mary's and the Innocents of the Strand. It was then situated on the site now occupied by the east end of Somerset House, for erecting which palace it was taken down in 1549, by order of Edward, the proud Duke of Somerset, to the great scandal of the times. The parishioners, deprived of their place of worship, joined themselves to the Church of St. Clement Danes, and afterwards to that of St. John Baptist, in the Savoy, where they continued till the year 1723. The new church, called St. Mary-le-Strand, was the first finished of any of the fifty new churches. Its living is a rectory in the gift of the king. It is a superb, though not an extensive edifice, massive without the appearance of being heavy, and formed to stand for ages. Its position is commanding, and although somewhat in the way of public business, we can hardly wish it removed to a more quiet and unobtrusive spot. At the entrance on the west end, is an ascent by a semi-circular flight of steps, which lead to a semi-circular portico of Ionic columns covered with a dome, crowned with a vase. The columns are continued along the body of the church, with pilasters of the same order at the corners, and in the intercolumns are niches handsomely ornamented. Over the dome is a pediment supported by Corinthian columns, which order is continued round the body of the structure over the Ionic order beneath; between the lateral Corinthian columns are windows placed over the niches. These columns are supported by pedestals, and have pilasters between them bearing arches, and over the windows are angular and circular pediments alternating. A balustrade is carried round the summit of the body, supporting vases. Formerly, there was a large watch-house placed before the entrance. On the spot where this church is built, there formerly stood a very lofty maypole, which, on public occasions, used to be decorated with flags, streamers, and garlands of flowers.

Hungerford Market, another improvement to the metropolis, is built on the ground where formerly stood the house and garden of Sir Edward Hungerford; he converted it into buildings, having a street into the Strand, and leading to the market, over the market-house was the charity school of St. Martin's parish. It was originally intended as a fruit and flower market, but Covent Garden having the start of it, and being in a better situation for business, Hungerford Market was neglected. As a starting place for steam-vessels, much company is drawn thereto, and much more may be expected when the suspension-bridge is completed and open to the public.

Between St. Martin's parish and St. Margaret's, Westminster, there was large commoning (for the benefit of those parishes), of lands laid open according to ancient custom from Lammass-day; which were, in Queen Elizabeth's time, inclosed with gates and hedges, by which the inhabitants were deprived of that benefit. Upon this, complaint was made to Lord Burghley, High Steward of Westminster, who ordered an inquest to be empaneled; the parishioners thinking this an acknowledgment of their right, employed persons on the ensuing Lammass-day with pick-axes and other

instruments to pull down the fences, and break open the gates. This assumed right extended over 688 acres, viz., Eobury Farm 430 acres, the *Neat* 108 acres, St. James's Farm 100 acres, John Lazarus of Jerusalem 50 acres.

In pursuing our train of observation on London in olden times and as it is in the present day, we now enter the limits of the city; and, previous to particularizing objects, it will be as well to give a brief history, as collected from Stow and other ancient writers. Geoffrey of Monmouth, the Welsh historian (?) reports that *Brute* lineally descended from the demi-god *Enes*, the son of *Venus*, daughter of *Jupiter*, about *anno mundi* 2855, and 1108 B.C., built a city near the Thames, and named it *Troynovant*, or *Trenovant*. This tradition was formerly of such credit, as to be preserved in an ancient tract in the archives of the city, transcribed into the *Liber Albus*, and long before that by *Horn*, in his old book of laws and customs, called *Liber Horn*.

King Lud, about 1060 years after, not only repaired this city, but also increased the same with fair buildings, towers, and walls, terming it *Caire-Lud* or *Lud's Town*, and the strong gate which he built in the west part of the city he named *Ludgate*; from this term the word London is said to have originated, by corruption; but others assert that it was anciently called *Longdin*, a British word answering to the Saxon word *Shipton*, that is, a town of ships. It is certain that long before the invasion of the Romans London was in good repute, notwithstanding its early history being involved in much obscurity. According to *Cæsar's* "Commentaries" *Casibelaun's* town was 20 miles west from London. *Tacitus* tells us that *Londinium* 62 A.C. was then most famous for the great multitude of merchants, provision, and intercourse, at which time it was pillaged and spoiled by the Romans. It is soon after this that London was walled with stone, and *Julius Agricola*, by introducing the arts of industry and civilized life from Rome, so engaged the affections of the Britons, as to win them to build houses for themselves, temples, and courts of justice, and to clothe themselves after the fashion of their conqueror.

The city of London is disposed on a small hill, having an easy ascent from the south, and its position is not only the most advantageous that could possibly be chosen for the seat of a mighty city, but also the most salubrious, being open to the bracing winds of the north, and having a noble river running through the midst of it, which, administering to its wealth and greatness on the one hand, carries off all impurities, and brings it the favourable and healthy breezes of the ocean. Formerly, it was thought that wood and charcoal only could be used with due regard to the health of the inhabitants; and in the reign of Edward I. the inhabitants, on the representations of the prelates and nobles, were by proclamation prohibited from burning sea-coal; which being disobeyed by many for their private emolument, stringent laws were enacted, and for the second offence, the authorities punished the offenders by demolishing their furnaces, kilns, &c. Great care has at all times been observed to preserve the purity of the atmosphere, provision being made against all annoying smells; and in the reign of Edward III. no butcher was allowed to slaughter his cattle nearer the city than Stratford or Knightsbridge.

In the time of Stow, London measured, from Limehouse to the end of Tothill-street, Westminster, about  $7\frac{1}{2}$  miles; and from the further end of Blackman-street, in Southwark, to the end of St. Leonard's, Shoreditch,  $2\frac{1}{2}$  miles; upon a medium, he says London is 7 miles long and  $1\frac{1}{2}$  miles broad, making an area of 9 square miles. In 1686 its population was computed at 100,000 souls. In 1702 the tax *Regin. Annæ* amounted to 1,979,931*l.*, and the quota of this tax set upon London and Westminster was 198,843*l.*, besides on Middlesex, in all 307,755*l.*, nearly one-fourth of the whole tax upon the kingdom; this will give some idea of its populousness and wealth. In 1682 there were 84,000 tenanted houses. It was computed at that period that the city doubled its population in forty years, and that by this mode of calculation the number of inhabitants in 1840 would be 5,800,000; that the inhabitants of all England would be but inconsiderably

more, viz. 10,917,389 in number; wherefore the growth of the city must stop before the year 1840, and be at its maximum in 1800, when the number of its inhabitants would be 5,000,359. In 1682, London was seven times larger than in Queen Elizabeth's reign.

William of Malmesbury tells us that about the year of Christ 394 the Londoners shut up their gates and defended Ethelred, their king within their walls against the Danes. Also, that Edmund Ironside, reigning over the West Saxons, Canute bringing his navy into the west part of the bridge by a trench which he had caused to be cut, east a trench about the city, and then attempted to win it by assault; but the citizens repulsed him, and drove him from the walls. Also, in the year 1052, Earl Godwin with his navy sailed up by the south end of the bridge, along the southern side of the river, and so assailed the walls. And William Fitz-Stephen, writing in the reign of king Henry II. of the walls of the city, observes, "The wall is high and great, well-towered on the north side, with due distances between the towers; on the south side also the city was walled and towered, but the fish-abounding river of Thames, with his ebbing and flowing, hath long since subverted them."

In the reign of Henry II. the city was bounded by a high wall, furnished with turrets, and seven double gates, and had in the east part a tower palatine, and in the west two castles well fortified. Further westward, about two miles on the banks of the river, was the royal palace of Westminster, "an incomparable structure guarded by a wall and bulwarks." Between this and the city was a continued suburb, mingled with large and beautiful gardens and orchards, belonging to the citizens, who were themselves everywhere known and respected above all others for their civil demeanour, their goodly apparel, their well-furnished tables, and their discourse. The number of conventual churches in the city and suburbs was 13, besides 126 lesser parochial ones. On the north side were open meadows and pasture lands, and beyond was a forest, in the woody coverts of which lurked deer, wild boars, and fierce wild bulls. The handicraftsmen, the venders of wares, and the labourers for hire, were every morning to be found at their distinct and appropriate places, as is still common in the bazaars of the East; and on the river's bank was a public cookery and eating-place belonging to the city, where "whatsoever multitude," and howsoever daintily inclined, might be supplied with proper fare. Within one of the gates also, in a certain plain field (Smithfield) on every Friday, unless it happened to be a solemn festival, was a great market for horses, whither early barons, knights, and citizens repaired to see and purchase.

The houses in Edward the First's time were built of wood, and the city was intersected with streams, which flowed through some of the principal streets. Thus the river Wells rises north-west of the city, and falling into Fleet ditch at the bottom of Holborn-hill; this brook had several mills on it, and was thence called Turnmill-brook; the Oldbourne, the Fleet, which had its course through Fleet-street, Walbrook, and Langbourne-brook.

In 1410 stocks market was erected where the Mansion House now stands.

In the reign of Henry V. the city was first lighted at night by lanterns slung on ropes. Leadenhall-market was then a granary or corn-market, it was afterwards used as a wool-market, subsequently converted into an armoury.

The whole circumference of the city walls was 16,095 feet, or 3 miles and 30 poles, the superficial extent being estimated at 380 acres. In the reign of Richard I. the citizens began to encompass and strengthen their walls by a ditch. In several succeeding reigns this ditch was cleaned out at the expense of the inhabitants of London. Previous to the reign of Elizabeth, this ditch abounded with excellent fish; Fleet ditch is the only part now remaining of the town ditch, and that is dwindled down into a common sewer.

The city of London was anciently watered by the river Thames on the south, the river of the Wells on the west, by Walbrook running through the midst of the city, Langbourn running within the city through Langbourn ward. In the west suburbs was also another stream called Oldbourn, which fell into the river of Wells. There were also three



principal fountains or wells in the suburbs, viz. Holy-well, Clement's-well, and Clarken-well, and also Skinner's-well, Pag's-well, Tode-well, Loder's-well, and Rad-well. In West Smithfield there was also a pool called Horsepoole, and one near St. Giles-without-Cripplegate; besides which, many of the streets were supplied with springs or wells.

In the year 1707, the foundations for some houses having been dug near the City-wall, at Bishopsgate, and part of the wall being applied for the buildings, Dr. Woodward took that opportunity of examining this ancient structure. The foundations of the wall at this place lay eight feet beneath the surface, and from that up to almost ten feet in height, it was composed of ragstone, with single layers of broad tiles interposed, two feet apart. To this height the workmanship was after the Roman manner, being the remains of the wall supposed to be built by Constantine the Great. The mortar was so firm and hard, that the stone itself as easily gave way to the implements of the workmen employed in breaking it down. It was thus far nine feet in thickness. The tiles used in this part of the wall were those termed *sesquipedales*, that is, tiles of 1½ ft.; each of them, in English measure, was 1½ in. in thickness, 11½ in. in breadth, and 17½ in. in length. On the sides were interposed open bricks, occasionally the stone outside was squared and wrought into layers 5 inches thick; between these were ultimately interposed two courses of brick of the same form as those on the inside, 11 inches long and 2½ thick.

(To be continued.)

#### A GLANCE AT THE INTERIOR OF THE CHURCHES IN THE DEANERY OF SPARKHAM, IN NORFOLK.—NO. V.

WITH NOTICES OF THEIR ACTUAL CONDITION.

(Continued from p. 457.)

*Elsing, anciently Ausing.*—The bright sunshine of an afternoon in May was expanding the wild flowers on Elsing Heath as, skirting the clump of spruce-firs that tops its western acclivity, we descended into a verdant amphitheatre, of which the parish church forms the nucleus. Serenely beautiful rose

"The grey embattled tower,  
Buttress, and porch, and arch with many round  
Of curious fret or shapes fantastic crown'd."

Of more ample dimensions, presenting a much larger proportion of "cleane hewen ashler" in the finished masonry of the more ornamental portions, and being altogether in a state of far higher preservation, Elsing Church is by no means behind that just quitted in offering its own attractions for the pilgrim of ecclesiastical beauty.

This church consists of a spacious nave and chancel, on the north side of which last is a vestry or vestry, the floor indicating that it has been the burial-place of some former incumbent. A lofty square tower, situate at the west end, and furnished with five bells, opens on the nave under a pointed arch springing from double octagonal pilasters; but this fine feature is marred by the introduction of a paltry gallery projecting into the nave. A spiral staircase at one of the angles is lighted by perforations in the masonry, of squared flint, with buttresses of solid freestone. The steeple is surmounted by an embattled parapet, as also are the side walls of the nave and chancel.

We were gratified to find the windows of this handsome church furnished with grating at the wickets to prevent, when these are set open, the ingress of birds. The crockets are for the most part arranged in flowing and ramified tracery, but several unsightly wooden bars intersecting these hardly reconcile us to the loss of effect by the additional security thus afforded. The fine east window, which fell *inwards* several years since, has suffered much disfigurement in this way; but we must own that, in many such cases, recourse would have been at once had to the bricklayer, and that despite the portraits of Sir Hugh de Hastings and the Lady Margaret, "hye wyf," yet seen on the painted glass of the central light.

Some time ago it became necessary to dislodge a swarm of bees that had possessed themselves of a crevice in the south-east portion of the nave-gable, and in effecting this, parts of an ancient staircase to the rood-loft

were discovered. The chancel arch under which this stood is, from its height and breadth, peculiarly imposing. The rood-screen, or rather the closed portion of it yet remaining, exhibits a profusion of rich carved-work; it has been converted to the use of seats, *backing on the altar*, by adding fronts indifferently sculptured in the style known as arabesque. The piscina and sedilia, under a range of ogive arches, only require to be freed from the incrustations, the effect of periodical latherings, under which their beauties lie concealed. The altars, formed of small shafts supporting Norman arches which intersect each other, afford a specimen of commendable taste, in which the present authorities have shewn themselves miserably deficient. A dossal or altar-screen lately set up here moves our spleen every way—meagre in design and gaudy in colouring. And yet we were told that the thing cost amply enough to have purchased one of far higher character. Strange that the juxtaposition of a brass mural table, placed in a niche surmounted by a canopy which is enriched with crockets and a finial, wondrous that this elegant monument hindered not the perpetration of such a deformity! A large altar-tomb appears on the north side, and in the centre a marble slab with elaborate brasses, the portraiture of a knight in complete armour with a lion at his feet, &c. Thus much of the chancel, which has the convenience of a priest's door at the south aisle.

The open wood-work of the leaded roof gave place in 1779 to the semicircular ceiling with tiles above, which now appears here; a change every way to be deplored, as the absence of pillars causes a defect of light and shadow within this church ill remedied by the unbroken superficies over head. An endowment for repairs amounting, we believe, to 20*l.* per annum, only shews that it avails little to hold such resources unless men of a better and purer taste than heretofore be found to direct their application. The pews over a large portion of the church have the merit of fronting the altar; but two parlour-like inclosures at the eastern angles receive, no doubt, occupants of a higher worship than the rest—"the grave Mr. Justice Tonson, the good lady Jones and the two virtuous gentlewomen her daughters." The pulpit, reading, and clerk's desks, are sorry affairs in themselves, but their position is, in degree, commendable; a fine window nearly filled with painted glass of splendid design throws in its mellow light here with elegant effect. The walls offer the first instance yet occurring in this deanery of the "scrolls that teach us to live and die."

The font has high claims to notice, the fine tabernacle-work of its cover yet more so. The bowl of the former, octangular in shape, embattled and wreathed beneath with a chaplet, stands on a low shaft having its sides fluted in cavettos, and resting on an octangular base; this again impends on a square moulded plinth, the whole terminating pavement-ward in an easy eight-sided step. It will suffice in respect of the cover\* to say that Mr. Blore's cultivated taste has led him to appreciate the beauty of its miniature windows and flying buttresses without, its fan-tracery and pendants within. Lamentable to add, this elegant appendage has become, through vulgar stint, an impediment to the hallowed office our forefathers sought to embellish by it. Being now without the ancient facility for raising this in appearance light, but really ponderous adjunct to the baptism, a pewter basin substitutes the noble leaded bowl, with its orifice to permit escape to the sanctified fluid; and, as a natural consequence, the officiating minister stands anywhere save upon the step provided for his accommodation. The site of this font, as will be shewn hereafter, is highly appropriate.

The only indication of a niche for the holy water stoup is afforded on the west side of the north door, the commonly used one, by a short beam which projects there; its use, to suspend the key from. Ogive arches over the doorways both of church and porches are foliated, crocketed, and surmounted by finials. A few stunted fir-trees in the north-east angle of the cemetery contrast strangely with the wild luxuriance of their fellows on the heath—

"They cannot quit their place of birth;

They will not live in other earth."

\* Mr. Repton, in the XVth vol. of the *Archæologia*, supposes this to have been one of the earliest instances.

#### RETROSPECTIVE ARCHITECTURAL LITERATURE.

##### THE ELEMENTS OF ARCHITECTURE.

COLLECTED BY SIR HENRY WOTTON, KNIGHT,  
From the best Authors and Examples.

(Continued from p. 493.)

First, I must note a certain Contrariety between Building and Gardening: For as Fabrics should be regular, so Gardens should be irregular, or at least cast into a very wild Regularity. To exemplify my Conceit, I have seen a Garden (for the Manner perchance incomparable) into which the first access was a high Walk like a Terrace, from whence might be taken a general View of the whole Plot below; but rather in a delightful Confusion, than with any plain Distinction of the Pieces. From this the Beholder descending many steps, was afterwards conveyed again by several Mountains and Valings, to various Entertainments of Scent and Sight, which I shall not need to describe (for that were poetical); let me only note this, that every one of these Diversities was as if he had been magically transported into a new Garden.

But though other Countries have more benefit of the Sun than we, and thereby more properly tied to contemplate this Delight, yet have I seen in our own, a delicate and diligent Curiosity, surely without parallel among foreign Nations; namely, in the Garden of Sir Henry Fanshawe, at his Seat in Ware-Park, where I well remember he did so precisely examine the Tinctures and Seasons of his Flowers, that in their setting, the inwardness of those which were to come up at the same time, should be always a little darker than the outmost, and so serve them for a kind of gentle Shadow, like a Piece not of Nature, but of Art: Which mention (incident to this Place) I have willingly made of his name, for the dear Friendship that was long between us: Though I must confess with much wrong to his other Virtues, which deserve a more solid Memorial, then among these vacant Observations. So much of Gardens.

Fountains are figured, or only plain Water'd-Works: Of either of which, I will describe a matchless Pattern.

The First done by the famous Hand of Michael Angelo da Buonaroti, in the Figure of a sturdy Woman, washing and winding of Linen Cloaths; in which Act she wrings out the Water that made the Fountain: which was a graceful and natural Conceit in the Artificer, implying this Rule, That all Desings of this kind should be proper.

The other doth merit some larger Expression: There went along, straight, mossy Walk of competent breadth, green and soft under foot, listed on both sides with an *Aqueduct* of white Stone, Breast high, which had a hollow Channel on the Top, where ran a pretty trickling Stream; on the Edge whereof were couched very thick all along, certain small Pipes of Lead, in little holes, so neatly, that they could not be well perceived, till by the turning of a Cock, they did spurt over interchangably from side to side, above Man's height, in form of Arches, without any Intersection or meeting aloft, because the Pipes were not exactly opposite; so as the Beholder, besides that which was fluent in the *Aqueducts* on both hands in his view, did walk as it were under a continual Bower or Hemisphere of Water, without any drop falling on him. An Invention for Refreshment, surely far exceeding all the Alexandrian Delicacies, and Pneumatics of Hero.

Groves and artificial Devices under-ground, are of great Expence, and little Dignity, which, for my part, I could wish converted here into those *Crypteria* whereof mention is made among the curious Provisions of Tycho Brahé, the Danish Ptolemy, as I may well call him; which were deep Concaves in Gardens, where the Stars might be observed even at Noon. For (by the way) to think that the brightness of the Sun's Body above, doth drown our discerning of the lesser Lights, is a popular Error; the sole Impediment being that Lustre, which by Reflection doth spread about us from the Face of the Earth; so as the Caves before touched, may well conduce, not to a delicious, but to a learned Pleasure.

In *Aviaries* of Wire, to keep Birds of all sorts, the Italians (though no wastful Nation) do in some Places bestow vast Expence; including great scope of Ground, variety of



Bushes, Trees of good height, running Waters, and sometimes a stove annexed, to temper the Air in Winter: So as those Chanteresses, unless they be such as perhaps delight as much in their Wing as in their Voice, may live long among so good Provisions and Room, before they know that they are Prisoners; reducing often to Memory that Conceit of the Roman Stoick, who in comparison of his own free Contemplations, did think divers great and splendid Fortunes of his Time, little more than commodious Captivities.

Concerning *Ponds of Pleasure* near the Habitation, I will refer myself to a grave Author of our own (though more illustrious by his other \*Work) namely *Sarisburiensis de Piscinâ*.

And here I will end a second Part touching *Ornaments* both within and without the Fabrick.

Now as almost all those which have delivered the Elements of *Logick*, do usually conclude with a Chapter touching *Method*; so I am here seized with a kind of critical Spirit, and desirous to shut up these building Elements with some methodical Direction how to censure Fabricks already raised. For indeed without some Way to contract our Judgment, which among so many Particulars would be lost by Diffusion, I should think it almost harder to be a good Censurer than a good Architect; because the working Part may be helped with Deliberation, but the judging must flow from an extemporal Habit. Therefore (not to leave this last Piece without some Light) I could wish him that cometh to examine any noble Work, first of all to examine himself, whether perchance the sight of many brave Things before (which remain like impressed Forms) have not made him apt to think nothing good but that which is the best, for this Humour were too sowre. Next, before he come to settle any imaginable Opinion, let him by all means seek to inform himself precisely of the Age of the Work upon which he must pass his Doom. And if he shall find the apparent Decays to exceed the Proportion of Time, then let him conclude without farther Inquisition, as an absolute Decree, that either the Materials were too slight, or the Seat is nought. Now after these Premises if the House be found to bear his Years well (which is always a Token of sound Constitution) then let him suddenly run backwards (for the Method of Censuring is contrary to the Method of Composing) from the Ornaments (which first allure the Eye) to the more essential Members; 'till at last he be able to form this Conclusion, that the Work is commodious, firm and delightful; which (as I said in the Beginning) are the three capital Conditions required in good Buildings, by all Authors both ancient and modern. And this, as I may term it, the most scientific way of censuring. There are two other, which I must not forget: The first in *Georgio Vassario*, before his laborious Work of the Lives of *Architects*, which is to pass a running Examination over the whole Edifice, according to the Properties of a well-shap'd Man: As whether the Walls stand upright upon clean Footing and Foundation: Whether the Fabrick be of a beautiful Stature: Whether for the Breadth it appear well burnished: Whether the principal Entrance be on the middle Line of the Front or Face like our Mouths: Whether the Windows, as our Eyes be set in equal number and distance on both Sides; whether the Offices, like the Veins in our Bodies, be usefully distributed, and so forth: For this Allegorical Review may be driven as far as any Wit will, that is at leisure.

The second Way is in *Vitruvius* himself, Lib. 1, Cap. 2, where he summarily determineth six Considerations, which accomplish this whole Art:

<i>Ordinatio.</i>	<i>Symmetria.</i>
<i>Dispositio.</i>	<i>Decor,</i>
<i>Eurythmia.</i>	<i>Distributio.</i>

Whereof (in my conceit) we may spare him the first two; for as far as I can perceive, either by his Interpreters, or by his own Text, (which in that very Place, where perchance he should be clearest, is of all other the cloudiest) he meaneth nothing by *Ordinatio*, but a well settling of *Model* or *Scale* of the whole *Work*: Nor by *Dispositio*, more than a neat and full Expression of the first Idea or Designment thereof: which, perchance, do more belong to

the *Artificer*, than to the *Censurer*. The other four are enough to condemn, or absolve any *Fabrick* whatsoever. Whereof *Eurythmia* is that agreeable Harmony between the Breadth, Length, and Height of all the Rooms of the Fabrick, which suddenly, where it is, taketh every Beholder, by the secret Power of Proportion: Wherein let me note this, That though the least Error or Offence, that can be committed against Sight, is Excess of Height; yet that Fault is no where of small Importance, because it is the greatest Offence against the Purse.

*Symmetria* is the Conveniency that runneth between the Parts and the Whole, whereof I have formerly spoken.

*Decor* is the keeping of a due Respect between the Inhabitant and the Habitation. Whence *Palladius* did conclude, that the principal Entrance was never to be regulated by any certain Dimensions, but by the Dignity of the Master; yet to exceed rather in the *More*, than in the *Less*, is a Mark of Generosity, and may always be excused with some noble Emblem, or Inscription, as that of the Conte di Bevilacqua, over his large Gate at Verona; where, perchance, had been committed a little Disproportion.

*Patet Janua: Cor magis.*

And here likewise I must remember our ever memorable Sir Philip Sydney (whose Wit was in truth the very Rule of Congruity), who well knowing that *Basilius* (as he had painted the State of his Mind) did rather want some extraordinary Forms to entertain his Fancy, than Room for Courtiers, was contented to place him in a Star-like Lodge; which otherwise, in severe Judgment of Art, had been an incommensurable Figure.

*Distributio* is that useful casting of all Rooms for *Office*, *Entertainment*, or *Pleasure*, which I have handled before at more length than any other Piece.

These are the four Heads which every Man should run over, before he pass any determinate Censure on the Works that he shall view; wherewith I will close this last Part, touching *Ornaments*. Against which (methinks) I hear an Objection, even from some well-meaning Man, That these delightful Crafts may be diverse ways ill applied in a Land. I must confess, indeed, there may be a lascivious, and there may be likewise a superstitious Use, both of *Picture*, and of *Sculpture*. To which Possibility of Misapplication, not only these Semi-liberal Arts are subject, but even the highest Perfections, and Endowments of Nature: As *Beauty* in a light Woman; *Eloquence* in a mutinous Man; *Resolution* in an Assassinate; prudent *Observation* of Hours and Humours in a corrupt Courtier; *Sharpness* of Wit and Argument in a seducing Scholar, and the like. Nay, finally, let me ask, What Art can be more pernicious, than even *Religion* itself, if itself be converted into an Instrument of Art? Therefore, *Ab abuti ad non uti, negatur consequentia*.

#### CHAPEL OF ST. EDMUND, WALPOLE.

In reference to an article which appeared in our last number headed "*New Chapel at Walpole, St. Peter's*," and which article was extracted from the *Cambridge Chronicle*, the rector of Walpole has written the following letter to the editor of that paper:—

Sir,—In perusing in your last number a descriptive account of St. Edmund's Chapel, consecrated on the 26th inst., I observe so many inaccuracies, that I must request to be permitted to say a few words in reply.

The nave is 42 feet 6 inches long, not 46 feet, as asserted by your correspondent. The apse is 16 feet by 14 feet, dimensions which, though scanty, bear a better proportion to the size of the nave than would appear from his statement.

The seats do not "fill the entire chapel," an open space being left in front of the chancel arch, and westward of the pulpit. The aisle is 5 feet in width,—and the back of each seat is 2 feet 8 inches in height.

The chapel has seats, not for 400, but for 180 persons, and are all open and free. Your correspondent's estimate of the expense is much exaggerated: The figure of Our Lord (not that of the Blessed Virgin) occupies the east window. "The incomprehensible saint" is St. Edmund, bearing in his hand an arrow, the instrument of his martyrdom. Had your

correspondent taken a little trouble to inquire, the poorest cottager would have informed him that the ancient chapel of St. Edmund formerly stood at no great distance, suggesting the same saint as the patron of the present building.

The "kind of dog-toothed quatrefoil" (?) which is the name your correspondent assigns to the ornament on the edge of the altar, is neither more nor less than the well-known *indented star*, sharp, and deeply cut—a device purely Norman—and so far from being a "deviation from the style" of the building, it is, on the contrary, a fac-simile of the top-stone of an undoubted Norman altar lately discovered in Norfolk. The cross on the frontal is also Norman. The whole design of the altar is plain and simple, somewhat resembling a tomb.

The chancel arch is 8 feet wide: instead, therefore, of its spanning "three parts of the entire breadth of the chapel," to have said *one-third* would have been more correct.

Our font is 2 feet 5 inches in diameter—a dimension by no means beyond the average in Norman fonts, nor is the size of a church necessarily a rule for that of its font. It has much of the boldness that characterizes the style. Its position in the centre of the aisle, near the west door, is in accordance with the recommendation of the Incorporated Society.

The cornice was not intended to be of Norman design, but to assimilate with the other wood-work, which follows a later date. Tastes may differ in such matters of detail; but I have reason to believe, that many persons of good taste and sound judgment would approve of the course we have adopted in reference to this point. Indeed, the poppy-heads were carved from casts taken from finials lately put up by the Camden Society in the Round Church, Cambridge, a Norman building; and it was their advice which was of influence in our choice of a later style for the furniture. For my own part, I have no objection to take refuge under their responsibility.

Whether in the absence of a steeple and side-aisle, censure is implied, I know not; if it is, I would appeal to any person of taste whether such features would not be quite out of keeping with the size and simple character of the whole building. A bell-cote has been adopted, taken from a very elegant specimen in Buckinghamshire.

My object in the above remarks has been merely to correct some inaccuracies in your correspondent's letter. I have endeavoured to do so without acrimony. I feel grateful to him for his mention of my name with approbation, scarcely deserved on my part. I only wish that before he had put pen to paper he had applied to me, or to some other party qualified to give him accurate information on the subject-matter of his letter.

I am, Sir, yours, &c.,

ARTHUR MOORE.

Walpole Rectory, Lynn, Oct. 1, 1844.

[We have no hesitation in recording our opinion that the fitting-up of new churches with carpentry, furniture, and fittings in discordant styles, and differing from the main fabric, if not very bad taste, is taste of a very low and piecemeal description. We are sure those who build the Round Church would not have fitted it up in any such style.—Ed.]

#### DECORATIVE ART SOCIETY.

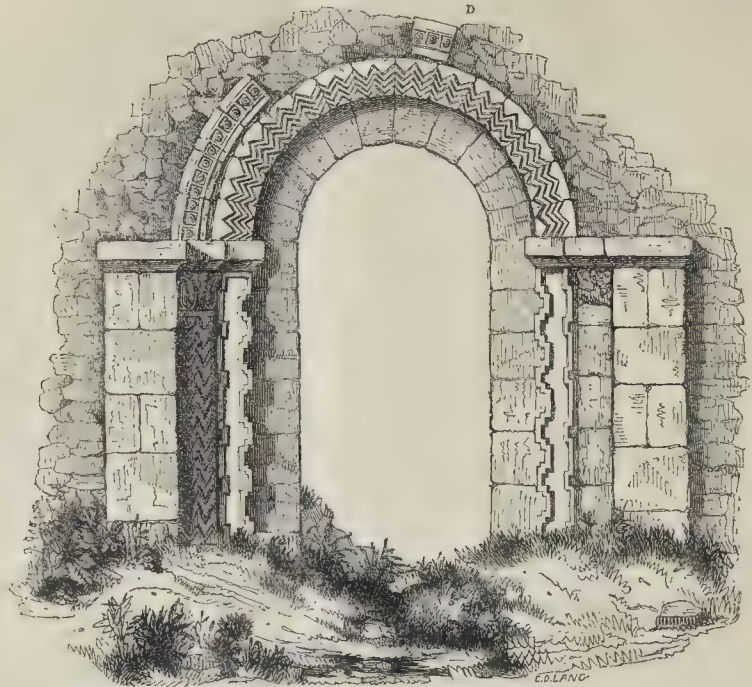
##### PAPER HANGINGS.

A VERY interesting and valuable paper was read last Wednesday evening, at the apartments of the above society, in Davies-street, Berkeley-square, by Mr. Cowtan, "On Paper Hangings," at the conclusion of which a discussion took place, for the purpose of eliciting further information on the same subject from those who were present. Mr. Crabb, whose paper on *Design* we have republished, took a leading part in the discussion, as also did the secretary, Mr. Laugher. We regret that our space this week does not admit of a notice of the evening's proceedings so detailed as we could wish. The quiet, unobtrusive, and successful course this society is steering, and the judicious way in which it is effecting its objects, are deserving of much praise. We shall endeavour in our next number to revert to Mr. Cowtan's paper,

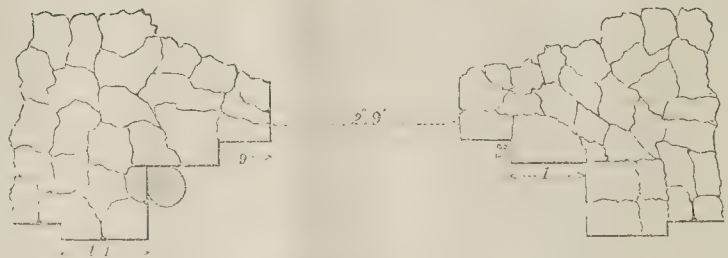
\* De Nugis Curial, &c.



CATHEDRAL OF AGHADOE.



ELEVATION OF THE WESTERN DOORWAY.

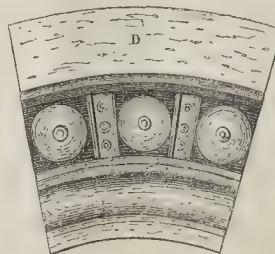


PLAN OF THE WESTERN DOORWAY.

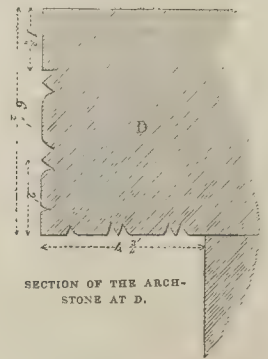
(Only one of the Columns remains.)



COLUMN AND IMPOST OF THE DOORWAY.



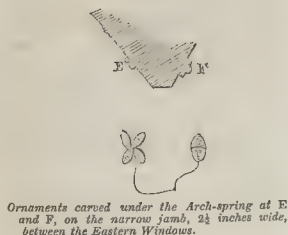
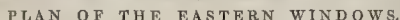
ARCH-STONE AT D ON THE ELEVATION.



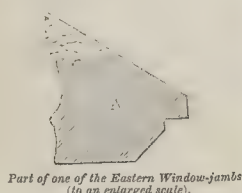
SECTION OF THE ARCH-STONE AT D.







Ornaments carved under the Arch-spring at E and F, on the narrow jamb, 2½ inches wide, between the Eastern Windows.



*Part of one of the Eastern Window-jambs  
(to an enlarged scale).*



PLAN OF THE CATHEDRAL

prove in the long run highly destructive to these sacred monuments of Christian piety, left as landmarks of the munificence and skill of our ancestors, who appeared to have kept in perpetual remembrance that beautiful passage in the 25th Psalm, "I have loved, O Lord, the beauty of thy house; and the place where thy glory dwelleth." It much to be deplored that little or no efforts have hitherto been made to stop the hand of the destroyer, whose progress in destruction will, before another half-century passes away, complete the havoc Cromwell commenced some 190 years ago.

Owing to the Cathedral of Aghadee being in the vicinity of the far-famed Lakes of Killarney, and commanding, from its elevated site over the adjoining roadway, one of the most magnificent scenes the eye can rest on, on one side the great Mangerton and Turn mountains, clothed to near their cloud-capped summits, with the inexhaustible Arbutus tree; the wild and rugged pass through that stupendous chasm called "the Gap of Dunloe," the romantic and beautiful island of Innisfallen, noted as being the spot where the materials were collected and written denominated the "Annals of Innisfallen," valuable for their illustration of ancient Irish history; this island is also the subject of Moore's well-known song, "Sweet Innisfallen, Fare thee well." It is, therefore, no wonder that this spot (Aghadee) has become a favourite resort of tourists and others, independent of the attractions to be found in viewing the roofless walls of an old building. Let this be as it may, the cathedral has afforded materials for some published opinions, both as regards the architecture and antiquity of the fabric. One writer asserts, "The cathedral consists of *two* distinct chapels or churches, of unequal antiquity, and of somewhat different architecture, separated by a solid wall."

Having had frequent opportunity during the past year of visiting this old ruin, I never could perceive, after careful examination, any difference in the workmanship of the two flank walls, which are inclined outwardly, so as to leave the cross-wall standing in the clear, with an open space of two or three inches at the top, leaving no doubt, from having neither tie

But then we are left wholly to conjecture the object of such an unusual arrangement. The assertion in the quotation above, that the cathedral was "separated by a solid wall," is not strictly correct, as I found the appearance of a doorway and window, now walled up. Finding no tradition respecting this matter amongst the "oldest inhabitants" of the locality, the only thing I could learn to throw any light on the subject is, that the See of Agheadoe was suppressed about the year 1600. Such an occurrence must have made a great change in the ecclesiastical establishment connected with the then cathedral. It therefore may be fairly presumed that such a change had the effect of lessening, not only the new "staff" but the numerical strength of the flock also. Hence the necessity of suiting the church to the congregation may be judged a judicious arrangement, both as regards economy and comfort, by having the cathedral shortened by means of the cross wall in question. This alteration, whilst it had the effect of excluding much of the cold damp air, may be considered a *desideratum* equivalent (in those days) to that modern appendage and antidote against rheumatism, a Doctor Arnott's stove.

Your obliged servant,

Ferns, August 16, 1844. J. K. L.

BY JAMES WYLSOY.  
(Continued from p. 505.)

106. WILD-CHERRY, or GEAN-TREE.—The best specimens of this hardy native are such as have sprung accidentally in the woods, where, although not very commonly it is yet frequently to be met with; its wood is more used on the Continent than here, for notwithstanding the avidity with which, when felled, it is purchased by cabinet-makers, it is with us seldom cultivated as a timber-tree, and has not the care bestowed on it which it deserves. Under favourable circumstances it will attain, in a growth of fifty years, a height of 60 or 70 feet, with a trunk ample enough for general purposes, the timber being of considerable size and durability. This tree is of an ornamental and pleasing character, springing up, as it approaches maturity, in a pyramidal form, and its branches shooting out at right-angles from the stem. In the spring months it is particularly interesting on account of its luxuriance of white blossoms, which render it, in the lawn or park, a very attractive object; these, as well as the leaves, much resemble those of the orchard or cultivated cherry, its leaves are oval, pointed, serrated, and smooth; the fruit is black, small compared with the cultivated cherry, and has a stone larger in proportion. There are other species of the wild cherry of a more vigorous growth and larger size, and with red fruit. Young plants are propagated by layers, or from the stones, which in autumn or spring are sown thickly in the nursery, on a bed of good soil, and in due time are rowed out, previously to being ultimately planted. This tree makes excellent stocks whereon to graft the orchard-cherry. From the older branches a gum exudes which serves very well as a substitute for gum-arabic. The wood of well-grown trees is highly valuable, being strong and firm in texture, close-grained, and susceptible of a high polish; it is in colour of a beautiful red. It is very suitable for boring and forming musical instruments; and is also calculated for tasteful display in cabinet-work.

107. HAWTHORN or WHITE THORN.—This is generally known as a plant for quick-set or living hedge-towns, for forming which it is invaluable, its appearance having a striking superiority over that of stone or stake fences; but it is nevertheless to be met with of such dimensions as to entitle it to our consideration as a timber tree. Those at Bushy Park, from which that domain has been supposed to have derived its name, are believed to have existed in the time of Cromwell, and will, therefore, seeing that he died in 1658, be about 200 years old. Instances occur of their attaining a circumference of from six to ten feet, and it is remarked that it seems to be the nature of those specimens which reach a great age, to part into a number of separate stems.

108. In early times this tree appears to have had a high poetical standing; for we find

SIR,—From the willingness shewn on your part to insert the contributions of your numerous correspondents, many of whom are kindly disposed to lend a helping hand in placing before the public so much of the neglected but not the less interesting remains of the ancient architecture of the country, I beg to offer for insertion in *THE BUILDER* the annexed sketches, taken from the old Cathedral of Aghadoc, county Kerry.

The church or cathedral is a plain oblong building, having little to admire except the western doorway, one peculiarity alone in its arrangement being somewhat remarkable—a stone wall carried up nearly in the centre of the interior. For what *purpose* this wall was constructed, I beg before concluding to submit an opinion, as it has given rise to some published observations by tourists and others, tending to shew a difference in the style as well as in the antiquity of those portions of the cathedral being east and west of the central wall.

Before proceeding to remark on the above, where all at best must be conjecture, it may be desirable to notice the taste and skill exhibited in the execution of the western doorway, which, notwithstanding its present dilapidated state, confirms the general opinion, that however rude in design were most Norman churches the western or entrance doorway was well executed.

The accompanying sketch and details are intended to represent its appearance at the present time.

The doorway, when contrasted with the simple forms of the windows, may be considered a very fine specimen of workmanship. Two of the windows are still uninjured by time, probably from being less ornamental than the doorway; for from the assaults (to use a military phrase) of the neighbouring peasantry, who without hesitation frequently displace some beautiful chaste stone or other architectural ornament for the purpose of marking the spot where some departed relation "rests in peace," not thinking for a moment that such Vandal-like acts



that the ancients considered it as the emblem of hope; that the Troglodytes, an Ethiopian tribe, on that account strewed branches of it over their dead; and the Athenians, with torches made of it, illuminated the altar of Hymen, their young girls also carrying boughs of it in the wedding processions. In the days of chivalry too, when a lady favoured the suit of her knight, she wore its leaves tied with carnation ribbons, the reading of which being "hope in love," undoubtedly impelled the lover to still more stalwart feats to prove the tenderness of his passion. In our own day, its early and sweetly-perfumed blossom gives well-founded hopes of a beautiful spring, and is hailed by young people under the name of *May*. The Glastonbury thorn is a variety which is by some described as blooming twice a year; at the usual time in spring, and again, though more thinly, about Christmas; and by others as blooming much earlier than the common hawthorn, being frequently found in flower in January or February, and in very mild seasons soon after Christmas—a circumstance rare, and which in darker ages was attributed to miracle: of the correctness of the former we entertain a doubt, but not having the means of ascertaining the truth, we must leave it for some one located near the abbey to solve it. Of the sacred character of this thorn, we are informed by tradition handed down by the monks of Glaston, that "Joseph of Arimathea, to whom their abbey is dedicated, ceased from his wanderings at the place where it stands, and there stuck in the ground his staff, cut from a thorn tree in the Holy Land, and which took root and flourished," and still continues to be propagated, young plants being raised in the nurseries. When in 1752 it was deemed expedient to alter the style, and the common people considered themselves robbed of eleven days, a deputation was sent from a village in Warwickshire to consult the holy thorn of Glastonbury, a sprig of which—it being believed to blow every Christmas-day, and being just then in leaf or blossom—was borne back in triumph.

109. The wood of well-grown hawthorn is of a tough and strong description, an idea of which is gathered from the fact of its being made available for axletrees and tool handles.

110. *BIRCH* (COMMON WHITE).—This tree, called by Coleridge "the lady of the wood," is comparatively small, but of great beauty; light, airy, and elegant, frequently assuming the pendent character, and thence distinguished as the "weeping birch;" there are also other varieties of it, besides the poplar-leaved, the tall, and the black American. It thrives best towards the northern parts of Europe, and is capable of flourishing where no tree indigenous to Britain will grow—having been found in Scotland at an altitude of 3,500 feet above the level of the sea, though of dwarf dimensions. As a graceful ornament in landscape gardening, especially if there be water in the composition, it is scarcely to be surpassed; and it forms a chief adornment to our wild and mountainous tracts, being abundant in Wales, Ireland, and Scotland, the romantic scenery of the latter graced by the weeping variety especially. The leaves are oval, tapering to a point, and serrated, and they exhale a very pleasant fragrance; the slender twigs are made into brooms, and are besides known to the schoolboy in another form, being characterized as the

"Well-lettered birch,  
Which supplies law, and physic, and grace for the church."

The wood is not of much utility, nevertheless as a coppice-plant it is useful for many rural purposes; hoops, clogs, and various utensils are made from it, and arrows used to be formed from it in the days of archery. The smaller branches are cut for yard and stable brooms, and in the north it is even used for the covering of houses; in Lapland, water-proof boots are made from it without seams, the legs being taken from the trees entire; being resinous, it makes good fuel and even torches; it also furnishes the material from which the pleasant and wholesome beverage called "birch wine" is made, the juice for this purpose being obtained by making, in the spring when the sap is beginning to rise, a deep incision in the trunk; the bark is white, very valuable, and has been likened to layers of beaten silver. Young plants of the common birch are most conveniently raised from seeds; exotics from layers,

or by grafting on the former; the soil favourable to its growth is of a poor, light, or sandy description.

111. *ARBOR VITÆ*.—This is one of the most beautiful of our evergreens, and of a bright, lively description; the English species is merely ornamental, but the wood of the American is of considerable value for fencing, being very durable when so, or similarly employed.

112. *LIME, OR LINDEN TREE*.—This, if not of all European trees the one capable of reaching the greatest diameter, at least ranks in that respect in the very first class, examples of very large dimensions being found in Switzerland and many parts of Germany, some being extant which are above 50 feet in circumference, though not arrived at their growing maturity. The lime attains a height of 40 or 50 feet, and an instance exists of one in Norfolk 90 feet high. Its blossom is of a delicate light-green colour, and diffuses widely a fragrant and delicious odour. There is no clear evidence of its being indigenous to this country; indeed, from the circumstance of its seeds very rarely ripening here, an almost conclusive inference may be drawn that it is not so: the small-leaved variety, however, is generally believed to be native, and the large-leaved one an exotic: be this as it may, its introduction must have been at a very early period; for it is mentioned familiarly by the earliest writers on the subject; two examples at Halstead, planted in 1590, and still growing, have been said to be the first planted in England; but it is rather supposed to have been introduced here by the Romans. If any exception could be taken to the appearance of the lime-tree, it would be in respect to its uniformity of outline; this characteristic, however, does not render its beauty wholly devoid of the picturesque, for when favourably situated, it is a pleasing and even striking object; and in regard to elegance of foliage, it is scarcely rivalled.

113. It is a tree of most rapid growth, the large-leaved being more so than the small-leaved. There are several varieties, and which, from its being a handsome leafy description of tree, are grown chiefly for ornament, being well adapted for avenues and situations where their grateful shade is desirable; also for the adornment of squares and public walks in large towns, to which they form a graceful, and, coming as they do early into leaf, a very advantageous appendage; intimating to the inhabitants the advent of the much-longed-for spring. The intersection of the contiguous branches of the lime over an avenue has, in the pleasant task of fixing the origin of Pointed Architecture (but which seems as elusive as the discovery of the longitude or the squaring of the circle), been construed into the veritable lancet arch; certainly no elaboration of fan-tracery could form a more delightful canopy than is afforded by its green boughs and broad beautiful leaves; nothing in sculpture can equal its beautiful branches in luxuriant blossom.\* It is, for a reason already referred to, not often raised from seeds; but when it is so, they should be sown in autumn, in a shady border of earth of a moist and light description; the seeds ripen about the end of October. It is most generally, and most advantageously, propagated by layers, which may be obtained from stoles or mother plants cut close to the ground, and laid in autumn, in almost any soil if not of a nature too arid. It possesses the singular advantage, that it may be transplanted at a considerable size with as much safety as a seedling.

114. The varieties of limes we can name,

\* [By-and-by will be seen if this notion be correct or not: whether Gothic cathedrals were or were not so invented. The greater part of their science may be referred, and that correctly, to a grove of trees. We believe that the progression of substance matter and strength which are contained in a tree from its summit downwards, agree with the philosophical solid figure of pressure equal throughout, modified to suit the differing vicissitudes of winter, leafage, fruitage, and storm. This is to some extent shown in the very tops of children, where trees are represented by small conoidal bits of wood, which are BRANCHED OUT, NOT BY ADDITIONS TO THE MATERIAL, BUT MERELY BY STRIPPING AWAY THE SUBSTANCE OF THE WOOD FROM AND OUT OF THE GENERAL TAPERING MASS. A correct model of a vaulted cathedral may be made, with its ramified roof-tracery, out of a grove of such tops.—Ed.]

are the common *linden*, the *small-leaved*, the *broad-leaved*, the *coral*, the *red-twigg*, the *American*, the *white*, and the *downy* lime. The small-leaved is the one believed to be our own native species, and is commonly met with in Essex, Sussex, and Lincolnshire, flourishing in the greatest perfection, and attaining a diameter of 4 feet, and in soils of a loose, deep, and fertile description, a height of 8 feet; its leaves are dark-green and smooth above, glaucous underneath, with brown hairy tufts at the springings of the leading veins, and about two inches wide; it is about a month later in flowering than the succeeding description. Our broad-leaved variety is said to be the wild lime of Switzerland and Southern Europe; it attains a size equal to that of the common *linden*, and is met with in the woods and hedges of Whitstable, in Surrey, and in various other places: its leaves are, on their underside, clothed with a white down, the ribs and veins covered with fine hairs; they have also long foot-stalks. The coral lime is so nearly allied to the broad-leaved kind as to be by some considered as only a variety of it. The American lime is of recent introduction in this country, and, judging by a specimen at Whiteknights, in Berkshire, which has attained the height of 60 feet, we may anticipate its proving one of great growth: its leaves are dark-green above, paler beneath, obliquely heart-shaped, and very large, the blossom odoriferous, large, pendulous and elegant, and having, like our more naturalized varieties, a long, narrow floral leaf attached to each bunch; in its native country it flowers in the middle of summer. The white variety is mostly to be found in America, on the banks of the Ohio; the downy sort, also, on the Susquehanna; this is a native of the Floridas and the southern parts of the United States; its leaves are very downy underneath, and its flowers more plentiful, and produced in larger bunches, than in other species.

115. Respecting the purposes to which the *Linden-tree* is applied, it may be mentioned that the light, delicately-white, tender, and uniform texture of its wood, together with its injuring so very slightly the tools with which it is worked, has so suited it for the carver's art, as to obtain for it the designation of "the carver's tree." The celebrated Grinling Gibbons employed it in his exquisite representations of flowers, dead game, &c.; it is used in the manufacture of moulds, small toys, pill-boxes, and other light wooden wares, also sometimes in forming carriage-panels and the seats of Windsor chairs; a good board of it is capital for the leather-seller and the shoemaker to cut out upon; it is likewise used by the turner, and, having an excellent spring, is made into fishing-rods, although, from its weight and brittleness, and liability to snap through without giving the least warning, these should only be used by experienced anglers, and must for real utility give place to the hickory; when spoken of with reference to its application to this and similar purposes, it is commonly termed "Lancewood." Abroad, its bark being prepared in a particular manner, and manufactured into matting, called *bast*, is used for packing up hemp, flax, and other commodities; here it is used in like manner by the cabinet-maker, for packing furniture, also by the gardener, for fruit trees. Its flowers, from their fragrance, generally form one of the ingredients in making *pot-pourri*; and a decoction of them is said to be a good antispasmodic.

(To be continued.)

**DUNDEE TRIUMPHAL ARCH.**—Lord Panmure, father of the Right Hon. Fox Maule, M. P., has subscribed the munificent sum of 500*l.* towards the triumphal arch, proposed to be erected at Dundee, to commemorate the visit of her Majesty and her illustrious consort. The loyal inhabitants of that prosperous town have agreed upon an arch, as was the case with the Perth people, when the queen visited that ancient city in 1842.

**NORTHAMPTON ARCHITECTURAL SOCIETY.**—A general meeting of the friends of this institution will be held at the George Hotel, Northampton, on Wednesday the 16th instant. The Marquis of Northampton, one of the presidents of the Society, has consented to take the chair.



## CHURCH-BUILDING INTELLIGENCE, &amp;c.

**Re-Consecration of Saint Mary's Church, Dover.**—On Tuesday, Oct. 1, this church was re-consecrated by his Grace the Archbishop of Canterbury—the restoration (or rebuilding) and extension of the sacred edifice having rendered the ceremony necessary. The Rev. B. Harrison, the chaplain of the archbishop, preached the sermon, and took occasion to observe that the venerable fabric, the oldest portion of which still remained, had been restored—he might say rebuilt. It was originally erected about the time of the Norman Conquest, with that solidity which characterizes edifices of that period, and about 150 years subsequent had been enlarged, and broader and larger arches of a later period erected, which in like manner had been restored. The work now effected had been executed with much elegance, while the space had been made more available, and would admit of the accommodation of a larger number of worshippers. By the pulling down of the necessary portions, the whole edifice had been endangered, which rendered the rebuilding of the external wall necessary. The increasing population of the parish, and the augmented numbers of visitors, called for the enlargement of church accommodation; and these objects had been accomplished at a cost which would fall little short of 6,000*l.* The original estimate did not exceed 4,650*l.*, which is more than covered by the amount already received, that being 4,850*l.*—of which 1,600*l.* was raised by a parochial loan, 500*l.* received from the Incorporated Church-Building Society, and the remainder by individual subscription. An additional expenditure of 1,000*l.* had been necessary to gain a secure foundation.

**St. Clement's Church.**—A short time since, says the *Corwall Gazette*, as Mr. W. Pearce, statuary of Truro, was removing a portion of the plaster on the north side of this church, for the erection of a tablet, he came upon a curious old fresco painting, rudely executed, about 12 feet by 10 feet, inclosed in a quatrefoil border. The colours were well preserved. The principal figure is recumbent, and he holds in his right hand a palm branch. By his side stands a female figure, in royal ermined robe, and holding a globe and cross. Beneath is an antique ship, with quaint high forecastle and poop, and around it are sporting a number of mermaids and dolphins. In the upper part of the painting are some rude representations of churches, and at the open entrance of one of them is shewn a man pulling a bell in the steeple, by means of a leverage somewhat similar to that by which we see our smiths' bellows now worked. The whole painting exhibits a thorough disregard of proportion, grouping, and perspective. It is conjectured that the design of the painting was to commemorate the return of Admiral Hawkins, of Trewithan, in the adjoining parish of Probus, one of the commanders of the English fleet which conquered the "Invincible" Armada; with Queen Elizabeth welcoming him home, and his countrymen also testifying their joy at his return. A portion of the painting is still open to inspection; and a coloured sketch of part of it has been made by an artist, Mr. Philip Mitchell.

**Bristol Cathedral.**—The alterations so frequently made in parish churches by churchwardens have often been subjects of severe and just complaint. In cathedrals, which are presided over by an enlightened corporate body, we do not expect to find alterations made of a mean and shabby character. In our cathedral, however, we have just seen a re-modelling of some of the seats near the pulpit, which has surprised and grieved us; by whom ordered it is not for us to inquire. Several pews have been removed, and open seats substituted; but instead of being constructed of oak, like the handsome carved specimens around them, they are made of common deal; they are, too, literally *sittings*, no kneeling-places being attached to them. The pulpit-stairs, also, hitherto in the north aisle—a locality most convenient to the officiating clergymen, have been very injudiciously removed into the choir, greatly abridging the seat-room, and presenting an unsightly appearance. The recumbent stone figure of Bishop Paul Bushe, which has survived the violence of the Cromwellian troops, has been inclosed in a glass case, and is now visible from the choir.—*Bristol Journal*.

**New Church at Wood Green, Tottenham.**—On Thursday, October 3, the new church at Wood-green, in the parish of Tottenham, was consecrated by the Lord Bishop of London. This interesting ceremony was witnessed by about 30 of the neighbouring clergy, and a very full attendance of the founders of the church. The hamlet of Wood-green contains a population of about 400, and the church affords accommodation for about half that number. It is of the Early English style, and has been constructed from a design and under the superintendence of Messrs. Scott and Moffatt. It is entirely of stone, Kentish rag, dressed with Bromhill stone. The pulpit and font have been elegantly carved in Painswick stone by Mr. Cox, of Oxford. The roof is open. The history of the building of this little church may afford an useful lesson to building committees engaged in any similar undertaking. For some time it had been contemplated to make some provision for the spiritual good of Wood-green; but the resources of the hamlet were clearly not equal to the expense of building a church. An appeal, however, was made to the parish generally. The intention set forth was building a church, not on a niggardly and sparing principle, but of stone and in the best possible manner, and the result has been that assistance has been rendered, and that contributions, many of them anonymous, have come in from quarters whence they were least expected.—[The above particulars, though exaggerated, may not be altogether without interest.]

The chapel at Burton Constable, Yorkshire, is being splendidly decorated in lively colours and gold, from designs and under the direction of Taylor Bulmer, Esq. The ceiling is divided into compartments of ultra-marine, and powdered with stars, surrounded by a *bordure* of pure scarlet and gold. The pillars and rood are also richly gilt and coloured. The several niches are of a deep azure, powdered with fleur-de-lis, having also a scarlet and gold band, with scriptures, &c. A very fine window of stained glass, originally from the Continent, and lately in the church at Tixal, has been placed at the end opposite the altar. The mullions are to be richly painted and gilt.—*Hull Packet*.

A subscription is set on foot for beautifying the Abbey Church at Rousey. The sum of 2,000*l.* is still wanted, and about 400*l.* are already collected. A new organ is much desired by many.

**New Church, Swadincote.**—Earl Howe, Lord Teignmouth, Sir Oswald Mosley, and Mr. Colville, M.P., have given liberal donations towards the erection of a new church at Swadincote, Derbyshire.

**SOUTHEAST NEW PIER.**—The progress of this construction will be completed in the course of the ensuing spring or early in the summer. Its extraordinary length, stretching out as it does over the shallow bay a distance of a mile and a quarter, renders it an undertaking of much interest. The pier is chiefly supported on cast-iron piles, which are so placed as to lean considerably towards each other, so that when united by the cross-beams and planking they have some of the properties of an arch, and present thereby a strong resistance to the pressure of the sea, which in stormy weather runs very high there. At first an attempt was made to drive these iron piles in the usual manner by the machine commonly called a "monkey." This process was abandoned in consequence of the metal splitting by the concussion. The piles are now fixed by "wriggling," their weight under an oscillatory motion serving to insinuate them into the soil so effectually, that it is found impossible to move them when fixed, and some difficulty has arisen in consequence of one or two not having been sloped inwards as originally intended. The necessity for the erection of this pier must be apparent to all who have landed at this little watering-place at any other time than the period of high water, for an awkward transit in clumsy flat-bottomed boats does not always serve to secure a landing, passengers being sometimes coolly requested to step out, and wade through the mud and water at a depth of four or five inches. But cast-iron piles have hitherto decomposed in salt water.

## RAILWAY INTELLIGENCE.

**Egyptian Railway.**—The project of still further facilitating the intercourse between Europe and India, by means of a railway across the Isthmus of Suez has been resumed, with the prospect of an early accomplishment. The consent of the Pacha of Egypt for the formation of this line was some time ago obtained by Mr. Galloway; but the premature death of that gentleman, after thirty miles of rails had been transmitted to the spot, put a stop to the undertaking. If it should now be completed, the saving of time in the overland journey will be twenty-four hours, and there is no doubt that it would be a source of increased wealth to the Pacha. The fact that from the commencement of the new year the mail to and from India will be fortnightly, instead of monthly, makes the project of greater value and importance.—*Railway Record*.

**The direct Northern Railway from London to York, via Lincoln.**—We have this week seen a plan of the above proposed line, for which Parliamentary plans, &c., are in the course of preparation, and will be brought forward early in the next session. The line, we believe, will commence near King's-cross, in the New-road, proceeding thence by Chipping Barnet, Biggleswade, St. Neot's, Huntingdon, near Peterborough and Market Deeping, by Stamford, to the west of Bourn, east of Grantham, west of Sleaford, and east of Newark, to Lincoln, and thence by Gainsborough, Thorne, Snaith and Selby, to York; thus passing through a most densely populated district, connecting the north of England and Scotland with the metropolis, completing the whole distance in 180 miles.

**Atmospheric Railway.**—It has been propagated by the organs of this scheme, in opposition to what we stated, that the Great Western directors, who have been over to inspect the working of the Dalkey line, have returned highly satisfied with it. We can, on the best authority, give this a flat contradiction. They are not only not pleased with it, but displeased, we believe we can say to a man, as being all that we had described it.—*Herapath's Journal*.

**Her Majesty's State Carriage on the Southampton Railway.**—This splendid carriage is nearly completed, under the direction of Mr. Beattie; and it is confidently expected that the application of the patent Kamptulicon (or composition of cork and India rubber), under the carpet and between the framework and body of the carriage, will entirely prevent the unpleasant vibration inseparable in all railway travelling.

**The Railway Act.**—The new Act came into operation last Tuesday week; it compels all companies to provide third-class carriages with awnings, to protect passengers from the effects of bad weather.

**WESTMINSTER IMPROVEMENTS.**—Some of the inhabitants of Westminster having seen the plan for the proposed improvements, invited their neighbours to meet them last Tuesday week, to take them into consideration. They had been unable to obtain a copy of the plan, but from what they had seen of it, reported that it was very nearly the same as that formerly projected and known as "Rigby Wason's line." The following are some of the principal defective points which it was agreed to lay before the Commissioners of Woods and Forests and the public.—By the proposed line Westminster Abbey, which ought to be thrown open to public view, is left as obscure as ever; instead of a direct line from Westminster Abbey to Piccadilly, it is a curved street from Westminster Abbey to Vauxhall-bridge-road; it does not improve the approaches to the Palace, but diverges further from it every yard it proceeds; it leaves the sewerage of Westminster unimproved, and does not touch the bad lanes, courts, and alleys branching out of York-street in the neighbourhood of the Palace, which are a continual source of malaria and consequent fever. There were other strong points of objection to the proposed plan, but the foregoing were considered such radical defects, that it was thought it would only be necessary to call the attention of all parties concerned to them to insure its rejection; and a subscription was entered into and a committee formed to take the necessary steps to effect this.—*Times*.



## Correspondence.

METROPOLITAN NEW BUILDING-ACT.  
"ALREADY BUILT"—BUILDINGS BEGUN BEFORE 1ST OF JANUARY, 1845—LIMITATION 1ST JANUARY, 1846.

To the Editor of "The Builder."

SIR,—I think the reply you have given to your correspondent "Felix" in reference to the time and manner in which the New Building-Act will come into operation is not quite correct, and therefore trouble you with this note, that you may take an opportunity of correcting the matter if my view of the case be the right one, as I feel assured that you would regret that the influence of your valuable journal, which is growing to be an authority in matters connected with building, should, however unintentionally, tend to mislead any one.

If you refer to the 9th clause, you will find that whatever state a building may be in at the time the operation of the Act begins, it becomes at once subject to the provisions of the Act. "So far as any part thereof may remain to be executed after this Act comes into operation;" and consequently that the Act will not be avoided, unless any such building is so far advanced as to have all those matters completed (the walls and roofs) to which the Act is intended to apply.

I am, Sir, your most obedient servant,  
THOMAS PIPER, Jun.

173, Bishopsgate-street, Oct. 2, 1844.

[BY THE 2ND SECTION OF THE ACT, "The term 'ALREADY BUILT' used in reference to buildings," is "to apply to buildings BUILT BEFORE the 1st day of January, 1845, or COMMENCED before that day, and covered in and rendered fit for use within twelve" (calendar) "months thereafter; and, used in reference to streets and alleys, to apply to all streets or alleys made or laid out before that day, and which shall be formed and rendered fit for use within twelve" (calendar) "months thereafter."

"The term 'HEREAFTER TO BE BUILT,' used in reference to buildings, to apply to all buildings to be BUILT OR COMMENCED AFTER the 1st day of January, 1845, or which, being commenced, shall not be covered in within twelve" (calendar) "months thereafter; and used in reference to streets and alleys, to apply to all streets or alleys NOT laid out before the said 1st day of January, or which, being laid out, shall not be rendered fit for use within twelve" (calendar) "months thereafter."

WE CONSIDER the provisions of the 9th section of the Act relative to contracts, whereby "It shall not be lawful to execute such contract otherwise than in conformity with the provisions of this Act," would be strictly fulfilled by the completion before the 1st January, 1846, of any building begun before 1st of next January, according to previous statute, and that all streets and alleys completed for use before the 1st January, 1846, will be legal, whatever may be their widths, though in the latter case the term *use* may admit of dispute; we ourselves think it cannot be intended that streets partly built shall be required to be suddenly widened throughout the remainder of their extent; the term *use*, we imagine, being applied to the purposes of passage, and not to habitation.

WE CONSIDER that the words in the 9th section, "It shall be LAWFUL for either party, and he is hereby ENTITLED to deviate from such contract so far as any part thereof may remain to be executed after this Act shall have come into operation; and the alterations rendered necessary by this Act shall be performed as if this Act had been in force when such contract was entered into," are not intended to compel any party to forfeit the direct allowance granted by the 2nd section; but to entitle either party voluntarily so to deviate as to comply prematurely with the new statute, with the understanding that he abide the award of the district surveyor, or by appeal that of the official referees, as to all attendant expenses and costs of appeal.

Perhaps the "RULES concerning chimneys HEREAFTER BUILT OR REBUILT" (Schedule F.), may be construed to apply to all chimneys not commenced on the 1st January, 1845, although the buildings to which they are attached may be previously begun. There may be some other exceptions, which will be better seen from the alphabetical digest which we intend to publish.—ED.]

EXTERNAL WALLS, FOURTH-RATE, DWELLING-HOUSE CLASS.

SIR,—In conning over the various clauses of the New Building Act, contained in your valuable publication of August 31st, my attention was particularly directed to those parts which refer to fourth-rate houses; there appears a little discrepancy in the reading with regard to thickness of external walls (Schedule C. part 2nd, page 445), and the section shewn page 446.

Question.—Suppose I build a fourth-rate house of two stories, that is to say, a ground and one-pair floor, is it compulsory on me to have brick-and-half walls up to the underside of the one-pair floors, or only, as at present, the brick-and-half to the underside of the ground-floor?

THOS. SMITH.

Dock Head, Bermondsey.

[We do not perceive the supposed discrepancy. The wording of the schedule runs "at least 8 inches thick, from the under side of the floor NEXT BELOW the TOPMOST floor, up to the top of the wall." The section given with the Act agrees with this. Therefore, in the two stories mentioned, the external walls may be only one brick thick.—ED.]

TUBULAR AND OTHER FLUES.

SIR,—Will you confer upon me an additional obligation, by publishing the following extract from a list of mine, circulated nearly twenty years ago. It might be of use to some who erect cottages and other buildings without brick or stone jambs, or thick walls; and would also tend to corroborate the purport of my former letter, which appears to have freed the "Ebury Wharf" advertisement of what may turn out to be both *libellous* and untrue.

"CHIMNEYS.—Instead of projecting brick-work occupying so much space in rooms, Thomas Peake thinks, from experiments he has made, that 10 inch socket pipes would be found an almost invaluable substitute. In appearance, when painted, they form a neat cylinder, commencing at the top of the fire-place and finishing in the ceiling. The cap of each pipe shews a projecting ring, which is rather ornamental than otherwise. As brackets would support these flues, there would be no necessity to carry jambs from the ground-floors for that purpose. The heat emitted by such funnels into every room through which they pass is so great as, in the opinion of the writer, to exceed what is produced by moderate sized grates, and consequently to supersede the necessity of fireplaces in upper rooms. Perhaps outer-casings, that is, larger pipes with regulators, might be required in all lodging rooms, and might be so contrived, as either to admit the warm air or allow it to escape through the roof. T.P. believes that soot would not adhere to them; that they could not smoke; that they are of universal application, if made of suitable materials where the heat would be great; and that their cheapness or durability will not be questioned. Architects, builders and others, are invited to try the above plan, in any small shop or out-house, with such pipes as their respective localities afford; convinced that, if the joints be made air-tight, the result will be preferable to anything which might be said here."

The extract may be of use to those who build cottages, &c., in places where fuel is dear.

In closing this correspondence, Sir, permit me to remark that I am prepared to prove the truth of what I have stated; and submit, therefore, that any man who has the means is at liberty to manufacture, vend, or construct the "tubular and other flues," they having been long public property, and being very likely to continue so.—I am, Sir, your obedient servant,

THOMAS PEAKE.

22, Water-lane, Fleet-street, London, from "The Tileries," Tunstall, Staffordshire.

BROCKHAM NEW CHURCH.

SIR,—In your last number you have a statement by "A Mason" "that the inhabitants of Brockham, in the county of Surrey, are erecting a new church, according to plans designed by Messrs. Smith and Armstrong." There being some inaccuracy in this statement, and wishing to correct it I beg to inform you, B. Ferrey, Esq., of London, was the architect employed to make the designs. Messrs. Smith and Armstrong are one of a party of four respectable builders who were selected to tender for the erection of the building, and although

their tender was not the lowest, they were selected by the committee to carry it into execution. It would be difficult to assign a reason for the committee having come to this conclusion, particularly as the builder whose tender was the lowest was prepared with sufficient security for the due performance of the work. Report says that it was owing to a family connection with an influential member of the committee that the parties selected were favoured in this instance; be this as it may, it has a tendency to prevent respectable builders from giving their time and incurring expense, when the result may be that, after having done so, some favoured individual, through *interest*, is selected. I equally regret with "A Mason," the committee should have selected doubtful materials for such a structure, it having failed where used in most instances; at the same time I do not agree with him that *red brick* would have been most proper; there is plenty of flint close by which could be had for such a purpose free of expense; and this, with the Bath or other stone dressings, which it is now proposed to use, would have made a more durable, picturesque, and church-like building than can be made either of *chalk or bricks*; instance St. Saviour's Church, in the Borough, the flints of which were taken from the immediate neighbourhood.

Having seen the design, I think the building will be an ornament to this beautiful neighbourhood, and it would be serviceable if a drawing of it were given in THE BUILDER.

I am, your obedient servant,

A SUBSCRIBER.

Dorking, October 8, 1844.

HARDY TESTIMONIAL.

SIR,—I beg leave to forward you a few particulars relative to the "Hardy Testimonial," and hope you will insert the same in your next number for the information of your readers;—facts are stubborn things, and will speak for themselves.

There were about ninety-four designs sent in for the "Hardy Testimonial;" these were privately exhibited for about a fortnight to the committee (previous to a public exhibition); in the interim a design was concocted by one of the committee, which was adopted; the premium offered was then divided and presented to the authors of the best two designs out of the ninety-four.

I have not seen the design made by the amateur committee-man, which, however, possibly may be very beautiful; at all events, it ought to warrant the adoption of such a proceeding, which is at once an insult to the profession, and an outrage on common decency.

I am, Sir, your obedient servant,

MEMORABILIA.

London, October 5, 1844.

ST. ROLLOX'S CHIMNEY.—This giant stalk—partly perhaps on account of its vast height, but chiefly, we presume, in consequence of the constant internal heat to which it is subjected—is exhibiting considerable rents or fissures in an upward direction. The two principal seams are about half-way up; one on the east side, and one on the west. Although the stability of the structure is by no means endangered as yet, the enterprising proprietors have determined, as a measure of precaution, to clasp it with iron for a considerable way up. This appears a serious operation, when we consider the huge dimensions of the chimney (40 feet diameter at base, and 14 at summit); and to reach the height at which the rimming is necessary will be an undertaking of some difficulty. For this purpose a machine has been invented, we believe by Professor Gordon, of this university, by which two men are at the present moment working their way up to the west side of the stalk in a manner which, although it has the appearance of considerable risk and daring, seems, on examination, to be perfectly safe. The operation is an interesting one, and will become more so as the workmen continue to ascend. We may mention, that a second chimney has just been completed in the same works, to the west of the great one. It is not, however, nearly so high, its height being only 250 feet—a method having been discovered whereby the smoke emitted is rendered much less pernicious to health and vegetation; thereby obviating the necessity of carrying it to so great a height above the city.—Glasgow Citizen.



## Miscellaneous.

**THE PROPOSED IMPROVEMENTS IN WESTMINSTER.**—It has been for some time generally known that considerable improvements have been under the consideration of Government to be effected in the neighbourhood of Westminster, especially in those parts where scenes of the grossest description daily and nightly take place, which, it is reported, are leased by the Dean and Chapter of Westminster to other persons, and then sub-let to the most infamous characters. The district which this comprises consists of Orchard-street, New Pye-street, Duck-lane, New Tothill-street, and the vast number of courts which diverge from them. The whole of these buildings are to be taken down, and a most excellent improvement, not only morally but sanatorily, will be effected. The courts and alleys and streets are thickly inhabited by unfortunate creatures, and even the supply of water is obtained from the houses of persons living at a distance, who are generally their landlords, and who permit them to reside in their miserable tenements on the payment of a nightly rent. It was in Orchard-street that Oliver Cromwell had one of his palaces, but in those days Palmer's Village was close beside it, and was the seat of gentlemen's country-houses. In James-street, where Lady Dacre's almshouses now stand, Lady Dacre had her residence, and this by her will has been devoted to the erection, many years since, of one of the first institutions in England, nearly equal to that of Christ's Hospital, in the city of London. Peter-street derives its name from having been built on the grounds upon which formerly stood a splendid mansion belonging to an ancestor of the present Lord Petre. Lady Dacre left to the city an estate of between two and three acres of ground, the garden ground, and that called Palmer's Village, which has been occupied in small tenements for a number of years; and on the 2nd instant, the occupants, having had previous notice, were removing their trifling goods. The whole of this space is to form a part of the new street from Westminster Abbey to Buckingham Palace. The gentlemen connected with the woods and forests were on the same day engaged in valuing the estates belonging to the trustees of Lady Dacre and the city, in order to estimate the proportions due to them, as well as to the tenants. The work of improvement, as long desired, will commence immediately.—*Globe*.

**AGRICULTURAL COLLEGE.**—An agricultural college is about to be established, by royal charter, in the vicinity of Cirencester, to be opened for pupils from all parts of the kingdom. The necessary capital is to be raised in shares. The affairs of the company will be managed by a committee chosen by the shareholders, who will act under the authority of the charter, by which the liability of the shareholders will be limited to the amount of their respective shares. A suitable farm, and a moiety of the estimated cost of the buildings, have been provided by Earl Bathurst; the college and the other buildings will be erected on the farm. The whole establishment will be under the direction of a head-master, a practical farmer, and possessing scientific and general qualifications for so important a situation, who will have under him the requisite tutors, farm bailiffs, &c. The pupils will be instructed in the science applicable to agriculture, such as chemistry, geology, mechanics, botany, &c., and a portion of their time will be employed on the farm in manual labour, so as to obtain a complete knowledge of farm work.—*Staffordshire Advertiser*.

**THE ISTHMUS OF PANAMA.**—The following appears in the *Courrier Français*:—"We learn from a source upon which we can confidently rely, that the hopes which have been entertained relative to the cutting of the Isthmus of Panama cannot be realized. M. Garella is returned from making his survey, and the result of it is that the Isthmus rises between the two oceans not merely to the height of ten yards above the level of the sea, as stated by the Franco-Grenadine Company, but in reality to 125 yards; so that, instead of a single trench or canal without any sluice, which would have been an artificial strait, as we had been given by the company's engineers to expect, nothing can be thought of less than a canal with sixty locks.

**THE LONDON DOCKS.**—The extensive alterations and improvements in progress at this great commercial establishment are proceeding very rapidly. The dock establishment was removed some time since from the original superintendent's office, adjoining the west quay, to the building which formerly stood outside the dock walls parallel with the Custom-house, in the occupation of the Excise and Government Emigration Departments, and which has been considerably enlarged, and now includes offices for the whole of the superintendent's department in addition to committee and board-rooms for the directors, &c. The boundary-wall of the dock has been extended outside this new dock-house and also includes the Custom-house within the dock walls, coming to a point at the corner of East Smithfield and Nightingale-lane, on which spot a new entrance has been erected facing the proposed new street from Shoreditch Church. The entrance consists of two large gates, one for the entrance and another for the exit of waggons, a great though a rare convenience at similar establishments, and at the top of the pivot connecting the two gates it is intended to place a budge light of considerable power. The baggage warehouse, which formerly adjoined the superintendent's office at the west quay, has been removed to a warehouse appropriated to the purpose, a little further to the right of the quay, adjoining the Hermitage basin. On the sites of the old superintendent's office and baggage warehouse a very extensive warehouse has been erected, intended principally for the housing of tea, and underneath this warehouse spacious vaults have been made, and in which a great quantity of wines and spirits have already been deposited.

**SIR EDWARD KERRISON'S "OAKLEY HOMES,"** IN SUFFOLK.—There are now being erected in the pretty village of Hoxne, on a healthy spot, near the venerable church where many of the "forefathers of the hamlet sleep," several neat cottages, to be tenanted by respectable and industrious old people, who may have lived all their lives in the parishes on the Oakley estates. They are to be called "The Oakley Homes;" the tenants to occupy for life, and to be rent free. In addition, also, to the present well-organized school, at which nearly 100 boys are every week receiving a sound education, not only religious, but moral and industrial—many of the larger boys having small garden allotments for cultivation—there is now in course of erection a Sunday-school, which is to provide sufficient accommodation for eighty children. This work is also to be completed and carried on at Sir Edward Kerrison's expense. The whole of these new buildings are in the Gothic style, from designs by Smirke, and when completed will form a great additional ornament to the village.—*Ipswich Journal*.

**EXTRAORDINARY SALES OF SHARES IN THE THAMES TUNNEL.**—One hundred shares in the Thames Tunnel, upon which 50*l.* each had been paid up, amounting to 5,000*l.*, were sold a few days since at the Auction Mart by Mr. Shuttleworth, at 6*s.* per 50*l.* share, realizing only 30*l.*, being 4,970*l.* less than had been paid for them. The sale was a *bond fide* one, the shares having been put up by the executors of a deceased gentleman.

**BIRKENHEAD DOCKS.**—The day for the laying of the first stone of these important works is now definitely fixed, we understand, for Wednesday, the 23rd instant, when Sir Philip de Malpas Grey Egerton, M.P. for South Cheshire, will officiate on the occasion. Preparations for the public proceedings of the day are under the consideration of the principal inhabitants.—*Liverpool Albion*.

The most remarkable excavator in modern times, in any part of the world, has been the Pasha of Egypt. The Mahmoodie canal alone is twenty-three leagues in length; no fewer than 313,000 men having been occupied for the space of ten months in its construction. For some years past, the number of workmen employed in hydraulic works in Egypt has exceeded 350,000.—*Bombay Times*.

**PUBLIC BATHS AND WASHING HOUSES.**—A public meeting will be held at the Egyptian Hall, Mansion House, on Thursday, the 16th instant, for the purpose of promoting the establishment of cold and warm baths and washing houses, for the labouring classes. The Right Hon. the Lord Mayor will preside.

**THE VICTORIA PARK.**—A communication is said to have been made from the directors of the East London Waterworks to her Majesty's Commissioners of Woods and Forests, in which the former very liberally offer to supply two or three fountains in the Victoria-park with an abundant quantity of water gratuitously, provided it is subsequently permitted to flow into public baths to be erected in the vicinity for the use of the poor. Several benevolent gentlemen, at the head of whom is Mr. William Cotton, Governor of the Bank of England, are at present projecting a plan for the erection of baths at the east end of the metropolis, where the poorer classes of society may be enabled to obtain luxuries so conducive to health, and of which they are at present totally deprived, at a charge commensurate with their means. The want of public baths, or indeed any place for bathing, at the east end of the town has been severely felt.

## Tenders.

TENDERS delivered for repairing, &c., a House in Bedford-row.—Mr. Charles Broadbridge, 87, Great Portland-street, Surveyor. October 9, 1844.

Ashby.....	£224
Jocks and Nesham.....	192
Matthews.....	188
Whitlaw.....	183

## NOTICES OF CONTRACTS.

For such Bricklayers, 'Carpenters,' Masons,' and other Works, in the Cleansing, Building, and Repairing the public Sewers and Drains for the City and Liberty of Westminster.—Mr. Lewis C. Herslett, Clerk, 1, Greek-street, Soho, October 15.

For Building a Sewer in Robin Hood-court and New-street-square, London.—Joseph Daw, Sewers Office, Guildhall. October 15.

For re-Building of Shotter's Mill, in the Parish of Linchmere, Sussex.—The Royal Farmers' and General Fire, Life, and Hail Insurance Office. October 24.

For Surveying, Levelling, and Mapping of all lands lying within certain districts in Lincolnshire. Work to be completed on or before May 1, 1845.

—M. Dudding, Clerk of Sewers, Lincoln. October 16.

For Excavating and Completing of several miles in length of new Water Courses, and Erecting a number of Bridges, Culverts, &c., connected therewith.—Messrs. George Leather and Son, Civil Engineers, Leeds. October 15.

For 250 Tons of the true Red Roman Pozzolano, from the works of Carlo Nepoti, called the Cave of St. Paul, near Civita Vecchia. W. H. Huffam, Secretary, Dock Office, Hull. October 15.

For Building a Church to contain 1,250 persons at Woolwich, Kent.—Mr. Francis E. H. Fowler, Architect, 28, Sackville-street, Piccadilly. Oct. 19.

For Building a French Church and School-House in Plumtree-street, Bloomsbury.—Mr. Jacob Vincent, 10, South-square, Gray's-inn. October 18.

## COMPETITIONS.

**PREMIUM OF 25 guineas** for the best and another of 15 guineas for the second best design for laying out for building purposes a plot of land, containing about nine acres and a half, situate in the borough of Reading, having a frontage of upwards of 900 feet, and being of the depth of about 460 feet. Further particulars of J. J. Blandy, Esq., Solicitor, Reading; or of Messrs. Gregory, Faulkner, Gregory, and Bourdillon, 1, Bedford-row, London. November 15.

**PREMIUM OF 500*l.***, being a legacy bequeathed for a painting to be placed in the recess over the communion table of St. James's Church, Bermondsey. The subject to be the Ascension of our Saviour. Further particulars of the trustees of that church.

## TO CORRESPONDENTS.

A. Z.—A letter of introduction from the clergyman of the parish in which you reside, from a banker, or from any other known responsible person, addressed to either of the Librarians, or to the Secretary of the British Museum, will gain for you an admission to the Library.

J. Bet.—We cannot without a view of the premises at Pentonville, answer the question. "A Bath Stone" is referred to the leading article of last year's last number of "The Builder," and we advise him to become an inmate of St. Bartholomew's Hospital, where he will find relatives all around him, in every state of disease, and of every age, from 20 to 70 years; but he must apply soon, for we lately saw Mr. Mallico, the mason, taking particulars for an estimate for the renewal of its masonry with Portland stone.



## Current Prices of Wood and Metals.

October 8, 1844.

	£.	s.	d.	£.	s.	d.
Box, Turkey, per ton	2	0	0	6	0	0
CEBRAR, Pencil, per foot	0	0	3	0	0	4
Cuba	0	0	3	0	0	4
N. S. Wales	0	0	3	0	0	4
Green, per ton	5	5	0	9	0	0
EBONY, Ceylon, large	6	0	0	7	10	0
small	4	10	0	5	15	0
Madagascar, small	5	0	0	6	0	0
LIGNUM VITÆ, Jamaica	3	0	0	5	0	0
St. Domingo	8	0	0	12	0	0
MAHOGANY, Cuba, per foot	0	0	7	0	1	4
St. Domingo	0	0	7	0	1	6
Honduras	0	0	4	0	0	10
TIMBER.						
Teak, African, per load	6	10	0	10	10	0
Oak	3	15	0	4	10	0
Fir, Riga	3	17	6	4	0	0
Danzic and Memel	3	10	0	4	5	0
Swedish	3	12	6	0	0	0
Pine, Quebec, red, per load	3	15	0	0	0	0
yellow	3	0	0	0	0	0
Miramichi & St. Johns	2	15	0	4	10	0
Wainscot Logs, 18 ft. each	4	10	0	5	5	0
Lathwood, Memel, &c. fm.	12	0	0	0	0	0
Deals, Gefle, 14ft. 3in. by 9	29	0	0	31	0	0
Stockholm	25	10	0	26	0	0
Christiana, 1st & 2nd	27	0	0	29	0	0
St. Petersburg, G. Memel,						
Danzic, 12ft. 11in.	16	0	0	18	0	0
Quebec yellow Pine,						
first quality	17	0	0	18	0	0
second ditto	10	0	0	11	0	0
White Spruce, 120.	16	0	0	17	10	0
Danzic Deck, each.	0	18	0	1	6	0
Plank, Danzig Oak, load.	9	0	0	10	0	0
STAVES, Baltic, per 1200.	160	0	0	0	0	0
Quebec Pipe, 1200	50	0	0	52	10	0
Punccheon	13	0	0	0	0	0
COPPER—Brit. Cake, p. ton						
84	0	0	0	0	0	0
Tile	83	0	0	0	0	0
Sheet, p. lb.	0	0	9	0	0	9
Old	0	0	8	0	0	0
South Amer., ton	73	0	0	74	0	0
IRON, British Bars.						
84	5	15	0	6	0	0
Rods	6	10	0	0	0	0
Hoops	8	0	0	0	0	0
Sheets	8	15	0	9	0	0
Cargo in Wales, Bars	5	0	0	0	0	0
Pigs No. 1, Wales	3	10	0	4	0	0
No. 1, Clyde	2	15	0	0	0	0
Russan, cold	16	10	0	0	0	0
Swedish	10	0	0	0	0	0
LEAD—British, Pig, p. ton	16	10	0	0	0	0
Sheet, milled	17	10	0	0	0	0
Shot, patent	19	10	0	0	0	0
Red or Minium	21	10	0	0	0	0
White	23	10	0	0	0	0
Litharge	20	0	0	0	0	0
Pig, Spanish	16	0	0	16	10	0
American	15	10	0	15	13	0
STEEL—Swedish Keg	15	15	0	16	0	0
Faggot	16	0	9	0	0	0
TIN—In blocks, p. cwt.	3	12	0	0	0	0
Ingot	3	12	0	0	0	0
In Bars	3	13	0	0	0	0
Banca	3	5	0	3	7	0
Straits	3	4	0	3	5	0
Peruvian	2	17	0	0	0	0
Plates, p. box, 225 sh.						
No. 1. C. 13½ by 10 in.	1	4	6	1	10	0
I. X.	1	10	6	1	16	0
SPELTER—On the spot, ton	22	5	0	22	10	0
Delivery	21	17	6	22	0	0
ZINC, English Sheet	30	0	0	0	0	0
ORSIDEN	0	3	0	0	0	0
QUICKSILVER	0	4	6	0	0	0

## ADVERTISEMENTS.

**H. BESSEMER'S PATENT GOLD PAINT.** Sole Agents, R. TILLEY & GARROD, 345, Blackfriars-road, London.

The above METALLIC PREPARATION is intended to supersede the use of Gold Leaf, as it gives an equally beautiful effect; is extremely durable; will bear washing equally well with any other description of fine paint; and in comparison, cost less, requiring only to be applied with an ordinary brush. It will be found particularly adapted for the following purposes:—

**HOUSE-PAINTERS and DECORATORS.** For exterior and interior Decorations, Iron Works, Mouldings, Cornices, Centres, Brackets, Figures and Casts of every description, whether in Paint or Metal, Writing and all ornamental work where gold is required to be introduced.

**SHIP-PAINTERS and DECORATORS.** For all Ornamental Work, either within or without, as may require gilding, and from its cheapness, affording an opportunity of embellishment so desirable, but which is frequently neglected from its great expense.

**PLASTURE FIGURE-MAKERS.** For general use upon the Figures, Casts, and Medallions manufactured for ornamental purposes.

And for various other uses here undescribed, but which its low cost may likewise adapt it to. To be had wholesale only as above, and retail at most Colour Warehouses in the kingdom. Sold in bottles, 6s. each.—A liberal allowance to the trade.

## PAINTING BRUSHES.—TO PAINTERS,

BUILDERS, &amp;c.

**J. J. KENT and CO., 11, GREAT MARLBOROUGH-STREET, LONDON,** offer to Painters, Builders, and Dealers in Painting Brushes, goods of quality far superior to those generally offered for sale, and to which they beg to call the attention of those who study quality and durability to cheapness. Lists and prices forwarded on application.

## TERRO METALLIC DRAIN PIPES,

PAVING AND ROOFING TILES, and numerous other articles manufactured from the blue Terro Metallic Clay which are, in point of durability and hardness, nearly equal to cast-iron; to be had at reduced prices at WYATT, PARKER, and CO., Albion-wharf, Holland-street, Blackfriars-road.—Also a large quantity of Stourbridge Lumps and Tiles.

## TO ARCHITECTS, BUILDERS, &amp;c.—

A large assortment of RAIN-WATER PIPES, O.G. and plain Gutters, Sash Weights, Air Bricks, Sink Traps, Rattling Bars, of which a great variety of patterns and sizes is kept. Gas and Water Pipes; Grates to lift from one to twenty tons (fitted up if required); and castings of every description made to order on the shortest notice. Apply to JOHN PILKINGTON, Agent, Hyde Park Foundry, 15, Wharf-road, City-road.

## PEAKE'S TERRO METALLIC TILE

DEPOT, WHITEFRIARS, and 29, WATER-LANE, FLEET-STREET, LONDON; from the Tiler, Tunstall, Newcastle, Staffordshire, THOMAS PEAKE, Manufacturer, having by various means, and during a considerable time, published the names of Agents in London, deceiving his duty to announce that he has no longer any Agent there; that, consequently, he has opened a Metropolitan Depot, situated three minutes' walk from the Temple, to supply genuine articles and at just prices as any other Tiler. The Tiles are central, and goods are sent direct to any place inland, or to the Mersey, to be there transhipped for the British and Irish coasts, the Colony &c. The Proprietor feels most grateful to his numerous friends; he assures them and the public also, that as probity and fair dealing have been his aim for thirty years past (although no one can control the circumstances which too often affect), affecting also the quality of manufactures and the time when they ought to be at their destination, so he trusts to his conduct in future to retain and increase his estimable connection. BLUE TILES for various purposes, namely, for pavements, both plain and of devices to suit the styles of buildings; they are easily laid on, as they do not require dressing, fitting, pegs, or nails; for ridges and hips of any plane, plain, capped, railed, or with a variety of upright ornaments; for valleys for lining chimneys and other flues; for paving—blue, red, and dark squares, hexagons and octagons for ornamental floors; for drying kilns; for skirting; for coping walls; for chimney tops; for sewers, barrel drains, troughs, surface drains, and conveying spring water without injuring it. BLUE BRICKS for paving stables, areas, foot-paths, barns, and warehouses; also for building docks, piers, wharves, tunnel and other arches, culverts, and bridges. FIRE BRICKS for furnaces, lime kilns, steam boilers, ovens, grates, &c.; also squares to pave bread-ways. Depot at the corner of Temple-street, and Water-lane, City. Lists in preparation of the various articles and their use; containing also remarks, testimonials extracted from standard works. "The bricks being made of clay peculiarly good in quality, and triturated by machinery, and being carefully moulded and burnt, consequently, the best Newcastle blue bricks, the hardest and most durable of any made in England."—*Life of Telford*, p. 77. "The tiles being formed of terro-metallic earth, have what of the colour of cast-iron; they are almost equally hard; and must, from their nature, be incomparably more durable. In short, we consider them as the best of all coverings for roofs, whether of small or large buildings." "There are suitable ridge tiles and valley tiles, all manufactured by Mr. Peake in the same superior style."—*Landoner's Encyc. of Cottage, Farm, and Villa Architecture*, p. 648, sect. 1365; Longman and Co. 1833.

## TO LANDOWNERS, AGRICULTURISTS, BUILDERS, ARCHITECTS, &amp;c.

**McKIBBIN'S improved ROOFING FELT** is peculiarly applicable as a substitute for Slate, Zinc, Tiles, and other articles used for Roofing, from its ECONOMY, LIGHTNESS, and DURABILITY.

The disadvantages attending other materials used in roofing, preventing, in agricultural districts, many small houses and sheds being erected or rendered waterproof, it is submitted that the improved Roofing Felt will in a great measure—and in some instances, wholly—obviate them, and prove most serviceable from its lightness, durability, and impermeability to water and damp, in covering Houses, Cattle-sheds, Workshops, Rope-walks, &c. and for the sides, as well as roofs, of light structures for plants, being likewise a non-conductor of heat; besides its economy in repairs, the timber where it is used may be as light as to save its whole expense; it requires no other coping, and may be applied by any person of common ingenuity; being flexible and portable also, it is free from breakage, the expense of carriage is inconsiderable in comparison with slates, tiles, &c. and it is not liable to contraction like zinc.

Sold in sheets 36 inches by 20, at 6d. each (being less than 9s. 6d. per square of 100 feet), with printed directions for applying them.

Orders will meet with prompt attention, if addressed to H. C. BOWDEN, 18, East India Chambers, Leadenhall-street, London; or to the following agents:—Liverpool.—Messrs. Grueber and Co., 11, Manesty-lane.

Plymouth.—Thomas Stevens, esq.

Birmingham.—William R. Lloyd, esq.

Sunderland and Newcastle.—

On Tyne.—Messrs. John Ritson and Sons.

Hull.—William Ward, esq.

Bristol.—Messrs. Moore and Hewitts.

Ramsgate and Deal.—Messrs. Edward Hodges & Co.

Whitehaven.—William Todd, esq.

Glasgow.—Malcolm Carmichael, esq. St. Enoch's.

Cork.—Messrs. Richard Wallis and Co.

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Who have also on sale McKIBBIN'S improved SHEATH-  
ING, Boiler, Railway, and other FELT.

\* \* \* The "Improved Roofing Felt" will be found much more durable than the common Felt made in length, and not subject, like it, to continuous sheets of other material, to be stripped by storm; it can also be more easily repaired, and from the simple mode of application recommended, the wet cannot percolate through nail-holes, being only fastened down at the overlaps.

## PATENT TENSELLATED, VARIE-

GATED, ORNAMENTED MARBLE AND PLAIN PAVING TILES, Manufactured by SAMUEL MAYER, Burslem, Staffordshire. Specimens and Prices may be obtained at Mr. Charles Long's, No. 1, King-street, Portman-square, and also at the Manufactory.

## ORNAMENTAL WINDOW GLASS,

2s. per foot super.—CHARLES LONG having greatly improved his machinery for ornamenting glass, is enabled to furnish the most beautiful patterns at 3s. per foot super glass included. 100 feet can be executed and delivered in two days. Address to Charles Long, House Decorator, &c., 1, King-street, Portman-square. For Cash only.

## BROWN OAK, &amp;c.—Builders, Cabinet-

makers, Contractors for Church fittings, and others, are respectfully informed, that a parcel of BROWN, POL-  
LARD, and finely FIGURED OAK, has just been landed at J. OSBORNE FRANCIS'S BRIDGE WHARF, FIM-  
LICO, and can be disposed of at a very moderate rate. A good assortment of Oak, Elm, Lenz, Pear, Beech, and other English Woods will be constantly kept on hand. Timber, Stone, and other Goods, landed by a powerful Crane at 1s. per ton, including all Canal Charges.

## GILT MOULDINGS FOR ROOMS, WIN-

DOW CORNICES, &c.—The cheapest House in the Kingdom for Room Mouldings, Window Cornices, Gilt, and Fancy Wood Picture-frames, and every article connected with Carving and Gilding, is P. GARBANATY'S, 130, NEW BOND-STREET, corner of Grosvenor-street; Manufactory, 19, St. Martin's-court (the broad part), Leicester-square. A list of the Prices of PLATE-GLASS sent pre-paid. Re-gilding in all its branches at the lowest possible prices. Estimates given free of charge.

## POLONCEAU'S BITUMEN PAVE-

MENT for paving Footwalks, Terraces, Garden walks, Stables, Coach Houses, Granaries, Corn Stores, and Salt Warehouses. For the exclusion of Damp and Vermine Basements it is particularly adapted, and for Roofing Dwelling Houses, Porticos, Balconies, and Sheds.

Price 3s. 6d. per square yard.

BITUMEN for covering the Arches of Bridges, Culverts, &c. &c. on Railways and other places (with instructions for laying it down), may be had at the rate of 45s. per ton, by applying to JOHN PILKINGTON, 15, Wharf-road, City-road.

## BASTENNE BITUMEN COMPANY,

Office, 31, Poultry. The Directors of this Company beg leave to call the attention of ARCHITECTS, BUILD-  
ERS, and others, to the very beneficial results attendant on the use of BITUMEN in the erection of buildings, &c. Its application as a FLOORING will be found eminently useful. It is also valuable for numerous other purposes, more particularly where the object sought for is the EXCLUSION OF DAMP AND VERMIN. The Directors beg to refer to the works in Trafalgar-square, which have given general satisfaction. Scale of prices per foot square—1 inch thick, 8d.; 2 inch thick, 7d.; 3 inch thick, 6d. Works not measuring 400 feet, 1d. per foot extra. Roofing executed at 6d. and 7d. per foot square. Concrete is charged in addition according to the thickness when required. Carriage and men's time are charged extra when works are executed beyond the General Post Office. Bitumen 2½ per ton, with grit, 26 per ton, without grit. Bitumen 2½ per ton, with grit, 26 per ton, without grit.

CHARLES F. TILSTONE, Sec.

## SEYSSAL ASPHALTE COMPANY.

"CLARIDGE'S PATENT,"

ESTABLISHED 1835.

This ASPHALTE is a Bituminous Limestone, obtained from an inexhaustible Mine at Fyrmont, in the Jura Mountains.

Previously to its introduction into this country, in 1836, the Material had been used for many years in London, and from its great utility was extensively patronized by the Government of that Country.

Among the various uses to which it can be applied, the following may be enumerated:—For Foot-Pavements, public and others; for Driveways, Carriage Approaches to Mansions, Garden-walks, and Terraces; the flooring of Kitchens and other basement offices; also of Coach Houses and Stables, Dog Kennels, Barn Floors, Cow Houses, Piggeries, Poultry Houses, Tug-boats, and other buildings. For Roofing Coverings of Railroad and other Arches, the Lining of underground Cellars near Rivers to prevent the ingress of the Tides; also the lining of the basement of Walls, to prevent damp rising to the level of the ground. The Asphalt of Seyssel is particularly recommended by the Commissioners on the Fine Arts, thereby rendering the basement stories in the worst situations both dry and warm. It is an excellent Cement, as applied to Docks, Breakwaters, or Walls built for resistance to the encroachments of the Sea. For lining of Tanks, Fish-Ponds, and other Hydraulic purposes.

J. FARRELL, Secretary.

Seyssel Asphalt Company's Works, "Claridge's Patent,"  
St. George's Dock, London.

## COMMISSIONERS OF FINE ARTS' REPORT ON THE

MEANS OF PREVENTING DAMP IN WALLS.

THE DIRECTORS of the SEYSSAL ASPHALTE COM-  
PANY have much pleasure in recommending to the notice of Architects, Builders, and others, the application of THE ASPHALTE OF SEYSSAL as the only effectual means of preventing Damp rising in WALLS.

The following account of its application is extracted from "The Appendix to the Commissioners of Fine Arts' Report," page 18.

"In 1839 I superintended the construction of a house of three stories on the Lac d'Engien. The foundation of the building is constantly in water, about 19½ inches below the level of the ground-floor. The entire horizontal surface of the external and internal walls was covered at the level of the internal ground-floor, with a layer of Seyssel Asphalt, less than half an inch thick, over which coarse sand was spread.

"Since the above date no trace of damp has been itself round the walls of the lower story, which are for the most part painted in oil of a gray stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is about 2½ inches above the external surface of the soil, and only 19½, at the utmost, above that of the sheet of water.

"The layer of Asphalt having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been since remarked at the base of the door-posts."



## The Builder.

NO. LXXXIX.

SATURDAY, OCTOBER 19, 1844.



## POPULAR

as we may be, yet we trust to being none the less right on that account

if we lift up our hand to prevent the destruction of good and ancient buildings in the city and suburbs of London. We have, indeed, for many years past thought that some powerful protecting society is needed for the maintenance of the architectural beauties which our forefathers

reared at great cost and pains, trusting no ungrateful descendants would treat them as so much rubbish, to be removed under the pretence that the wastes which violent action would leave would be denominated *improvements*. Such a society we trust would, upon any threat of the kind, by every lawful means use every lawful prevention. Some twenty years ago, Guildhall Chapel, which was an edifice of much beauty, and which might have been so restored as to have few rivals, was violently destroyed to make room for the mean and miserable courts of justice which now lie at the east side of the Guildhall-yard. The church of St. Christopher-le-Stocks had, a few years before, been swept away to provide chambers for trafficking in the funds, created by the all-absorbing national debt. Lately, the church of St. Bartholomew-the-Less was eaten up, and its site occupied by a fire-insurance-office. But a short time before, the church of St. Michael, Crooked-lane, whose lofty spire graced the city in that direction, had trenches cast about it, and was blotted almost from memory, that the wayfarer crossing New London-bridge might unconsciously pace its sacred ground, and trample on the graves of its neighbouring dead.\* Thus, within a few years, the city of London has lost from within a range of half a mile four of its ancient temples, and has not received very much in return. But as if this were not a destruction of sacred architecture sufficiently large—a casting out from the religious to the worldly sufficiently extensive—there is now a violent fermentation going forward to destroy totally the remaining body of the church of St. Benet-Finck, Threadneedle-street, as may be seen by the perusal of the following communication from the *Times* :—

Sir,—Notwithstanding your strenuous, almost indignant, remonstrances on the subject, the corporation of London refused to make the necessary purchases to prevent the east end of the Royal Exchange from being almost hidden from view; the consequence is, that the portion of ground formerly occupied by Freeman's-court is now being built on. The inhabitants of the parish of St. Benet-Finck thinking if a row of houses is to be erected there, that their church will cause no greater obstruction

to a view of the Exchange, are about memorializing the Bishop of London to withhold his consent to its demolition. We shall next have the shopkeepers whose houses it is intended to pull down in that immediate locality (without doubt the best in London for retail trade), petitioning and remonstrating against such a course, on the somewhat plausible ground, that if the church is allowed to remain standing, it cannot be of any service to destroy their houses.

Now pray, Sir, do give us your assistance once more. Raise your powerful voice yet again. If we cannot get a whole loaf, try to procure us the half of one. If we are not to see the whole of the Exchange, let us see a portion of it. No doubt the houses now being built in Freeman's-court will greatly obstruct a view of that end of the Exchange; but the church of St. Benet-Finck, and the houses at and near the corner of Threadneedle and Broad-streets, will completely hide it in that direction. In fact, a few houses on both sides of Broad-street, abutting on Threadneedle-street, ought to be taken down, to make the approach on that side what it should be; and such is the eagerness with which houses on that particular spot are sought for, that the corporation, instead of suffering a loss, would realize a handsome profit by the purchase.

Do pray try to shame them into it: such penny-wise-and-pound-foolish policy as they have adopted is unworthy the rich corporation of the first city in the world.

I remain, Sir, yours respectfully,  
October 3. CIVIS.

Some portion of the public may be already aware that some considerable time ago the tower of this fabric was destroyed under a pretence of its site being necessary, if not for the Royal Exchange, yet for the obtaining a view of the eastern part of that edifice; and the remainder of the church now bears, from the wrenching away of the masonry, a somewhat ruinous effect. Yet internally the fabric is untouched, and loudly demands better treatment.

Now, the Royal Exchange extends over about twice as much ground as was requisite for any public purpose. If its outline has been extended for the purpose of trafficking in the rental of taverns and merchandize-stalls, that is but poor reason for swallowing up and destroying every thing around for its sake; and, after all, its eastern front is precisely such an one as would lose half its effect by being set in a wide space. The western front of the Exchange lost infinitely when the fronting houses were removed. Its columns appeared at once small; the chimneys above them, which are neither formed as architectural maskings nor as obvious chimneys, presented themselves in an obtrusive manner; and the eastern turret grouped ill with the general view. We therefore think that, on the score of taste, there is not a shadow of reason for the destruction of St. Benet's Church. But there are other and higher reasons for its preservation. This very church was built principally by the most liberal votive means: one or two, if we remember correctly, laid down thousands of pounds, in times when money was at so different a scale, that the work might be well and handsomely performed; and we think reasons better than seeing the screen-wall which incloses a tavern and a few stalls should be given before a votive oratory, so generously created, and by so great a man, be annihilated under the plea of giving a view of the Exchange. The bourse itself lies some hundred feet or more to the west, and is confined to very moderate limits. All around it is not the Exchange, not public, but a bad speculation in paltry odd-cornered shop-scantlings, and room-sherds, not one of which was strictly necessary as attached to a bourse; the only part which, out of respect to the founder, should have been retained—Gresham College—was

turned adrift, and has found refuge in a mere plastered building at the corner of Basinghall-street.

But there are higher reasons yet. All the buildings around the real new bourse are but shreds and tatters—rooms dismembered, angles out of square, tortuous dog-legged passages—scarcely is one decent and respectable apartment to be found amid the whole—scarcely has one of them the uniformity of window-light or of entrance which is to be found in the meanest ordinary apartment. The whole is a failure as a work of architecture precisely in that part which requires the architect; the whole is little more than 130,000*l.* worth of, or rather expenditure for, screen-wall. Now, the whole might have been built, while keeping to the oblique lines of the surrounding streets, so as to have had the angles of all the apartments regular, all doors and windows uniform, all passages straight, and no dismembered apartments.

And is it for the sake of this mass of new ruins that the wreckers are to be let loose upon the precious work of Sir Christopher Wren? Mark, now, what *its* architect did when he was set to work upon a piece of ground which seemed to give defiance to all ordinary capacity. Greatly restricted, and seated at the obtuse turn of the street, he nevertheless adapted a plan to the occasion, conforming to the restrictions of the public way. He threw within it a mutation in the form of an ovate decagon; and within this, he placed a hexastyle composite colonnade, at the six angles of a smaller ovate hexagon; these columns support six semicircular vaults, which are carried upon architraves and cornices to the external walls, and inwardly are faced with archivolts, between which rises an oval pendentive dome, only sufficiently high to change the plan from an ovate hexagon to an ellipsis, and to receive a modillion cornice of an oval plan, from which is sprung a complete semi-ellipsoidal dome; the four sides of the outer decagon, which exceed the number of the sides of the internal hexagon, are disposed of in a very masterly manner by four intermediate triangular ceiling-compartments. Thus, the plan of this church, though not one of Wren's best, is one of singular beauty; and there can be no plea for its destruction other than the fear, if it exist, that its science and ingenuity would, with all persons who understand the subject, be a living condemnation of the rudeness and meanness of the apartments of its more ostentatious neighbour.

When Freemasonry is duly revived, no man will dare to execute such a wasteful and dishonourable plan as that of the Exchange; and still further, no man would dare to destroy a work of such a plan as the church of St. Benet-Finck. We should cry our eyes out rather than perpetrate in brick and stone the skew odments of the former, or destroy the higher science and beauties of the latter.

We think the city authorities who have destroyed the tower of St. Benet's Church should be obliged to rebuild it exactly as it was before, and if not on the same site, that the tower should be carried beyond the present altar of the church and be there built, its lower part being added to the interior of the church as a chancel, around which could be placed the present finely-carved wainscot altar-piece: and we think the outside of the church should be restored and completed exactly as it was, and a new receding doorway like the former one should be made at the west end of the fabric.

We strenuously hope that the Bishop of London will enjoin these things, and will by

\* There are in the Royal Library in the British Museum some drawings of this church.



no means listen to the wretched project of destroying a crumb of what its greatest benefactor built for the adornment of the city.

If the steeple be rebuilt, it will shew pleasingly in the general north-west views of the Exchange; and let the citizens, who are proud of their steeples, remember that already their city has within a few years lost three of its church towers within half a mile of each other.

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#### ON PAPER-HANGINGS.

BY MR. COWTAN.

*Read before the Decorative Art Society on the 9th Instant.*

AMONG the many articles of British manufacture that lay claim to our attention, few are of more importance than that denominated "Paper-hanging," and few have received less of the requisite care and study. Not only is it of importance in a commercial point of view, but it must be considered in some sort as a vehicle for the advancement and encouragement of the fine arts of the country.

The art of ornamenting the walls of apartments has been in use from a very distant period; among the ancient Egyptians the pictorial representations on the walls of their tombs may lead us to suppose that their houses were decorated in a similar manner. Among the Greek settlers in the south of Italy decorating the interior of their houses was paid great attention to; and the ruins of Pompeii and Herculaneum attest that the art was highly cultivated there: some of these designs, though wanting in artistic skill, yet possess remarkable brilliancy of colour. The houses of the rich patricians of Italy present numerous specimens of beautiful decorations; and the arabesques of Raffaello, and the rest of the Roman school, are perhaps the finest productions of this kind in the world.

Tapestries, as coverings to walls, were in great use for many centuries in Europe, and among the Eastern nations were known at a very remote period. Most tasteful and beautiful designs were employed in their manufacture; and the refined taste of Athens, and the talents of the first Italian artists, were called into requisition to furnish models from which to work these patterns; and those invaluable cartoons of Raffaello at Hampton Court, shew us how particular they were to procure the best designs and finest specimens of art to decorate and ornament their walls, a strong contrast with the character of taste of the present day, which is content with the productions of inferior artists whose taste and judgment have never been properly cultivated, and, except in some few instances, are totally deficient in those principles of true art which have been the study and direction of all who have arrived at excellence; and without a knowledge of these principles, no manufacture in which taste is required will ever reach even the length of mediocrity.

The capabilities of paper suggested the idea of applying it to the purposes of hangings for rooms, and though it has only been in use for little more than a century, it is nearly two hundred years since it was first applied to that purpose; and it has been used as a substitute for almost every other species of decoration. The varieties of subjects imitated in paper-hangings are very comprehensive, and successful attempts have been made to adapt them to the representation of architecture, sculpture, and painting, as well as arabesque designs, ornaments, and flowers. At first the aim seems to have been directed to imitations of tapestry, and to produce this a material called flock was employed, a kind of woollen cloth chopped small with a machine, strewed lightly with the finger and thumb over the paper, on which a pattern had been previously drawn with fat oil or varnish, and the different colour and tints being carefully blended, an appearance of tapestry was thus obtained. This method is said to have first originated in England, and was invented by Jerome Langer, who obtained a patent for it during the reign of Charles I., dated May 1st, 1634. We find, however, according to an old French work that a manufacture of this kind was carried on at Rouen some ten or fourteen years previously by a man named François, who was succeeded by his son, and who continued the business for fifty years after with great success. Originally the material was of an extremely coarse description, and

the flock projected considerably from the paper. At Hampton Court specimens of the early productions may still be seen, mostly painted over in distemper, but the pattern can be distinctly traced. I have been enabled to procure a specimen of flock-paper which I am assured is not less than 110 years old; in this the surface is very coarse, although a great improvement upon the older fabrics.

In the reign of Queen Anne, paper-hangings were largely imported from China, and continue in fashion down to the present day. These hangings, though the outlines may be executed with stencils, are almost wholly done by hand, the colours of which are very rich and brilliant, exceeding in beauty almost anything we can produce in England. Dr. Ure states that the idea of paper-staining was borrowed from the Chinese, among whom it has been practised from time immemorial. It is curious to observe how systematically the Chinese have adhered to the same patterns and devices to be seen among the earliest drawings of that remarkable people; we do not find the least advancement from the remotest period to the present time.

Mr. Jackson, a manufacturer of paper-hangings at Battersea, published in the year 1754 a work on the invention of chiaro scuro, and the application of it to paper-hanging, with prints in illustration. This book was probably used as a sort of advertisement of his own manufacture, and contained many just and well-sustained remarks, shewing a cultivated and well-directed taste. He proposed, instead of adhering to the old system (for it seems that paper-hanging had reached some degree of perfection even then), to employ subjects of more interest than the mere repetition of flowers and ornaments, which prevailed so much, that instead of being a principal, as they were, they should be merely an elegant auxiliary to designs of more dignified character; as, for instance, copies of the most celebrated classic subjects, statues, and landscapes; he remarks, "that the persons who could not purchase the statues themselves, might have these prints in their places, and thus gratify the taste of the possessor, which is not seen in the expense of the article, but in the selection."

In speaking of the vulgar and gaudy patterns, frequently selected instead of tasteful and harmonious designs, he says, "Persons who prefer the unmeaning paper so generally met with to those done in this style, would prefer a fan to a picture of Raffaello, Carracci, Guido, or Dominichino; and those who choose the Chinese manner ought to admire, in pursuit of the same taste, the crooked, disproportioned, and ugly, in preference to the straight, regular, and beautiful."

It is by this very means of ill-judgment in furnishing apartments that the true taste of the person is unthinkingly betrayed; those little and seemingly distant things offer the clue which leads to discovering the whole mind, and undoes perhaps all that character of being a true judge of the polite arts which they are so fond of establishing. It seems impossible that any mind truly formed can, without distaste, be capable of letting such objects in upon it through the eye; where the internal senses are well-proportioned and just, these monstrous objects of the external must be displeasing and offensive. In that breast where the softer sensations of humanity are in any particular degree, the love of beauty generally accompanies them, and the approbation of natural objects is the proof of these sensations existing in an individual, as the contrary taste is of the ill-formation or perversion of that mind which approves of preternatural appearances; there is a close analogy between the love of beauty in external objects and a mind truly disposed to the feeling of all the softer and most amiable sensations.

The prevailing unfounded idea that the English, as a people, are inferior to other nations in the talents for artistic design and invention, are, I am very glad to observe, fast being overturned by proofs that we are quite as capable, and in some instances more so than the artists of other countries, of producing designs of exquisite taste and workmanship. And I may here mention that the encouragement given to the art of design by the rebuilding of the Houses of Parliament, is in every way praiseworthy, and will give an impetus to native art it has never received since the days when the royal patronage was

displayed on the very same spot, during the reign of Henry III., six centuries ago. It is sometimes necessary to bring to the recollection of those cavaliers at British talent that, in many of the arts of design, we have far outstripped our contemporary brethren on the Continent. Among our early Saxon progenitors we find that they attained to higher proficiency in the art of MS. illumination than any Continental school. It is proved by early record that painting in oil was practised in England 200 years before the time of Van Eyke, who is called the inventor of it. And it is well known that until lately the French were far inferior to us in ornamental work. Why, then, do we now find that we are obliged to confess their superiority in this branch, when we know that patterns of paper-hangings (and I have myself seen them) exist, manufactured sixty years ago, equal, if not superior, to those executed in France at the present day? Several of the blocks used in the production I have also seen, and their beautiful workmanship far exceeds those in use for present purposes.

It is true that until within the last ten years a noxious tax, imposed during the time of Queen Anne, weighed down the spirit, and clogged the energies of the manufacturer; but the want of a proper national school of design was the grand evil, and kept in embryo the latent genius of English youth. These difficulties, it is pleasing to notice, are fast being overcome; and I hope soon to find our English name, proud as we all are of it, spoken of, not only as retaining its ancient glory, but being a pass-word to all other nations for all that is *talented and tasteful*, as well as for all that is noble and honourable.

About the year 1786, a Mr. Sherringham threw a new feature into the manufacture of paper-hanging. This gentleman, who had spent many years on the Continent, returned about this time to England, and established a business in Great Marlborough-street. His enterprising spirit and refined taste led him to engage a number of artists of first-rate ability—such men as Jones, Boileau, La Briere, and Fuzili; he was thus enabled to infuse into the art a style which for beauty and grace was not equalled before, nor has since been surpassed. Sherringham's productions were indeed characteristic of the true principles of art. From this establishment emanated the leading decorators of the present day, and the first houses in London built their fame upon the foundation he had constructed. Sherringham was, indeed, the Wedgwood of paper-stainers.

About this time the Messrs. Echardt, who had a manufactory at Chelsea, produced designs of most exquisite workmanship. Besides the mode generally in use, they adopted a method of applying engraved copper-plates, to form the outlines, and by an underground of silver and gold, worked up by hand in varnish colours, effects of the most beautiful kind were obtained; they were highly illustrative of the ability of the English talent when properly applied. Their well-directed taste, their eager desire to advance as much as possible their undertaking, their steady endeavour to adopt only the most beautiful patterns, and their determination to get them up in the best manner, are lessons for some of our modern paper-stainers which it would be well for them to take to heart and learn, for they not only depreciate their own taste by producing, as in many cases they do, patterns which they are almost ashamed of when finished, but the character of the country suffers, and they lose the opportunity of improvement, while they prevent in a great measure the encouragement that would otherwise be bestowed.

The establishments of these gentlemen, though conducted with laudable spirit and enterprise, were destined to sink as they had risen; and the spirit of emulation ended with them.

From that time paper-staining in England kept on in its trodden path without much improvement, and without increasing taste. The French took up the ground that we had left, and their manufactures were in every way encouraged by the government of Napoleon, and they reached that standard of perfection their industry and perseverance so richly merited. But it is true, while speaking of the ability of the French in comparison with ours, and of their continuing in the road we had prepared for them, they had no such difficulties as we to contend with. While a heavy tax was laid on our productions, theirs were entirely free;



while their government gave them every facility, we had to fight our battles singly, and at our own hazard; while they had the best designs of great and illustrious men continually before their eyes to improve, and, in fact, create a taste, we were without any advantages of the kind, and had to depend solely upon our own resources.

Academies were instituted in France at which every branch was cheaply taught—our School of Design has only been in existence a few years. Still, with all these difficulties and drawbacks, we have kept on amazingly, and improvements from time to time have been issued, particularly among the minor branches of the art, which were formerly in a very low and wretched state.

I trust that our time has not been ill-spent in speaking of what our trade has been in comparison to what it is now, and how much is yet required to be done. To urge, that the example of those who have erected their temple of fame almost upon the ruins of ours should cause a spirit of inquiry into the means to be employed in attaining our lost position. It is not for me, as an humble individual, to point out any project by which this great desideratum is to be accomplished. The increasing facilities which we are every year receiving, and the attention that seems devoted to the fine arts at the present day, should also be an inducement to draw some important attention to the systems of improving paper-hangings in England.

If we cast our eyes towards the French, as our principal competitors, we find that the methods in practice here are precisely the same as they have in use; that in the mechanical branches we are superior, and the colours we employ are far more durable; that at one time we equalled their productions of the present day, and the only difference that exists is our want of proper artists, and of course the want of proper instructors to educate them for the profession. While they employ (as did our former manufacturers) men who understand the principles of design and the harmony of colouring, and who make it their aim to unite every beauty with taste and cultivated judgment, we throw all this important branch upon persons who, to gain a scanty living, require to unite the two professions of designer and dealer in block-cutting. It is not to be expected but that those men will throw off a number of patterns of most inferior quality; they cannot be supposed to pay the attention which is required to produce good work, nor have they ever had the means of educating themselves sufficiently to enable them to equal work which is the result of careful and indefatigable study and practice. This shews a great want of encouragement on the part of the English manufacturers that we must hope to see remedied. The designer in England is not deemed the man of talent—the man of genius—who is looked up to as possessing great and superior abilities, whose refinement of mind ensures him respect and honour wherever he goes;—no, he on whom the manufacturer depends for his success in trade—he on whom devolves the important task of creating from his practice or mind beautiful forms and elegant combinations, it is a melancholy fact, is paid less for his labour than the mechanic that is merely employed to print the pattern after it is prepared to his hand, who has no necessity for thought, nothing but that which is within the power of common animal strength to exert.

#### NEW METROPOLITAN BUILDING-ACT.

The Examiners appointed to grant certificates of qualification for the office of District Surveyor, have issued a notice, dated the 15th inst., to the effect that they are prepared to receive applications from persons desirous of being examined.

The last day for receiving preliminary statements for the present examination will be the 6th day of November next. Subsequent examinations will be held in the months of January, April, July, and October. The notice is signed Arthur Symonds, Registrar of Metropolitan Buildings.

MERSEY AND IRWELL NAVIGATION.—It is said that Lord Francis Egerton intends to improve the Mersey and Irwell navigation, so as to admit sailing vessels of 200 tons, or iron steamers of 400, up to the town of Manchester.

#### THE WELLINGTON STATUE AT GLASGOW.

The inauguration of this statue took place on Tuesday, the 8th inst.

The pedestal, which is of Peterhead granite, is 8½ feet high. On this the statue is placed, resting on a floor of bronze. The horse is the work of a bold and masterly hand. The animal has just come to a state of repose, and seems as if listening to some distant sound. The head is that of an Arab, with the broad forehead and wide nostrils, and is standing with fore-feet a little in advance, in an easy posture, the reins lying slack. The position of the duke is that of a general reviewing his troops. The likeness is taken when the duke was in the prime of life, and the artist has avoided the very general fault of caricaturing the features. The likeness has been declared by his grace's brother, Lord Cowley, to be perfect. The hero is dressed in the full uniform of a field-marshal, with his different orders, the whole being most life-like and beautifully executed.

The bas-reliefs are the most wonderful pictures we have ever had the fortune to look upon. They are placed on the south and north sides of the pedestal, and represent the first and last victories of the duke,—namely, that of Assaye, fought on the 23rd of September, 1803, and Waterloo, on the 18th of June, 1815.

The scene to the left of the relief, in the victory of Assaye, represents the submission of the native chief to Colonel Wellesley, and it is portrayed with a force and a truthfulness far above all the praise which we can bestow. The dogged submission of the conquered old chief, as he slowly moves forward to obedience, is imitable. He seems most unwilling to go through the humiliating task, although one of his own officers is whispering the necessity of the case in his ear. There is likewise the figure of a Highland soldier, leading the horse of a captive prince, and one of Wellington's staff introducing him—very fine, especially the countenance of the Highlander. Colonel Wellesley is represented in the middle of the bas-relief on a beautiful steed, and holding up his hand in the act of receiving the submission. The right side of the picture represents the battle. In the foreground are two horses, in strong relief, drawing a piece of artillery on a carriage; and this seems no easy task. The driver is flogging the off-horse and spurring the near one at the same time, throwing his body well back, and the animals are evidently struggling to get the gun out of the difficulty. Behind the gun the troops are seen to advance, led on by an officer carrying a flag and cheering. The background is, of course, entirely Asiatic, with mosques, minarets, &c. We feel it quite impossible to do anything like justice to this section of the monument.

In the relief of the battle of Waterloo we have a representation of the Church of Waterloo, to the left, with Hougoumont, in flames, in the distance, broken guns and carriages, &c. The moment seized upon is supposed to be that when the final charge was ordered, and when the duke is said to have exclaimed, "Up Guards, and at 'em!" A party of the Guards are in advance, with the duke in the centre, mounted, and wearing a military cloak. The Marquis of Anglesey (a very fine likeness), Lord Hill, and another officer, all mounted, follow behind in a group. The likenesses here are also excellent, and the horses are represented in action, with the greatest skill. There is a dying soldier attended by a surgeon, and troops following behind. This is also a most affecting and masterly group.

The small bas-reliefs on the east and west ends of the pedestal represent the soldier's return. The father is seen sitting in his arm-chair by the fireside, reading his Bible, and the wife is flying to meet her husband with uplifted hands, in token of joyful surprise, as the "poor but honest soldier" opens the door. This is a most touching piece, and tells its tale like one of Wilkie's pictures.

The other represents peace and agriculture, with the soldier at the plough, after all his labours, and after having saved his country from the inroads of the foe. The plough horses are exceedingly fine. The desire of the artist in this picture seems to be the cultivation of peaceful occupations, as the final and best conclusion to war's alarms; and he has certainly succeeded to the life.—*Glasgow Constitutional.*

#### LONDON AS IT WAS, AND AS IT IS IN 1844.

(Continued from p. 516.)

In the reign of the Roman emperor Severus, London was called by Herodian a great and wealthy city; it was then, however, defenceless, without walls or other fortifications. About a century after this, a wall of hewn stone and British bricks was erected round it. At this time it extended in length from Ludgate-hill to a spot a little beyond the Tower. The breadth was not half equal to the length, and at each end grew considerably narrower. Maitland ascribes the building of the wall to Theodosius, governor of Britain in 369; Dr. Woodward, on the other hand, ascribes it to Constantine, which latter, other writers observe, seems to be confirmed by the number of coins of the emperor's mother Helena, which have been discovered under it, placed there in compliment to her. The same emperor made London a bishop's see. The wall began with a fort near the present site of the Tower, was continued along the Minories, and the back of Houndsditch, across Bishopsgate-street, in a straight line by London-wall to Cripplegate; then returned south by Crowder's well-alley to Aldersgate, thence along the back of Bull-and-Mouth-street to Newgate-street, and again along the back of the houses in the Old Bailey to Ludgate, soon after which it probably finished with another fort, where the house formerly the king's printing-house now stands; from hence another wall ran near the river side, along Thames-street, quite to the fort on the eastern extremity. The walls were 3 miles 165 feet in circumference, guarded at proper distances on the land side with fifteen lofty towers; Maitland mentions one 26 feet high near Gravel-lane, on the west side of Houndsditch, another about 80 paces S.E. towards Aldgate. London-wall is now the most entire part left of that ancient precinct. The gates which received the great military roads were four: the Prætorian-way, the Saxon Watling-street, passed under one on the site of the late Newgate, vestiges of the road having been found in digging above Holborn-bridge: it turned down to Dowgate, anciently Dive-gate, or Water gate, where there was a ferry to join it to Watling-street, which was continued to Dover. The Hermin-street passed under Cripplegate; and a vicinal-way went under Aldgate by Bethnal-green towards Oldford, a pass over the river Lee to Dornlicton, the modern Leiton, in Essex.

After being deserted by the Romans, it suffered much in the wars carried on between the Britons and Saxons; but recovering soon after, Bede terms it a princely mart town, under the government of a chief magistrate. When all the seven Saxon kingdoms fell under the power of Egbert, London became the metropolis of England, which it has ever since continued. During the invasion of the Danes, London suffered greatly, and in 849 those invaders entered the Thames with 250 ships, plundered and burnt the city, and massacred the inhabitants. In the reign of Alfred, the city began to recover from its former ruinous state; he rebuilt its walls, drove out the Danish settlers, restored the city to its former liberties and beauty, and committed the care of it to his son-in-law Ethelred, duke of Mercia; when in 893 it was unfortunately reduced to ashes, the walls only being left standing. It was again rebuilt, and the city divided into wards and precincts, and the office of sheriff instituted. At this time the houses were built mostly of wood, and a house built of any other material was looked upon as a kind of wonder; but Alfred having begun to raise his palaces of stone and brick, the opulent Londoners of the nobility and gentry, resident therein, followed the example.

In 1015 the citizens made a successful resistance against Canute, king of Denmark; but in the compromise which afterwards took place between this monarch and Edmund Ironsides, London was delivered over to the former, and owned him as its lawful sovereign. In 1046 we first hear of London sending representatives to Parliament. On the Normans, and received two charters from William I., confirming all the privileges they had under the Saxon kings, and adding several new ones; but in this reign, A.D. 1077, it was again unfortunately reduced to ashes, the result of accident; and



scarcely had it recovered from this calamity, when another of the same kind began at Ludgate, and destroyed the best and most opulent part of the city, consuming, among other buildings, the Cathedral of St. Paul. Under the reign of William Rufus, London suffered considerably by fires, hurricanes, and inundations, and was likewise depressed by the tyranny of that prince; but Henry I. granted large immunities to the city, which were favourable to the progress of the arts, and again revived its trade; the appointment of portreeve, or chief magistrate, was, however, still in the hands of the king. In this reign such was the abundance of provision, that as much corn was sold for 1s. as would suffice 100 people for a day; 4d. would purchase as much hay and corn as would maintain twenty horses for a day, and a sheep could be bought for fourpence.

On the death of Henry II., the title of the first magistrate of London was changed from *portreeve* to that of *baillif*; and in 1189 its chief magistrate claimed and acted in the office of *chief butler* at the coronation of Richard I. In 1191 this monarch permitted Henry Fitz Ailnoe, the then baillif, to assume the title of *mayor*, and twelve aldermen were also then chosen by the discreeter men of the city in full hustings, to assist the mayor in appeasing contentions that might arise in the city, upon inclosures betwixt land and land. Almost the first act signaling this body was the order that all houses, thereafter to be erected in London and the liberties thereof, should be of stone, with party-walls of the same, and covered either with slates or tiles, to prevent those dreadful calamities by fire, which were frequently and chiefly occasioned by houses built of wood, and thatched with reeds or straw; the dimensions of the party-wall were to be sixteen feet high and three feet thick.

The citizens of London were also much favoured by King John, who gave them three charters soon after his accession, the first confirming them in their former rights and privileges, and exempting them from tolls and customs on the payment of 3,000 marks annually; the second confirming the one granted by King Richard, by which the citizens have the jurisdiction and conservancy of the river Thames, and a clause extending this right to the river Medway; the third contains a fee-farm rent of the sheriffwicks of London and Middlesex at the ancient rent, granting them also the additional power of choosing their own sheriffs. In the reign of Henry III. the city was much oppressed, many of its citizens slain and others mutilated by having their hands and feet cut off by order of the chief justiciary, Hubert de Burgh, who also degraded the mayor and all the magistrates, and placed a *custos* over the city, and obliged thirty persons, of his own choosing, to become securities for the good behaviour of the whole city. The general alarm which followed these arbitrary acts, extorted a confirmation of Magna Charta in full parliament in the year 1225, at which time the citizens were confirmed in their rights and privileges. In the nineteenth year of this king's reign, Walter le Bruin, a farrier, had a piece of land granted him in the Strand, in the parish of St. Clement's Danes, whereon to erect a forge, he rendering to the exchequer annually for the same a quit rent of six horse-shoes, with their nails, which is paid up to the present day. One hundred pounds was also granted in 1236 towards bringing water to the city from Tybourn; the town was also fortified, much to the alarm of the citizens. About the same time the heads of colleges of Oxford, with their scholars, were obliged to repair to London and do penance, and assembling at St. Paul's, they thence walked to Durham-house, the legate's palace in the Strand, undressed, bare-headed, and bare-footed, ere they could obtain absolution for killing the legate's cook, and compelling himself to take refuge in the church-steeples. In 1243 wheat was 2s. per quarter.

In the year 1248, on St. Valentine's eve, a terrible earthquake happened in London, destroying many houses. In 1252, the citizens, not being possessed with the chivalrous spirit of the king, refused to undertake the crusade, with the exception of three individuals, for which they were called by him a parcel of base, ignoble mercenaries and scoundrels, fined twenty golden marks, and otherwise ill-used by frequent arbitrary exactions. About

1257 Henry caused the mayor and sheriffs to be degraded, under a pretence of mal-administration, but in reality, to extort money. The wall and bulwarks of London having become very ruinous, the citizens were commanded to repair the same, which they some time after effected at a very great expense. Twenty thousand persons in London are reported to have died about this time from famine, a death being occasioned by a remarkably wet season. King Edward III., having come to the throne, confirmed all the rights and privileges of the citizens, and a convent being required for certain Black Friars, he granted the city a toll for three years to be raised in merchandize of various sorts, and the city was opened and carried out, by a new wall westward to Fleet ditch, and thence southward to the river Thames. In the first year of his reign he not only confirmed the ancient rights and privileges of the city, but also conferred many other important privileges. In 1348 London was thinned of its inhabitants by a terrible pestilence, and some authors affirm that 50,000 persons were buried in the *Spittle-croft* (now the Charter-house) alone. In 1381 the then lord mayor, Sir William Walworth, distinguished himself by slaying Wat Tyler, for which great service he was knighted and had a fee-farm of 100l. per annum bestowed upon him.

In Henry IV.'s time the prison, called the Tun, in Cornhill, was converted into a cistern or conduit for Tyburn water; the liberty of St. Martin's-le-grand was petitioned against as a receptacle of murderers, thieves, bankrupts, &c.; a great plague carried off 30,000 of its inhabitants. In the reign of Henry V., the mayor, Sir Henry Barton, first ordered lanterns to be hung out for illuminating the streets by night. In the reign of Henry VIII. the streets constituting the chief thoroughfares into London were ordered to be paved with stone, and channels made in the midst thereof, at the charge of the ground-landlords. In the early part of the reign of Queen Mary, the citizens had acquired such luxurious habits, that it was found absolutely necessary to restrain them, and it was enacted, in common council, that thenceforth the mayor should have no more than one course, either at dinner or supper; and that on a festival, being a flesh-day, to consist of no more than seven dishes, whether hot or cold; and on every festival being a fish-day, eight dishes; and on every common flesh-day, six dishes; and on every common fish-day, seven dishes, exclusive of brawn, collops with eggs, salads, pottage, butter, cheese, eggs, herrings, sprats, and fruits, together with all sorts of shell-fish and fruits; the aldermen and sheriffs to have one dish less, city companies the same; swan, crane, and bustard were prohibited; and even at public entertainments no other extras were to be given than *ipocras* and wafers, &c. The number of taverns were limited to forty; and to Westminster three street bellmen were also instituted in this reign.

In the time of Elizabeth, 1556, Sir Thomas Gresham, a worthy merchant and citizen of London, proposed to the lord mayor and citizens to erect, in a convenient site, a commodious edifice for merchants to meet in; which being agreed to, and the place chosen being cleared by the removal of eighty houses, the building was erected within twelve months, and went under the name of the *Bourse*. In 1582 Peter Maurier erected a machine in the river Thames for raising water, which, by suction and pressure, raised the water to a sufficient height to supply the uppermost rooms of the loftiest house in the metropolis; the number of these machines eventually increased to five. In this reign the suburbs of the city increased so fast, that it was thought proper by the government to put a stop to it by proclamation, whereby all persons were prohibited from building upon new foundations; the citizens suffered much from frequent outbreaks of the plague in this and the succeeding reign. In the reign of James the orders were again re-issued and enforced against building upon new foundations; and, in consideration of the great decay of wood, all persons were enjoined to build the fronts of their houses either with stone or brick; during the whole of this reign there was, in fact, a regular crusade against the old builders. Foot-pavements then came in fashion.

(To be continued.)

#### THE ART OF BRICKMAKING.

The art of brickmaking was extensively practised in the earliest ages on record, and was most probably derived from India, along with other arts mentioned by ancient writers. The book of Genesis informs us that burnt bricks were employed in the construction of the Tower of Babel; if such was really the case, it is most probable that all vestiges of the ancient monument of the ambition of former times have been swept away in the revolutions of after ages, for the ruins mentioned by Buckingham and other travellers, and supposed to be of the ancient tower, consist of sun-dried bricks, and from the vitrified masses found among them, we should rather infer that they belonged to some magnificent temple destroyed by fire.

The Egyptians were well versed in the art of brickmaking, but many ages elapsed ere they began to use burnt-bricks. In the first dawn of civilization, when the Egyptians descended from their caverns in the hills, and from the increase of the alluvial deposits forming the Delta, the houses were chiefly mud cabins, such as even now exist in Ireland, the better sort being built of sun-dried bricks formed solely of the material deposited by the Nile: this mode of building was dictated by necessity, there being no timber in the country fit for building-purposes. At a much later date, when the Jews were in Egypt, the art of brickmaking had reached its perfected state; stubble was used with the river deposits, and bricks used in some of the public works, if not by the rich, underwent the process of burning. Some of the pyramids are built of brick, and one of them, called Klonbe el Menshieh (the bricks of Menshieh), is of unburnt brick, being composed of a black, sandy earth, with some pebbles and shells in it, and mixed up with chopped straw, in order to bind the clay together, as they now make unburnt bricks in Egypt, and many other eastern parts. Nineveh, built by Nimrod, and the famous walls of Babylon, were also built of the same material.

The Greeks, according to Pliny, made use of bricks of three different sizes, distinguished by the following names:—*dedoron* or six inches long, *tetradoron* or twelve inches long, and *pentadoron* or fifteen inches long. Vitruvius instances several celebrated structures, as the walls of Athens, the cells of the temples of Jupiter and Hercules, which were of brick, the surrounding columns and entablature being of stone. This writer also speaks of the Roman art of brickmaking, which had acquired great celebrity in his days, and gives the following directions for making unburnt bricks. They should not be made, he says, of sandy, stony, or gravelly loam, for such kind of earth renders them heavy, and upon being wetted with rain after being laid in the wall, they sweat and dissolve, and the straw which is put in them does not adhere on account of their roughness. The earth of which they are formed should be light, chalky, white or red. They should be made in spring or autumn, as being the best time for drying; for the intense heat of summer parches the outside before the inside is dry, which afterwards drying into the building, causes them to shrink and break. They are best when made two years before they are used, as they cannot be sufficiently dry in less time. If they are used when newly made and moist, the plaster-work which is laid on them, remaining firm and stiff, and they shrinking, consequently not preserving the same height with the incrustation, it is by such contraction loosened and separated. At Utica, therefore, the laws allowed no bricks to be used before they had lain to dry five years. He describes the same sizes as those of Greece, and also half-bricks of each sort; and in building, the whole bricks were laid in one course, and the half-bricks in the next. It was the boast of Augustus that he found Rome of brick and left it of marble; but this, it would appear, could only mean unburnt bricks, for the laws did not permit any walls in public places to be made thicker than one foot and a-half, while brick walls of that sort would not admit of more than one story. Accordingly, the walls were built of hewn stone, testaceous substances, or rubble. That these testaceous substances were tiles, is evident, for he observes, that it could not be known at first whether they were of good loam and well burnt, but that they should be laid in a roof during a winter and summer before they



were used in a wall. At this time the Temple of Peace, the Pantheon, and all the thermæ were of burnt brick.

M. Quatremere de Quincy, in his "Encyclopédie Methodique," observes that in his researches among the antique buildings of Rome, he has found bricks of three sizes; the least were  $\frac{7}{8}$  inches square and  $1\frac{1}{4}$  in. thick; the medium ones  $1\frac{1}{2}$  inches square and from 18 to 20 lines in thickness; and the larger ones 22 inches square by 21 to 22 lines thick. The smaller bricks were made to face walls of rubble-work; and to make a better bond with the wall, they were cut diagonally into two triangles, the longer side was placed on the outside, and the point towards the interior of the work. To tie more effectually the facing with the rubble, they placed at every four feet in height one or two courses of the large square bricks. The large bricks were also used in arches of openings or discharge, which were necessary in the building.

The material of Persian buildings in modern times, says Chardin, is bricks, either dried in the sun, or burnt in the fire. The tiles or bricks of earth are made in their wooden moulds, 8 inches long, 6 wide, and 2½ thick. The labourers temper with their feet the earth, which is generally mixed with straw out very small. They pass their hands over them to smooth them, after having dipped them in a vessel of water mixed with straw, still finer than was at first used. Then taking off the mould, they leave the bricks to dry for two or three hours, after which they are ranged over one another, where they remain till the drying is completed.

The baked bricks are made of two parts of earth and one of cinders, well tempered together, in moulds larger than for the others. They leave them then to dry in the sun for several days, then place them in a large furnace, ranged one over the other, at some distance, which they fill with plaster. They close the furnace, and light the fire, which is kept up for three days and three nights. Mr. Chardin has not, however, informed us what kind of cinder it is they use; the use of coal is not known among them, we, therefore, presume he means wood-ash, or the cinder of burnt bituminous bodies.

It is generally admitted that the Romans introduced the art of brickmaking into this country, for we have no account of any being used prior to the Roman Conquest. Nor does it appear that the Romans employed this material otherwise than when compelled to do so in the absence of other material. The Roman walls were generally built with cement and tiles, or flint stones laid in courses at convenient distances to bind the parts together, and at the external and internal angles, to strengthen them. These bands consisted of three or four courses of tiles or stones laid through the wall, and were placed at two or three feet from each other; the intermediate spaces being raised by a sort of cement composed of mortar and pebbles, and sometimes of rag-stones, or such materials as the country afforded. In this manner the walls of Verulam, Colchester, Chesterford, and other places, were built. Alberti tells us, on the authority of Varro, that the Gauls built their houses with baked brick, but this does not correspond at all with the ancient simplicity of those people, for the use of this material always implies a certain advance in civilization; on the other hand, in places where other material could not be procured, it is very probable they had recourse to unbaked brick or mud.

It is very certain that brick was scarcely used as a building-material in the towns and cities previous to the time of King Alfred, for we read that in his time the capital having twice been laid in ashes to his great grief and mortification, as defeating his efforts for civilizing and improving the social condition of his people, he therefore commanded after the second conflagration that the houses should in future be of brick or stone, he himself setting the example, by building his palaces of these materials, and the nobility following his example. The citizens, however, do not seem to have complied with this mandate, for it was not until the reign of Henry VII. that any considerable progress was made in brick building. In fact, in these dark feudal ages, stone was almost invariably chosen by the Saxon and Norman nobles, as being more adapted to the warlike habits, and offering greater strength

and consequent security. Mr. Essex remarks, "That the Saxons sometimes built of bricks and cement, after the Roman manner, and sometimes with squared stone, may be collected from Bede's description of the Hermitage built by St. Cuthbert in his retirement, the walls of which, he says, were not of squared stone, nor of tiles and cement, but of such rough materials as he could dig on the spot. In this description Bede intended to convey the meanness of St. Cuthbert's habitation, by comparing it with other buildings of that age, many of which were built of squared stones, and others with tiles and cement;" from whence we may conclude that the art of making tiles, or bricks as they are now called, was not forgotten from the time the Romans left Britain to the seventh century, when St. Cuthbert lived.

In the wall which went nearly round the city of Verulam, the Roman bricks are interlaid in separate courses between layers of flints. The quantity of mortar between the bricks is nearly equal to the thickness of the bricks themselves. Four layers were discernible; the lowest tier had four bricks, the next three, and the two uppermost of them two. The distances between the courses of bricks, which were filled up with flint and mortar, were 2 feet 8 inches, the bricks were  $1\frac{1}{2}$  in. or  $1\frac{3}{4}$  in. thick, 12, 16, 17, and 18 inches long. This deviation from the common Roman standard would lead us to infer that while the art of tile-making was received and carried out by the Romans, they neglected the measurement. Pliny, however, gives us an account of the Roman measures somewhat different from Vitruvius; he states that there were three sorts of brick, the *lydion*, 18 inches long and 12 broad; the *tetradorus*, and *pentadorus*; the *dorus* was a palm.

The earliest period fixed by the dean of Exeter for the revival of the art in Britain, was about King Richard II.'s reign, which, by the way, he observes confirms Dr. Ward's opinion, that the date on the brick chimney at Salford, in Bucks, should be read 1382, instead of 1182, which falls under the fifth of that king's reign. Leland says "That in King Richard the II.'s days, the town of Kingston-on-Hull waxed very rich, and Michael de la Pole, merchant there, was made Count of Suffolk; in whose time the tower was wonderfully augmented in building, and was enclosed with ditches, and the wall begun, and in continuance ended and made all of *brike*, as most part of the houses of the town at that time was. In the wall," adds the writer, "be four principal gates of *brike*; the north gate having four wardes, between the which and Beverle-gate be twelve tours (towers) of *brike*, yn one of them a posterne. Betwixt Miton-gate and Hazelle-gate there be three tours of *brike*, and from them to the Haven Mouth be five tours of *brike*. Michael de la Pole builded a goodly house of *brike* again the north end of St. Mary's Church like a palace, with goodly orchard and garden enclosed with *brike*. He also builded 3 houses beside in the towne, whereof every one has a tour of *brike*. Trinite Church, most made of *brike*, is larger and fanir a great deal than St. Mary's."

This fact goes far to prove that brick was extensively used, so far as regards the above town, in the reign of Richard II., but, from this time to the reign of Henry VII., we meet with no evidence of brick being employed as a building material; possibly it was confined to this place, for from all we can learn, with the exception of a few lordly mansions, London was chiefly built of wood. ARGILL.

(To be continued.)

#### ON THE ADVANTAGES OF TURNING CANALS INTO RAILWAYS.

MR. T. BERRINGHAM read a paper on the above subject at the recent scientific meeting at York. He commenced by observing that it was fortunate that the immense sums of money which had been expended on the canals in England and Ireland need not be entirely lost to the proprietors, and consequently in a great degree become useless to the country; but that, on the contrary, by the proper application of some of the various systems of railways at present proposed, the greatest blessing might be conferred upon the counties, if it could be shown, as he thought he should be able to do, that a cheap and expeditious, and, above all, a safe and easy mode of conveyance

could be made out of these great lines of canals. At the present moment, and in Ireland in particular, subsoil draining was most fortunately occupying the undivided attention of all classes of agriculturalists. He therefore proposed so to construct the railways as at the same time to make what was formerly a canal into a drain for the waters of the country, instead of, as now, in many places, especially in the case of the canal under consideration, acting as back-water upon the land, often to the very great detriment of all. His proposition was this: that the bottom of the canal should be levelled to a reasonable inclination at the various locks, that one of the present proposed systems of railways should be adopted, and that the waters which found their way into the canal should be made use of as the power, or in aid of the power, by which it should be determined that the trains should be propelled upon the railway. The advantages suggested were these: that the capital invested in canals would not be altogether lost; that though in many instances canals made a circuit between towns and districts at present populous, still the best levels had been taken, and the public had found their way to those canals; that instead of the waters in our lakes, and rivers, and streams, and springs being kept up for the purposes of the canals to a level injurious to the proper cultivation and management of our land, the canal itself would become the main drain for these very lands; that the adoption of this scheme would prove a source of employment for our peasantry, and be productive, by draining, of a vast increase of food for the sustenance of four people; and that considerable gain would ensue to the capitalists who might be induced to embark their money in the speculation.

#### BATHS AND WASHHOUSES FOR THE WORKING CLASSES.

On Wednesday last a numerous and highly influential meeting was held in the Egyptian Hall, at the Mansion-house, to take into consideration the best means of promoting the establishment of baths and washhouses for the labouring classes.

The body of the hall was filled, and on the dais at the upper end of the room were the Lord Bishop of London, Lord Dudley Stuart, Archdeacon Wilberforce, Archdeacon Hale, Sir W. Clay, M.P., G. Byng, Esq., M.P. for Middlesex, J. C. Colquhoun, Esq., M.P., Sir Lionel Goldsmid, Mr. D. Salomons, Alderman Johnson, Dr. Russell, Mr. Moon, the late Sheriff, R. Cotton, Esq., the Governor of the Bank of England, Mr. G. F. Young, and Mr. D. Wire.

At two o'clock the Lord Mayor entered the hall, and took the chair, when various resolutions were carried, having for their object the establishment of an association to carry the proposed measures into effect. A president, trustees, and committee of management were appointed, and a public subscription determined upon.

The Bishop of London accepted the office of president.

**BENEVOLENT INSTITUTION FOR THE RELIEF OF AGED AND INFIRM CARPENTERS.**—The fifth annual meeting of the members of this excellent institution was held on Monday the 14th instant, at Radley's Hotel, Bridge-street, Blackfriars, when Mr. W. Shimell, junior, took the chair. Mr. Wood, the secretary, read the directors' report for the last half-year, which stated that the institution was in a most prosperous condition, and would have been still more so had not the authorities of the Brighton Railway acted most improperly on the occasion of the last excursion. Thanks having been voted to those gentlemen who had most exerted themselves since the last meeting for the good of the society, the election of officers for the ensuing year took place, after which Mr. Munyard, in a neat and complimentary speech, drew the attention of those present to the untiring perseverance of their secretary, Mr. W. Wood, and attributed the prosperous condition of the institution mainly to his active and judicious superintendence.

**MILITARY PRISONS.**—Southsea Castle is ordered to be appropriated as a military prison, to contain 100 offenders. Another building at Wheedon, and a third elsewhere, are also to be fitted for the same object. The estimated outlay for these arrangements is 4,000*l.*—*Sun.*





GLASTONBURY,  
THE FIRST CHRISTIAN CHURCH IN BRITAIN.

SIR,—I beg to send you the following extract relative to the foundation of the first Christian church in England:—

Saint Joseph of Arimathea, so honourably mentioned by the Evangelists for asking and obtaining of *Pilate* the body of our Saviour, and afterwards burying it, was for that noble action closely imprisoned by the Jews, the very night he performed that Christian duty, from which he was delivered by an angel the night of our Saviour's resurrection, which so enraged the Jews, that they not only turned him, with Lazarus, St. Mary Magdalen, and St. Martha, out of Jerusalem, but, putting them into an open vessel without stern or tackling, they turned them to sea, where they were driven to *Marseilles*, in France, whence Joseph came into Britain, where he died.

Old historians say, that he came hither in or about the year of Christ 63, and brought with him twelve companions, whereof one was his son, called also Joseph.

Protestant authors say he was sent by Philip the Apostle, but papists will not allow it, and say he was sent by St. Peter.

There is an old book called *Sanctus Graal*, which says that St. Joseph brought over with him 600 persons, amongst whom, besides his son, were his wife, his nephew, Helaius, from whom it says our renowned King Arthur was descended, and a kinsman whose name was Peter; that St. Joseph was King *Orcanin*, and that divers of this his great retinue were persons of the first rank, but it is said that this book is not to be relied on. (Mr. Broughton.)

It is said by an author of credit, that the first landing of St. Joseph in Britain was in North Wales, where he and his companions, preaching the faith of Christ, were not only denied all necessary relief and sustenance, but their doctrine rejected, and themselves sent to prison by the king or prince of that province, a pagan. At length, he and his companions being freed of their imprisonment, and seeing how fruitless it was like to be to make any longer stay amongst so obstinate a people, came into England. At his first arrival here, he assumed the confidence to go to the British king, *Aviragus*, to whom he gave an account of the design of his journey, which being gravely and modestly delivered by one of so venerable an appearance so wrought upon *Aviragus*, that he not only gave them leave to convert his subjects, but afforded them a place of retreat, commodious for their quiet and devotions, and sufficient sustenance that, without distraction and solicitude, they might attend to the worship of the true God, and give instruction to all those who were willing to take it. The place which the king assigned them was an island, rude and uncultivated, ~~in the Bay of~~ *Inis-wohyn*, that is, *Glastonbury*, surrounded by the bay, full of woods, bushes, and fens, situated in *Somersetshire*. Although the island being cleared of the briars, drained, and cultivated, it was by the inhabitants named *Avallonia*, from the abundance of apples and other fruit growing there; but in after ages, when the Saxons had possessed themselves of those parts, they called it in their own language *Glaston* or

*Glascon*. It is said by the same author (Mr. Broughton), that it is a continued tradition of the still inhabitants of *Glastonbury*, that when St. Joseph and his companions came into England out of North Wales, they divided themselves into divers companies, and that three only at first went to *Inis-wohyn*, one of whom was St. Joseph himself, and that he and his companions coming tired and weary to a hill, within half a mile south-west of where *Glastonbury* now stands, rested themselves on the ridge thereof, for which reason that hill to this day is called *Weary-all-hill*, and that in the place where they rested, there sprang up a miraculous thorn tree, which every year at Christmas, in the coldest weather, frost, snow, or whatever else, never failed budding forth its leaves and blossoms. This thorn, it is said, sprung from St. Joseph of Arimathea's dry walking-staff, which was stuck by him in the ground at the time when he rested there.

When the rest of these holy men understood where St. Joseph and his two companies had taken up their settlement, they likewise repaired thither, and being all got together, they settled themselves in the adjoining place, where the late Abbey of *Glastonbury* stood.

A little while after this, they were admonished by St. Gabriel, the Archangel, in a vision, to build a church in honour of the Virgin Mary, upon which they immediately built an oratory of barked alder wicker wands, winded and twisted together with a roof of straws, or rather after the nature of the neighbourhood, of hay or rushes. Its length was 60 feet, and its breadth 26. The annexed woodcut is a representation of the oratory. It had a churchyard belonging to it, which was said to be sufficiently capacious to contain 1,000 graves, but the dimensions of it are not known at this day.

Some authors have it, that these holy men prevailed little by their preaching, and therefore at last gave themselves wholly to a monastical and solitary life; but this is contradicted by others (Dugdale and Dodsworth), who say that St. Joseph and his companions converted a great multitude of pagans to the Christian faith. After this manner of living they ended their days in the island of *Inis-wohyn*, having been supported by the liberality of king *Aviragus*, who, for their subsistence, bestowed upon each of them a hyde of land, twelve hydres in the whole, which was confirmed to them after his death by two of his successors.

It is said that this island, which had been the abode of saints, became after the decease of St. Joseph and his companions a den of wild beasts, till King *Lucius*'s days, St. Joseph and his brethren having left disciples behind them, who continued Christianity in the island or its neighbourhood, and King *Lucius* spread it through all his kingdom.

Two holy legates, *Phaganus* and *Dameanus*, travelling throughout Britain teaching, preaching, and baptizing, having been informed that St. Joseph and his brethren had about 100 years before, in some measure, spread the seed of Christianity in the south-western part

of the kingdom, and that they had retired to *Inis-wohyn*, and there died, and finding out where this sacred place was, about the year of Christ 183, penetrated into this holy island, where they, having found this oratory, were filled with joy, and upon searching diligently, they found the holy cross, the figure of our redemption, and which, together with several other signs, declared that that place had been formerly the habitation of Christians. After this they found the antiquity of the coming of St. Joseph and his brethren thither, and how three pagan kings ministered necessities for their maintenance. Afterwards, being admonished by a divine oracle, they added another oratory of stone, and dedicated it to the honour of our Lord and his Apostles St. Peter and St. Paul.\*

Hackney.

M. A. G.

## LECTURES ON ARCHITECTURE AND ANTIQUITIES.

### Lecture V.

#### ROMAN ARCHITECTURE.

(Continued from p. 507.)

Many other theatres were erected in Rome to gratify the inordinate passion of the people for shows. The first buildings used for the purpose were constructed of wood, as were those of Curio, Pompey, and Cæsar. Pliny gives an interesting account of the amphitheatre of Curio, a patrician, who lost his life on the side of Julius Cæsar. To produce a gorgeous pageant on the occasion of his father's death, he "caused two theatres to be built of timber, of great size, so that they might be turned so as to make them approach or join to each other, or be removed to a distance, as he should desire, and all by the means of one pivot apiece, that they hang by, which bore the weight of the whole edifice, the balance being so equal, and the whole firm and safe. The contrivance was arranged thus—that in the forenoon he should exhibit scenical representations, when the two theatres should be placed back to back; and that when the audience was satisfied with that kind of show, the theatres should be turned about until the ends fronted each other (every man in the audience keeping his place and sitting still, according to his rank and order), until by the meeting of the corners of these two theatres, the compass made a fair round amphitheatre." After praising the skill and contrivance of the designer, Pliny rebukes in no measured terms the folly of his countrymen who trusted to such a frail and dangerous edifice—"the conquerors of the world, the disposers of empires at their pleasure; and the givers of countries and nations at their will; the vicegerents of the immortal gods under heaven, hanging in the air within a frame, at the mercy of a hook, and rejoicing and ready to clap their hands at their own danger."

This singular edifice was erected in rivalry of one of more costly materials, which had been built by Marcus Scæurus; who, as Pliny says, "when he was adile, caused a wonderful piece of work to be made, exceeding every thing of the kind that had been seen before. It was a theatre, having three galleries, one above the other, wherein were 360 columns of marble; the base of the stage was all of marble, the middle of glass (an extravagant superfluity never heard of before or since). As for the uppermost, the boards, planks, and floors were gilded, the columns beneath were 38 feet high; and between these pillars there stood brazen statues and images, to the number of three thousand. The theatre itself could accommodate 80,000 persons to sit at their ease."

Pompey's theatre contained 40,000 spectators; it was finished 54 B.C., and was attached to the temple of Venus; Pompey exhibited 400 tigers and 500 lions, besides elephants. This building is said to have been in existence in the beginning of the fifth century, and its site is pointed out in the Campo di Fiore. Julius Cæsar exhibited in his theatre (of wood) besides more lions and tigers than Pompey had done, twenty elephants, and 500 gladiators on foot, and 300 on horseback. In the time of Augustus, large theatres were erected by Cornelius Balbus, by Æmilius Lepidus, and by Statilius Taurus, whose immense mound still remains, and who, according to Strabo, built the first amphitheatre of stone.

\* Sammes' Antiquities, pp. 213, 214. Dr. Warner's History of Glastonbury, App. No. 1, p. 6.

\* William of Malmesbury's Chronicles.



Augustus himself built the theatre of Marcellus in honour of his nephew and son-in-law; it is not above one-third of the size of the Coliseum, and consists both of two stories, the lower Doric, and the upper Ionic, both of better design than seen in the same orders in the Coliseum. There are arches between the columns.

Many of the Roman emperors built amphitheatres, and splendid remains are still to be seen in various parts of Italy; the most considerable are at Pola, 436 feet long by 346 feet, and 97 feet high, and which contained 20,000 persons; at Verona, 450 feet long by 360 feet, and capable of holding 22,000 persons; at Capua, 520 feet in length, adorned with statues of the whole pagan mythology, and considered second only to the Coliseum. In smaller cities likewise and in the provinces subject to Rome, numerous theatres were built.

We now proceed to notice in detail some of the most remarkable triumphal arches, of which one of the earliest, simplest, and most beautiful is the arch of Titus, whose single opening formed the entrance to the Sacred Way; which, in its course, neither wide nor lengthened, passed between some of the most splendid temples of Rome.\* This arch was raised in honour of Titus by the senate and Roman people, as the inscription testifies, "Senatus Populusque Romanus Divo Tito Divi Vespasiani F(ilio) Vespasiano Augusto," after the conquest of Judea. Some writers have attributed its erection to the emperor Trajan, others to Domitian, who took a part in the triumph. The exterior of this arch is built of the white marble of Paros, beautifully wrought and fitted. It had originally four columns on each front, of the Composite order (herein for the first time employed); two only of the columns on each front remain. The archway is 17 feet 6 inches wide, and 27 feet high to the key-stone; the sides of the archway are decorated with bas-reliefs, representing, on one side, the triumphal entry of the emperor into Rome in a quadriga, or car drawn by four horses, led by the goddess Roma, and attended by senators and lictors, whilst a Victory behind holds a wreath over his head; on the opposite side is shewn the train bearing the spoils of Jerusalem, among which are discerned the golden candlestick, the golden table, "of the weight of many talents," silver trumpets, all of which are described by Josephus, an eye-witness of the splendid triumph. In the centre compartment of the ceiling is shewn the apotheosis (i.e. the placing among the gods) of Titus, borne to heaven on an eagle. On the frieze are figures of men in alto-relievo leading oxen to sacrifice, and two figures of Fame occupy the spandrels of the arch. No Jews will pass under this arch which so mournfully tells of the capture and destruction of their beloved city, yet affords collateral proof of the authenticity of the Scriptures.

At the termination of the Sacred Way, at the foot of the steps leading to the Capitol, stands the triumphal arch of Septimius Severus, erected by the Roman senate and people in honour of that emperor's many victories in the East, obtained in conjunction with his sons Caracalla and Geta, who are therefore also honoured in the triumph. The arch has one large central opening 21 feet wide, and two side doorways each 9 feet 8 inches wide; there are communications from the side passages to the central gateway; four fluted detached columns, of the Composite order, are ranged in each front with pilasters behind; between the pilasters are bas-reliefs of poor design and inferior execution, representing the emperor's victories over the Parthians, Arabians, and other eastern nations. Winged Victories are placed over the centre arch, and four river gods over the side openings. On the top of the structure, which was 68 feet high, was placed a quadriga, containing statues of Severus and his two sons. The shafts of the columns in single blocks, 22 feet 11 inches high, were 2 feet ten inches in diameter; and the whole length of the front was 76 feet. This arch, supposed to have been completed A.D. 204, served as the model for that erected by Napoleon Bonaparte in front of the palace of the Tuilleries in 1806; on the summit of

which was placed a car, whereto were attached the celebrated horses taken from the Place of St. Mark, at Venice, and restored in 1815.

The structure, called the arch of the Goldsmiths, is in reality not an arch, but a gateway; the upper part of the opening being formed by the entablature continued from the pilasters on each side, for it has no columns. It was erected in honour of and dedicated to Septimius Severus and his family, by the goldsmiths and merchants who inhabited the Forum Boarium, so called because a statue of a bull was placed in it of Ægina metal. Thus Ovid in his Fasti—

*Area que posito de Bove nomen habet.*

At a short distance beyond the arch of Titus, but not in the Sacred Way, is the triumphal arch of Constantine, which exceeds in size that of Severus, having like it three openings, each front having four fluted columns of the Corinthian order, detached from the walls; the shafts are of yellow antique marble, behind the columns are fluted pilasters. With the exception of the columns, the whole of the edifice is of white marble, laid without cement, and cramped with bronze.\* This arch was decreed by the senate and people A.D. 312, on the occasion of Constantine having overcome Maxentius in battle, about nine miles from Rome, on the Banks of the Tiber. This victory of Constantine is called, by Gibbon, "the most splendid enterprise of his life." Over the entablature of the columns are placed statues of Dacian prisoners, which were brought from an arch erected to Trajan in his famous Forum, and which was entirely demolished to decorate that of Constantine; for the historian Gibbon tells us (vol. ii., p. 235) that it was not possible to find in the capital a sculptor capable of adorning the arch of Constantine.† In fact, the sculptures that were added to it, which belong to the age of Constantine, are very inferior to those which were taken from Trajan's arch, whose destruction is the more to be regretted, as it was most probably built from the design of the famous Apollodorus, to whom some have even ascribed the arch of Titus. The bas-reliefs under the central passage, and at the ends of the attic, represent the defeat by Trajan, A.D. 105, of the Dacians on the Danube; and the four medallions on the south front, each in one piece of marble, eight feet in diameter, represent Trajan going to and returning from the chase, and sacrificing to Apollo and Diana, the deities of field-sports. Other medallions shew the Emperor continuing the chase, and sacrificing to Sylva and to Mars. The centre medallions illustrate morning and the close of day. The arch erected in Piccadilly, at the royal entrance to the Green Park, is called a "free imitation" of the Constantine arch; it has, however, but one opening. And in this work, as well as in the opposite colonnades and arches leading to Hyde Park, may be seen the fault pointed out by Mr. Bartholomew, of entablatures sinking by the carrying of projecting architraves across the great arches with columns so prodigiously far apart as to be unequal to the passive support of the superincumbent work, instead of following the sound and legitimate Roman method of mitring the entablature round the columns, so as at once to find an apology for placing columns by far too distant, or "thin set," for correct ordonnance, and so prevent, by proper construction, the want of safety which must otherwise ensue.‡

Although we have not at Rome an arch of Trajan in existence, there are fortunately two remaining elsewhere in Italy, which are gene-

\* The Florentine architect, Andrea Orgagna, revived the ancient practice of joining marbles and stones in building with brass cramps instead of using cement or mortar. He died A.D. 1389.

† The historian thus speaks of this building: "The triumphal arch of Constantine still remains a melancholy proof of the decline of the arts, and a singular testimony of the meanest vanity. As it was not possible to find in the capital of the empire a sculptor who was capable of adorning that public monument, the arch of Trajan, without any respect either for his memory or for the rules of propriety, was stripped of its most elegant figures. The difference of time and persons, of actions and characters, was totally disregarded. The new ornaments, which it was necessary to introduce between the vacancies of ancient sculpture, are executed in the rudest and most unskillful manner." (Decline and Fall, &c., chap. xiv.)

‡ [In the Lottery Court of the Bank of England is an arch, by Sir John Soane, of considerable beauty, adorned with the Tivoli Corinthian order, somewhat modified with the entablature mitred over each column.—Ed.]

rally considered to be in better taste than any in Rome, and they were most probably from the designs of the great architect of that emperor, Apollodorus. One is at BENÉVENTUM, and very much resembling the arch of Titus at Rome; it was called the Porta Aurea (Golden Gate), and was erected A.D. 113, to record Trajan's achievements in the German and Dacian wars. It is one of the most beautiful and best preserved monuments of the kind, built of Parian marble, having a double socle, on which rest eight fluted columns of the Composite order; the intervals between them are adorned with superb basso-reliefs. In the centre of the ceiling of the arch is a beautiful figure of Fame crowning the Emperor. The bas-reliefs in the upper compartments (which are better preserved than the others,) are very fine, and particularly the figures of Trajan, Hercules, Jupiter, and Minerva.

ARCH OF TRAJAN AT ANCONA.



The other arch of Trajan is at ANCONA, erected A.D. 116, by the Roman senate and people in his honour, not for a victory, but for the more praiseworthy deed of facilitating an entrance into Italy from the Adriatic, by forming the port of Ancona, with the magnificent mole, which protects the harbour. This arch, built of white marble, has four engaged columns to each front, and but one arched opening, 9 feet 10 inches wide. It is of the Corinthian order, and was not so much encumbered with ornaments as were the arches of later date in Rome. On the summit of the arch was placed a statue of Trajan, with that of his wife Plotina on one side, and of his sister Marciana on the other. The statues, bronzes, and decorations of this arch have long since disappeared. The emperor did not live to enjoy this triumph, having died at Selinus, in Cilicia, after a reign of 19 years.

G. R. F.

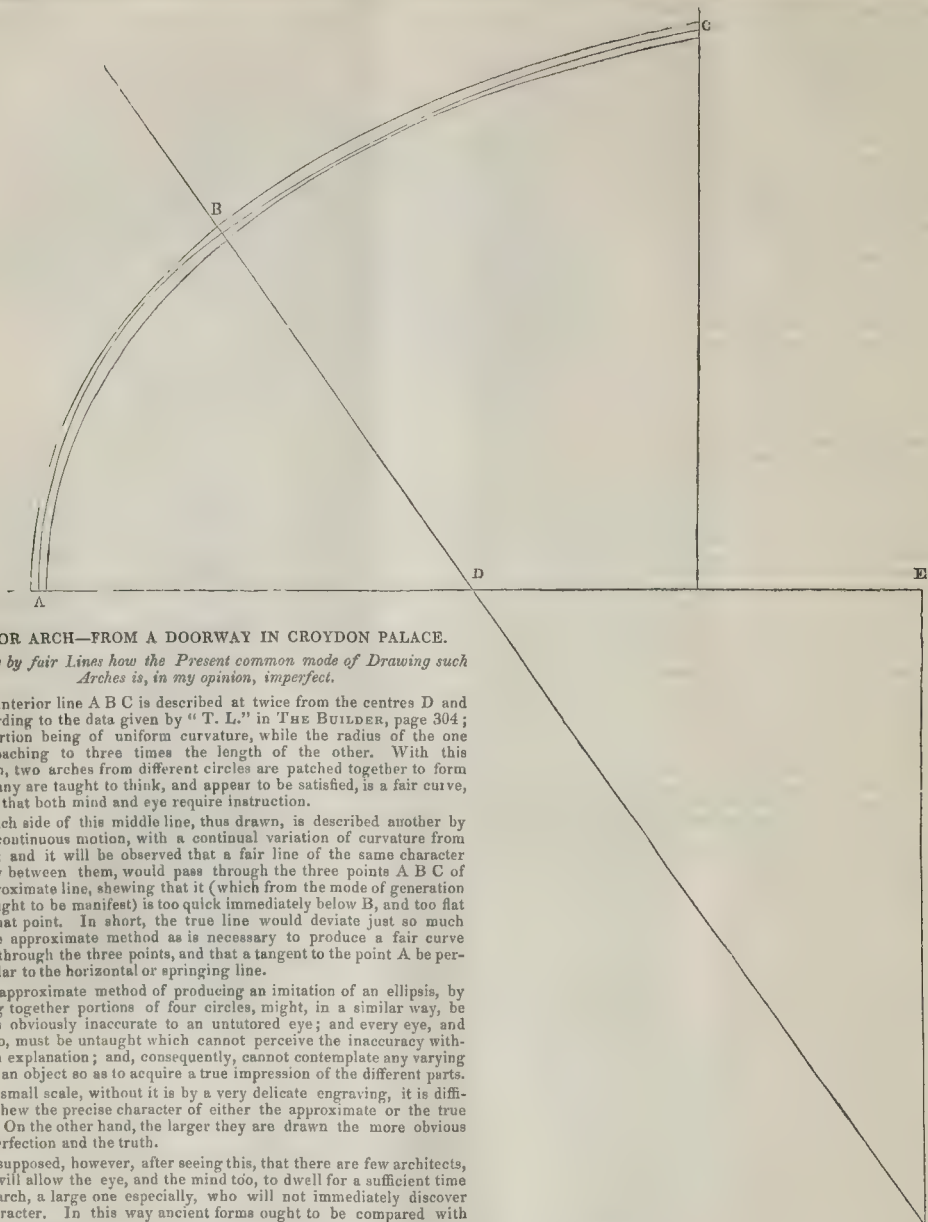
(To be continued.)

WESTMINSTER BRIDGE.—The approaches to this bridge, are about to be altered, it being in contemplation to remove a great quantity of earth from the crown of the arch and to add something to the extremes. The works commenced on Monday last, on which day the carriage-road was stopped.

\* Thus Le Grand observes, "Il se pourrait encore que l'architecte chargé d'exécuter l'arc de Bénévcent eût été tellement frappé de la perfection de celui de Titus, qu'il ait voulu le reproduire. Cette imitation subsiste aujourd'hui dans son entier, lorsque le monument qui a servi de modèle est en grande partie détruit."

\* The conqueror approaching the Capitol would, after passing through the arch of Titus, have on his left hand the temples of Jupiter Stator, of Concord, and of Jupiter Tonans; on his right, the temple of Peace, and of Antoninus and Faustina.





#### TUDOR ARCH—FROM A DOORWAY IN CROYDON PALACE.

*Shewing by fair Lines how the Present common mode of Drawing such Arches is, in my opinion, imperfect.*

THE interior line A B C is described at twice from the centres D and G, according to the data given by "T. L." in *THE BUILDER*, page 304; each portion being of uniform curvature, while the radius of the one is approaching to three times the length of the other. With this variation, two arches from different circles are patched together to form what many are taught to think, and appear to be satisfied, is a fair curve, proving that both mind and eye require instruction.

On each side of this middle line, thus drawn, is described another by simple continuous motion, with a continual variation of curvature from A to C; and it will be observed that a fair line of the same character half-way between them, would pass through the three points A B C of the approximate line, shewing that it (which from the mode of generation alone ought to be manifest) is too quick immediately below B, and too flat above that point. In short, the true line would deviate just so much from the approximate method as is necessary to produce a fair curve passing through the three points, and that a tangent to the point A be perpendicular to the horizontal or springing line.

The approximate method of producing an imitation of an ellipsis, by patching together portions of four circles, might, in a similar way, be made as obviously inaccurate to an untutored eye; and every eye, and mind too, must be untaught which cannot perceive the inaccuracy without such explanation; and, consequently, cannot contemplate any varying form of an object so as to acquire a true impression of the different parts.

On a small scale, without it is by a very delicate engraving, it is difficult to shew the precise character of either the approximate or the true curve. On the other hand, the larger they are drawn the more obvious the imperfection and the truth.

It is supposed, however, after seeing this, that there are few architects, if they will allow the eye, and the mind too, to dwell for a sufficient time on any arch, a large one especially, who will not immediately discover the character. In this way ancient forms ought to be compared with modern constructions.

But suppose the ancients had not arrived at a knowledge of a strictly fair line, does it follow that an imperfect line should be continued when an accurate one may be

applied with greater facility? Yet perhaps the fair line may be found to approach as nearly to the form of the Croydon arch as the approximate one, if a curve formed by

continuous mode of generation was applied to it.

JOSEPH JOPLING.

29, Wimpole-street.

**OPENING OF THE ROYAL EXCHANGE.**—Great preparations are making, not only in the Royal Exchange itself, but at the Bank and several houses in the vicinity, for the forthcoming visit of her Majesty to the City of London. The wooden pavement in Cornhill is nearly completed, and in a few days that thoroughfare will be re-opened. The area of the western front of the Exchange, whereon stands the Wellington statue, is nearly completed, and the hoarding will be shortly removed, when the whole building will be thrown open to the public. It is expected that the ceremony will take place on Wednesday, the 23rd instant. One thousand three hundred distinguished persons are to be invited to dine on the occasion. The Gresham and Corporation Committees have ordered Mr. Wyon to execute two medals commemorative of the event.

**INDIA-RUBBER PAVEMENT FOR STABLES.**—As a pavement for stables the caoutchouc preparation is said to be unequalled, preventing the lodging of stale matters, and their consequent noxious exhalations, requiring little litter, and preserving the knees and other parts of the horse from injuries which are apt to be received in stone-paved stables. By a little precaution, the ammonia, which now exhales to the injury of the horses' health, may be collected and sold as a manure, at from two to three pounds per horse per annum. The stables of the commissioners of Woolwich Dock-yard have been paved with this material for upwards of two years, and are allowed to be superior in point of cleanliness, freedom from smell, and healthiness, to what they were previous to the laying down of the elastic pavement.

**GIGANTIC SCHEME.**—We have heard that the practicability of connecting the opposite shores of the Mersey by a stupendous chain bridge is under consideration. It is said that, by the formation of a viaduct, on the principle of an inclined plane, on arches, commencing at the top of James-street to the margin of the river, a sufficient elevation may be obtained. A similar erection on the Woodside bank of the river would, of course, be requisite. Our acting and enterprising Cheshire neighbour would, no doubt, readily assist in promoting a project so magnificent. Such a work would throw all other suspension bridges into the shade, and be a world's wonder. Of its practicability no doubt, we believe, is entertained, and it will be allowed that the enterprise is worthy the combined energies of Liverpool and Birkenhead.—*Liverpool Albion.*



## Literature.

*Geology, Introductory, Descriptive, and Practical.* By DAVID THOMAS ANSTED, M.A., F.R.S., &c.—London: Van Voorst, Paternoster-row, 1844.

THE two elegant volumes now before us are highly complimentary to the learning and research of Mr. Ansted, and to the taste and spirit of the publisher, Van Voorst. With the high commendation of being comparatively free from the mysticisms of the science of Geology, they elicit our warm commendation for the methodical simplicity of arrangement and judicious selection of pleasing and important information brought down to the present period.

One century ago, geology, according to the definition given by Mr. Ansted, was unknown; the earth was never previously explored, unless for practical purposes, and when the organic phenomena of its strata first arrested the attention of men of science, the explanations given by them were conformable to the age in which they lived, crude, contradictory, and oft-times ridiculous. But this twilight of observation, however unsatisfactory to the mind thirsting after knowledge, was the infancy of geology, which, struggling into existence through almost insurmountable difficulties, soon made itself a name, increasing in beauty and utility, in wisdom as in years.

Mr. Ansted has most decidedly given the world the most pleasing, if not the most useful exposition of the science of geology of the present day; and, while we differ somewhat from him in the relative position and importance of mineralogy and chemistry, we can scarcely blame him, on observing that his object evidently is to render geology more extensively and practically useful, and by disrobing it of its strange and somewhat forbidding technicalities, to invite the young aspirant to scientific honours, to follow in the path of observation pointed out, that he may in turn be enabled to contribute his quota to the existing fund of human knowledge.

In considering geology in connection with architecture, Mr. Ansted informs the architect, that "the object of geology is to observe and describe the internal crust of the globe; and from the consideration of the phenomena there presented to view, to trace the successive changes that have taken place upon the earth, and the various laws or modes of action employed in effecting these changes." That it is absolutely essential to the architect and engineer to have some degree of knowledge thus defined as belonging to the department of geology cannot be questioned, for to readily comprehend what difficulties are likely to arise and what dangers are to be avoided, in forming roads, canals, railways, viaducts, and aqueducts, in building bridges or houses, is to enable ourselves the better to meet the one and overcome the other.

In introducing his readers to the technical expressions of geology, Mr. Ansted observes that "a very slight knowledge of mineralogy is sufficient to acquire geological knowledge," and that under this term "it is usual to designate all those substances which occur in masses, and which lie beneath the vegetable soil, by the general term *rocks*; and in this sense, clay and sand are called rock by the geologist, as well as granite and limestone." For all practical purposes this explanation should ever be borne in mind by the architect, otherwise, under this general term he must very often inevitably be led astray.

The Romans, not content with a climate favourable to the preservation of stone, carefully collected the results of experience, and placed them on record, for the benefit of future generations. In the writings of Vitruvius on Roman architecture, the most particular rules were laid down with respect to the selection and use of building stones and the cements employed by them; and every country then known to or under the rule of this warlike nation contributed the choice produce of its quarries for the advancement and grandeur of the great capital of the world. This desire of the ancients for building with durable materials ought to be fully participated in by modern architects, who, as part of their profession, should be enabled to classify and arrange building-stones, to apply, when required, the rules of chemical analysis, in order to discover their composition, physical character, and

powers of endurance of heat and moisture. As Mr. Ansted observes, it is the duty of the engineer to obtain a correct knowledge of the line of country through which he is to conduct roads, railways, canals, tunnelling, and embankments, and to do this effectually, he must have some knowledge of the leading principles of geology, as also of mineralogy, to which the former science is so strictly allied; still the engineer, in thus seeking aid from geology, must bear in mind that practical information is all he requires; to speculate on possibilities, and thereby involve large additional expenditure, is dangerous in the extreme. Geology, therefore, while, on the one hand, it commands his attention, and forms a part of his study, should, on the other, be carefully applied practically, lest it lead him into difficulties.

Mr. Ansted suggests the necessity of rigid attention to a system of drainage, in order to guard against landslips. That many evils have arisen from not taking proper precautions in this respect, is too true; but in behalf of the engineer, it is right to add that circumstances very often place these matters entirely beyond his control; for it often happens that the lands through which long cuttings are made, are of such a nature as to involve with the question of drainage that of vast expense; and this land seldom belongs to, or is under the control of the purchasers of the direct track in which the cutting is made, who have not power by Act of Parliament, or otherwise, to compel the proprietor to use Watson's draining pipes. Again, as practical men, it may be as well to observe that landslips as often occur in horizontal as in vertical strata; for there is always a tendency in clay beds, having great absorbing powers, to separate when saturated with moisture, or, on the evaporation of that moisture during the summer months, to contract in their parts, open into chasms, and either separate directly, or the seeds of separation would be sown against the rains commenced.

The observations of Mr. Ansted on the necessary attention of engineers to tunnelling are also good; but here, again, the geological engineer would be deservedly brought to book, if in conformity with Mr. Ansted's views, from mere suspicion, of hills of a particular shape having a nucleus of igneous rock, he should deviate from the direct line, and thereby interfere with the contract, and check the progress of the undertaking.

In the construction of harbours, breakwaters, quays, and bridges, a geological course of studies would greatly benefit the engineer, by enabling him to form a sounder judgment on the material to be employed, from whence it is to be procured, and of the beds on which the superstructure is to be raised. This Mr. Ansted recommends attaining by an attentive examination of the neighbouring rocks and quarries; and quotes the opinion of Sir H. De la Beche, who remarks, that "an observer may often obtain information on this head by studying the condition of the rocks on the banks and sea-shores." The valuable profile of the railways of the United Kingdom, first suggested by the geological section of the British Association, and now deposited in the Museum of Economic Geology, will long remain a monument of British engineering skill, and a proud triumph over apparently insurmountable difficulties.

"In architecture," says Mr. Ansted, "as in all kinds of engineering works, the benefit derived from a knowledge of geological science is shewn, not only with respect to the foundation of the building, but also in the selection of its site and of the materials of which the superstructure is composed. In the case at present before us this benefit is chiefly obtained in the selection of building materials, but it also has reference to the other parts of the subject, for there can be no doubt that the foundations of all buildings, more especially of those which are intended to last for centuries, should be most carefully selected, so as to possess the advantage of thorough drainage, and be unaffected by any changes that may take place on the surface by the action of ordinary causes."

Unfortunately for architects, they have seldom or never the choice of site left to them, their duty being to give plans for a building to be erected upon a *chosen spot*, and of necessity in prosecuting the work to provide for the imperfections and casualties as they think proper. Here they are necessitated to fall upon artificial

contrivances for draining and securing the foundations, for excluding the wet.

In entering upon the subject of building material, Mr. Ansted relates an anecdote of a practical man who had been employed in selecting stone for an important public building about to be erected, that in looking out for good stone, he was accustomed to go to the churchyard in the neighbourhood of the quarries he wished to judge of, and examine on all sides the oldest tomb-stones that were there.\*

"A stone," says Mr. Ansted, "which resists exposure to the air, may be readily disintegrated by water; and on the other hand, a porous sandy rock will resist the action of water, but fall to pieces when exposed to frost and atmospheric changes. Many kinds of stone are sufficiently durable for sheltered situations, but crumble away when more exposed; others are durable in the country, becoming covered with lichens, which preserve them from atmospheric action, but are disintegrated in towns, where the covering of soot they soon obtain may assist in destroying their surface, and opening the way to a more mischievous, because a deeper-seated action."†

The following quotations, though now old, cannot fail to interest some of the readers of *THE BUILDER*; they are principally drawn from the report of the committee appointed to select the stone for the Houses of Parliament.

## "LIMESTONE."

"Of limestones," says Mr. Ansted, "there are two or three distinct kinds, each of which is worthy of notice with respect to its geological position, as well as its economic value. The first of these includes the argillaceous limestone, common in silurian rocks, and found also in Devonshire and Cornwall (in rocks of the Devonian period); but stone of this kind is not confined to any particular localities, being met with also in the cretaceous series."

"The second and most important group of limestones for building purposes comprises those (chiefly of the mountain limestone series) which are crystalline and compact, and often of a blue colour. The third series includes the oolites (which are the stones most commonly used, and the most convenient for ordinary purposes), abounding in the middle secondary groups of formations, and employed in most of the public buildings that have been erected in the middle, west, and south of England. These stones, however, vary greatly in relative value as building materials."

"The argillaceous limestones of the older rocks are so rarely of sufficient durability to be used for public buildings, that there is no quarry reported on by the commissioners, one excepted, an accidental variety of the lower chalk quarried at Totterhoe, near Dunstable, and formerly used in some kinds of external work, but now superseded by Bath stone; like other kinds of *chunch*, this bed forms an easily cut, and a very useful material for certain kinds of internal decorative work, and has often been used for such purposes in the interior of our cathedrals. The crystalline carbonates of lime that have been used for building are not very numerous, although they possess many advantages, among which great durability and resistance to decomposition may be ranked as the principal. Many of them, however, are too expensive to be generally employed, such as marble and ornamental stones, and the number of fossil remains found in those of Derbyshire and Devonshire sometimes tends to diminish their value, by exposing them to unequal decomposition in the parts where fossils chiefly abound."

"It is chiefly the oolite limestones that have been employed in England for building purposes; they are so called from the egg-shaped particles being cemented together by a calcareous matter of varied character: they will of necessity suffer unequal decomposition unless the oviform bodies and the cement be equally coherent and of similar composition. Of those

\* [There is a remarkable instance in Hornsey church-yard of a flat ledger of Parbeck stone (which is hard to work) placed over a bricked grave some half century ago, which has strewn the surrounding site with its splitting and dissolving fragments.—Ed.]

† [We do not find soot of itself injurious to the durability of stone, but, on the contrary, believe where it is not washed away the tool-marks generally remain.—Ed.]



best known and used in England are the Portland, Bath, Ketton, and the Barnack. Besides these, Caen stone was a good deal employed in some English buildings of an early date (among the rest in Canterbury Cathedral), and is a stone of great durability and utility.\*

The qualities of the Portland and Bath stone have been already treated on in the columns of **THE BUILDER**. The inferior oolites at Douling, in Wiltshire, appear to possess some good qualities.

The Ketton stone and the Barnack rag are both of them building-stones, obtained from the oolite strata of Rutlandshire and Northamptonshire. Ketton stone is even-grained and of a dark cream-colour, containing more than 92 per cent. of carbonate of lime and upwards of 4 per cent. of carbonate of magnesia. It absorbs one-fourth of its bulk of water, and its cohesive power is much greater than any other oolite. Many of the buildings in Cambridge are constructed with it.

"The Barnack stone more properly belongs to the shell limestone than to the true oolites; it is of a light whitish brown, consists of 93·4 per cent. of carbonate of lime, and 3·8 per cent. of carbonate of magnesia; it is a little heavier than Ketton stone, but its cohesive powers not more than two-thirds. It is, however, an excellent stone, several buildings of the twelfth and thirteenth centuries built of it being in admirable condition, and scarcely at all decomposed."

There are other varieties mentioned, as the oolite of Lincolnshire, most employed in that county; the remarkable siliceous limestone of Chilmark, in Wiltshire, noted for its extremely great cohesive power, which is, no doubt, owing to the quantity of silica it contains, more than 10 per cent. "The Bolsover quarries, from which the stone for the new Houses of Parliament is procured, and several others that have been recently opened in the neighbourhood, contain about 12 feet of workable stone, in numerous bands from 8 inches to 2 feet thick. This stone is of a light yellowish lemon colour. Its chemical composition consists of 51 per cent. of carbonate of lime, 40 per cent. of carbonate of magnesia, and more than 3½ per cent. of silica. Its specific gravity is 2·316, or considerably greater than that of limestone."

"This admirable stone is not expensive, being cheaper than Portland stone, and worked as easily; but it does not seem to have been much used at a distance from Bolsover, except in slabs for paving. Its qualities of durability are well tested in Southwell Church, Nottinghamshire, a building of the tenth century, and in admirable condition. In this church the Norman portions, built of stone similar to that of Bolsover Moor, are throughout in a perfect state, and the mouldings and carved enrichments are as sharp as when first executed."

"The Roche Abbey quarries, near Bawtry, in Yorkshire, exhibit another instance of semi-crystalline magnesian limestone, but the quality is not at all equal to the stone of Bolsover Moor; and although thick, the stone is so irregularly bedded as to give no certainty to large blocks. This stone contains only 39½ per cent. of carbonate of magnesia, and 57½ of carbonate of lime; and it is both the lightest and the least cohesive of all the magnesian limestones. Roche Abbey, built of it in the thirteenth century, is said to exhibit a fair state of preservation; but this is accounted for by its semi-crystalline condition, and the resistance which the stone therefore offers to the decomposing action of the atmosphere."

"There are two considerable magnesian limestone quarries in the neighbourhood of Doncaster, from both of which building-stone has been obtained, though they appear to differ very considerably in value. The Brodsworth quarries produce a friable stone, with a tendency to oolitic structure; the thickness of the beds is considerable, the price low, and blocks of great size can be procured; but it has not stood the test of time.

"The Park-nook quarries yield a much better stone than those of Brodsworth, and contain about fifteen feet of workable material, which may be obtained of any practicable size. There are buildings of this stone about a cen-

tury old in perfect condition; it is of a cream colour and partly crystalline.

"The Huddlestone quarries, and others in the neighbourhood of Sherburne, supply also a good semi-crystalline magnesian limestone of whitish cream colour, which has been very much and very long used for building purposes, and of which, indeed, parts of Westminster Hall are built. Jackdaw Craig, near Tadcaster, and Smawse, in the same neighbourhood, are also well-known for their quarries, which have supplied the stone for public buildings in many parts of Yorkshire.

"The stone from Jackdaw Craig was employed in the building of York Minster, the transepts of which date from the thirteenth, and the tower, nave, &c., from the fourteenth century; but from the generally decomposed state of all this stone, more especially in the mouldings and enrichments, it is evidently not one that should be selected for durability. The upper beds, which are the worst, have been the most quarried, and many of the churches of York, besides the cathedral, are proofs of the want of judgment in the architect who selected a material so readily injured by exposure.

"The Smawse quarries, on Bramham Moor, contain a stone slightly crystalline, and probably for that reason more durable than the former. It is not, however, greatly to be depended on, as in Beverley Minster (of the twelfth, thirteenth, and fourteenth centuries), the west tower, the central tower, and other parts built of this stone are in good condition, while in other parts of the building the same material is decomposed.

"The Huddlestone stone, which is much more crystalline, is also a more uniformly excellent building material. Huddlestone Hall, built in the sixteenth century of this stone, is in excellent condition, as is also a church at Hemmingborough, built of a similar stone in the fifteenth century." Q.

#### DOVER HARBOUR.

In these days of improvements in all directions and of all manners and kinds, the ancient town of Dover is not entirely backward in the march of amendment. Not content with restoring the fine old church of St. Mary at a very large cost, and adorning the town and neighbourhood with new buildings of all classes, Dover will soon possess a vastly increased and improved harbour. It was, indeed, at one time contemplated to make it a harbour of refuge, and it is well known that the Duke of Wellington (who, as Governor of the Cinque Ports, has at different times taken so active a part in matters connected with the welfare and advancement of the town) has ever been in favour of such a desirable object being effected. The work, however, would be of so expensive a nature, that nothing short of national means could hardly hope to accomplish it. His Grace is understood to have remarked, "We will improve the existing harbour; but such a work as that must be done by the nation." Yet, it appears, it is not likely Dover will be converted into a harbour of refuge; but the town commissioners, it is declared, are determined to do all in their power to render the harbour as useful and perfect as possible. It is well known that at present it is not very good, yet it can now accommodate ships of 500 tons. It is chiefly used for sailing and steam packets to and from France. Immense sums have been expended upon this haven from the period of Henry VIII., but it is so imperfectly formed at the present time, that a vessel coming in with a direct south wind would be driven against the walls, as there is neither room to turn nor for the ship gradually to expend her force before reaching the extremity of the docks. The harbour has been undergoing repairs of various descriptions almost constantly for many years, but early in this summer an extensive improvement and enlargement was decided upon and commenced that is well calculated to remedy many of the most important objections now existing. Thus "the poor haven, such as it is" (rather derogatively termed in an old description thereof), is likely to be materially raised in the rank and utility of harbours upon the southern coast of England. It is to be so extended by another wing, as it were, being added, that a vessel may enter in full sail, and have room to turn and come gradually to its stoppage, an object that cannot now be attained.

A large piece of land to the east of the existing harbour and between it and the parade has been purchased for the purpose of enlarging the docks, and gates are to be added. Upon the land so appropriated stood, until quite recently, building yards, houses, &c. There also remains as yet upon the site (although they will be removed in the course of the speedily-approaching alterations) a battery, containing several cannon, and buildings that have been used as a magazine, guard-house, &c. A great portion of the space to be converted to the enlargement of the harbour is now in an advanced stage of excavation, and some parts are already being walled in. It was originally intended to have wooden walls for this addition to the haven, but a wiser, though more immediately expensive plan has been adopted, and stone is to be used instead of the former more perishable material. "Wooden walls" have for many ages proved good defences for Old England; but a harbour intended to endure requires something more substantial. Some notion of the important nature of these works may be formed when it is mentioned that no less a sum than 100,000*l.* is proposed to be laid out upon them, in addition to the large amounts that have been spent upon the docks during the last few years. The time which has been specified for the alterations to be completed is three years; but, having regard to the extent of the improvements, and the difficulties that are so often met with in like undertakings, it seems more than probable that they may not be finished until a somewhat longer period has elapsed. The effect, even now, is advantageous, as it gives more room in some portions of the harbour; but eventually it cannot fail to be most important to Dover, in advancing in no slight degree its prosperity as well as utility.—*Times*.

#### THE IRON TRADE IN SOUTH STAFFORDSHIRE—FALL IN PRICES.

THE ironmasters of this district have not been able to maintain the prices of last quarter, notwithstanding their previous resolutions to do so. It was hoped that they might have been able to sustain that advance which for the last few months they were getting, but they have not, and a reduction of no less than 1*l.* per ton has taken place. At their meeting in Birmingham on the 3rd instant, they resolved upon upholding the price, although it was evident that some undercurrent was at work to reduce it. Nothing but conflicting opinions were to be heard amongst the best informed representatives of the largest houses, and it was with difficulty that any thing like satisfactory information could be obtained upon the actual state of the market. The price, however, was then declared to be the same as last quarter, and it was reserved for the meeting held at Dudley, last Saturday evening, to make known the actual condition of the trade, and the necessity which existed for a reduction. Various causes are assigned for this fall, and amongst the most probable is the over-speculations of small makers. It would seem many of them, unable to keep stock, have, by underselling the large houses, rendered a sweeping reduction necessary on the part of those extensive proprietors, who have been endeavouring for their own sakes and the general interest of trade to retain something like a remunerating profit. The competition arising from the furnaces of other districts has also, no doubt, materially hastened the issuing of the circulars announcing the above fall of 20*s.* in the ton. It is a heavy reduction, one not usually made suddenly, and least of all not to be expected now, when the railway speculations would seem to hold out the prospect of an enormous demand for at least another year or two.

NEW CUSTOM HOUSE, IPSWICH.—On Friday, the 4th inst., the "raising treat" for this building took place in the large room of the Customs department. The architect, J. M. Clark, Esq., and the builder provided most amply for the entertainment. At 5 o'clock, nearly 100 persons, including several members of the Town Council, sat down to dinner; after which the mayor favoured them with his company for a short time, and who highly complimented Mr. Pettit upon the sound and workmanlike manner in which he had fulfilled his contract up to the present state of the edifice, and upon its near approach to completion.

\* Experience of ancient buildings shews this must be taken with very great limitation.—Ed.]



## CHURCH-BUILDING INTELLIGENCE, &amp;c.

*Eton College, Oct. 9.*—The western window in this beautiful chapel, which is the smallest window in the sacred edifice, situated over the inner entrance of the ante-chapel, and over the present organ-loft, has just been filled in with elegant specimens of stained glass, the liberal gift of the Rev. Edward Coleridge. It is understood that the assistant-masters of the school have arranged to fill in the easternmost window on the south side with stained glass containing figures descriptive of some part of Scripture history. It is believed that the easternmost window on the north side will also be filled in with stained glass, at the expense of a nobleman educated at Eton. It seems to be not improbable that in the course of a few years the whole of the windows of this beautiful chapel will be composed of stained glass, thus rendering it one of the most solemnly gorgeous places of divine worship in the kingdom. Active steps are being taken for having the roof, which is of wood, emblazoned with heraldic and other devices, in keeping with the sacred character of the chapel.

*Consecration of Trinity Church, Dilton's Marsh.*—On Monday last, Trinity Church, Dilton's Marsh, Westbury, was consecrated by the Lord Bishop of Salisbury. The building is of Norman design, being cruciform, the eastern end circular, and with a low tower. The north doorway and font are very good—the pulpit elaborate—the seats are low, open, and of good design, but, by a strange mistake, adopted only for seats, the under part of the seat having been blocked up to make sitting the more convenient, whilst kneeling is rendered totally impossible!! The windows in the chancel are of stained glass, representing the Incarnation, Crucifixion, and Resurrection of our Lord. They are the gift of Mrs. Phipps of Leighton, who also presented the altar cloth. The windows in the transept are also of stained glass of good pattern. The altar is a massive table of wood, supported on Norman pillars.—*Fairley's Bristol Journal.*

*Consecration of the New Church at Welshpool.*—This church, erected by voluntary subscription in honour of the coming of age of Lord Viscount Clive, was consecrated on Wednesday week. There is room for 1,000 persons in the church, and one-half of the sittings are free. The sum of 6,000*l.* was subscribed for the building, but this, it appears, is not sufficient to pay the cost.

*Munificent Gift.*—The late George Maude, Esq., of Middlewood Hall, near Darfield, has left the sum of 1,000*l.* to be appropriated to the repairs of Darfield Church.

## RAILWAY INTELLIGENCE.

*North British.*—The directors of the North British Company have made an offer of 4,500*l.* to the corporation of Berwick for the portion of their property required for the line (about 20 acres). The council, however, have resolved not to abate their demand of 6,000*l.*, considering that the property will be deteriorated by the manner in which it will be divided into two portions along its whole length.—*York Gazette.*

*Status of George Stephenson.*—A splendid marble statue of George Stephenson, Esq., from the chisel of Gibson, will, it is expected, before long, form one of the ornaments of St. George's Hall, Liverpool, which is rising opposite the terminus, in that town, of Mr. Stephenson's first great railway.

*Prosser's Railway.*—This railway differs from the old wooden railway in having the wood indurated by the injection of an alkaline and metallic salt, and the employment of a levelled guide-wheel, fixed at an oblique angle before and behind each carriage.

*New Method of generating Steam.*—The attention of scientific men is directed to what is expected to prove a new method of generating steam, viz., by a galvanic flame directed with such force as to cause water to boil.

*Coventry, Warwick, and Leamington.*—The branch from Coventry to Warwick and Leamington is nearly completed, and it is intended to open the line to the public on the 2nd of December.—*Worcester Guardian.*

*Whitby and Pickering.*—The York and Scarborough Company, who have purchased this railway, through Mr. Hudson, are to take possession at Lady-day next.

## Correspondence.

## IMPROVEMENTS OF IPSWICH.

TO THE EDITOR OF THE BUILDER.

SIR,—A short time ago, in your list of competitions, there was a notice of an offer of a premium of ten guineas for the best design for laying out the old Shire-hall yard in this town, together with a design for some almshouses to be erected on part of the said ground.

I beg to inform you, and those of your readers who take an interest in the result of competitions, that the committee appointed for the choosing of the best design have, after a long and careful examination, awarded two premiums of ten guineas each to two designs sent in, they not being able to give the preference to either.

The first is a very excellent and chaste design, in the Tudor style, by J. M. Clark, Esq. (architect of the new custom-house at present erecting there), and which is exceedingly creditable to the taste of the committee; the second is a design by a Mr. Woolnough, and is a mixture of the common street-house and Elizabethan, and which, of course, is more suitable to the taste of the unlearned and unrefined.

I am happy to say, however, that the town-council have wisely determined to carry into execution the design of Mr. Clark.

Excuse my trespassing on the space of your valuable journal, but this competition deserves notice, because it is one of the few exceptions which are not, to use a slang phrase, a "done job."

I am, Sir, yours respectfully,

Ipswich, Oct. 10. A LOOKER-ON.

## BATH STONE MASONRY.

SIR,—Having seen in your valuable publication of last week, that you intend to give a survey of the Bath stone masonry of the metropolis, I hope you will notice in it, whether those stones which are placed on their "bed" (i.e. as they lie in the quarry) exhibit marks of decay.

In the three instances in which you mention its having been used only fifteen years ago, and being now in a miserable state of decay, were the men then employed to work the stone used, accustomed to work Bath stone? and did the architect take care that all the stones were set on their "bed?"

If these precautions are taken, why does not Bath stone stand as well in the metropolis as in the neighbourhood of Bath, where it has stood the test of ages?

I am, Sir, your obedient servant,

October 11th, 1844. G. D.

[We believe little care was taken to place the stone as it lay in the quarry, and that where it is so laid, it has not fared better while it has a still more seamy, striated, and disagreeable effect. We in London, accustomed to fine masonry in nearly all the buildings forty years old, could not be brought to admire the triflingly smaller quantity of decay to be found where more care is taken in selection and building: we beg to contrast the restoration of Henry VIII's Chapel, completed hardly twenty years ago, with that of the neighbouring church of St. John. The former, though of chosen stone, taken from a large quantity kept on hand for selection, and not done by contract, has already been the occasion of much admiration; while the latter, except on the weather lines, retains its superb marble-like original surfaces, and is likely to retain them while its frail foundation will bear its mass.—Ed.]

## HARDY MEMORIAL.

SIR,—I am glad to see your correspondent "Memorabilia" notice, in your last number, the shameful manner in which the Hardy Memorial affair has been conducted. Happening to be near Dorchester during the time it was in agitation, and feeling interested as an admirer of the late gallant admiral, I inspected the designs sent in, and made inquiries, but everybody was asking, Who is the "hon. sec.," and what are the committee about that nothing has been done during the whole summer? Now it appears to have been a preconcerted plan that one of the committee, a Mr. A— (who is always, I understand, endeavouring to cull fame from the labours of others), should make a design, the committee having advertised for plans to furnish materials for the

amateur to work from; but what a wretched production has he given birth to! There were several excellent designs sent, but the one selected appears to have been copied from some gas-house chimney; at all events, it will be a disgusting specimen, totally destitute of one architectural feature, and an insult to the memory of the worthy admiral. Who are the committee? They must be the slaves of the man in power to select a plan so unworthy. I trust that the public will be awakened, and stop the adoption of so disgraceful a proceeding.

I am, Sir, your obedient servant,  
VERITAS.

## Miscellaneous.

**LAYING THE FIRST STONE OF THE NEW DOCK AT WOOLWICH DOCKYARD.**—The laying of the first stone of a new dock at Woolwich, by Admiral Sir George Cockburn, Bart., took place on the 26th ultimo, in the presence of another Lord of the Admiralty, and a number of officers. Sir George, on arriving at the site, first inspected the drawings of the new work, submitted to him by Captain Dennison, R. E., the director of works at Woolwich, and conversed on its formation, &c. Immediately the immense block of granite was hoisted from its intended resting-place, the cement was spread by the gallant admiral in a very workmanlike manner, and Sir George set the stone, weighing between four and five tons, with the mallet, as it was lowered into the bed prepared for it. On the work being finished, this distinguished member of the Admiralty congratulated Captain Dennison on the first progression in the construction of the dock, after so much necessary preparatory labour, and expressed a hope that its completion would be as creditable to the eminent contractor, Mr. Rolt, as it will be advantageous to the public service. This work, important and extensive as it is, is a small undertaking comparatively to the great undertaking in which Mr. Rolt is engaged in constructing, the new steam basin at Portsmouth, which is rapidly progressing with satisfaction to the Admiralty. The following are the dimensions of the new dock at Woolwich, called the Eastern Dock:—From the centre of caisson to head of dock, being clear of coping, 300 feet 3 inches; width of ditto, 92 feet 4 inches; average depth from level of coping, 26 feet. Mr. Rolt in the evening entertained a party of his friends, at the Crown and Sceptre, Greenwich, when, after the usual loyal toasts had been drunk, "Success to the New Work," the healths of Sir G. Cockburn and the Admiralty, Sir F. Collier, and many other officers, were given and drank with much applause.—*Morning Herald.*

**OPENING OF THE LOCK AT DIGLIS.**—This morning, at 11 o'clock, the ceremony of opening the lock at Diglis took place in the presence of a considerable number of the citizens, J. Bailey, Esq., M.P., Richard Spooner, Esq., and several gentlemen forming the committee of management. The first vessel that passed through the cutting and the large lock (having on board the gentlemen above named) was the Sarah, belonging to Mr. Luke Maybury, of the Wherry; two others afterwards entered the lock (the Richard, of Droitwich, and a smaller barge) abreast; there was ample space for both, and the length between the gates is sufficient to admit two others of the same size. The length of the lock is 150 feet by 30 feet, and 34 feet deep. The lower gates weigh 32 tons the pair, and may be worked with ease by one man. This, we understand, the first attempt that has been made to work gates of this magnitude by means of balance beams, and, as far as can at present be seen, it is likely to be most successful.—*Worcester Journal*, Oct. 10.

**ENCROACHMENTS ON THE REGENT'S-PARK.**—On Saturday, at a very numerous meeting of the vestry of St. Marylebone, for the purpose of considering what steps should be taken with respect to recent inclosures which have been made of portions of the Regent's-park, it was agreed, on the motion of the Rev. Dr. Fellows, that a memorial should be presented to the Commissioners of Woods and Forests, representing "that a part of the Regent's-park, in one of the green slips adjoining the ground attached to Hanover Lodge, has been inclosed with an iron wire fence, and thus taken from the public use; and that the green



slips which lay to the north of the park, between the canal and the road of the outer circle, are more prized by the public in general for the rural scenery which they exhibit, and for the shady walks which they afford, particularly during the hot summer months. Your memorialists, therefore, setting the highest value on these slips, are greatly grieved to see one of them fenced in and abstracted from the public benefit."—*Times*.

**FAIL OF A PORTION OF APPLEBY BRIDGE.**—On Saturday last, about 11 o'clock in the forenoon, the north-east end of the parapet-wall of Appleby stone bridge gave way, and a large part adjoining the Coach and Horses Inn was thrown down into the river Eden. Fortunately, no one was upon the bridge at the time, although it is frequently occupied by loiterers looking over the sides into the river. Mr. Robinson, the bridge-master, was in immediate attendance, and by the aid of a sufficient number of workmen, a wooden fence with iron stays was substituted for present security; it is presumed that the old bridge which has withstood the storms of so many years, will now be quite removed, and one more in accordance with the taste and spirit of the times erected in its stead.

### TENDERS.

**TENDERS** delivered for the restoration of the Parish Church of Kirk-Penton, Yorkshire.—Mr. George Fowler Jones, Architect, York. August 10, 1844.

Noah Akeroed, York	£656 0 0
John Baxter, Leeds	660 0 0
John Shaftoe, York	721 18 0
John Powell, York	786 0 0
Holmes and Bateson, Leeds	856 1 9

**TENDERS** delivered for building a New Gaol at Aylesbury.—C. J. Pierce, Esq., Victoria-road, Kensington, Architect.

Gravel and Peto	£43,394
Winsland	42,879
H. and J. Lee	42,240
Baker and Son	41,850
Hoomen, Aylesbury	41,583
Ireson, Northampton	41,500
Flowerman and Co., Oxford	41,150
Locke and Nesham	40,800

### NOTICES OF CONTRACTS.

For some repairs to the Steeple of St. Luke's Church, Norwood.—Mr. Rogers, Architect, Palace Chambers, Lambeth. October 22.

For Sloughing and Bottoming the Burton Pidssea West Drain.—Robert Gibson, Keyingham, or George Iveson, clerk to the Commissioners of the Keyingham Level Drainage. October 30.

For the Erection of a new Barrack Establishment at Bristol.—C. J. Selwyn, Major and Commanding Royal Engineer, Exeter. November 7.

### COMPETITIONS.

**PREMIUM** of 25 guineas for the best and another of 15 guineas for the second best design for laying out for building purposes a plot of land, containing about nine acres and a half, situate in the borough of Reading, having a frontage of upwards of 900 feet, and being of the depth of about 460 feet. Further particulars of J. J. Blandy, Esq., Solicitor, Reading; or of Messrs. Gregory, Faulkner, Gregory, and Bourdillon, 1, Bedford-row, London. November 15.

**PREMIUM** of 500*l.*, being a legacy bequeathed for a painting to be placed in the recess over the communion-table of St. James's Church, Bernersley. The subject to be the Ascension of our Saviour. Further particulars of the trustees of that church.

### NOTICE.

Our next Number will be Double; and, besides containing our promised Cyclopædia of the New Building-Act, will be fully and beautifully illustrated.

### TO CORRESPONDENTS.

A Subscriber.—The inquiry of our correspondent is very elementary. We refer him to "The Student's Guide to the Practice of Measuring and Valuing Artificers' Works," published by Weale, of Holborn; price 7*s.* 6*d.*

A Constant Reader.—The kind of jamb and arch mentioned is principally to be found in early and very late specimens; but is, we think, to be avoided as mean, and to be seldom used except in workhouses.

A. E. I. Z. is referred to Mr. Manfred, No. 36, Palace-street, Fimlico; or should that locality not suit him, he may apply by letter to T. T., care of Mr. Pollitt, 63, Fleet-street; or to Z., Post-office, Charles-street, Middlesex Hospital.

Q.—We have not yet received the final report of the Master Carpenters' Society.

A Constant Reader.—The Contract referred to was extracted from a local paper; we know nothing further respecting it.

### ADVERTISEMENTS.

**POLYCEAU'S BITUMEN PAVEMENT** for paving Foot walks, Terraces, Garden walks, Stables, Coach Houses, Granaries, Corn Stores, and Salt Warehouses. For the exclusion of Damp and Vermin in Basements it is particularly adapted, and for Roofing Dwelling Houses, Porticos, Balconies, and Sheds.

BITUMEN for covering the Arches of Bridges, Culverts, &c. &c. on Railways and other places. For instructions for laying it down, may be had at the rate of 4*s.* per ton; by applying to JOHN PILKINGTON, 15, Wmfr-road, City-road.

TO LANDOWNERS, AGRICULTURISTS, BUILDERS, ARCHITECTS, &c.

**McKIBBIN'S improved ROOFING FELT** is peculiarly applicable as a substitute for Slate, Zinc, Tiles, and other articles used for Roofing, from its ECONOMY, LIGHTNESS, and DURABILITY.

The disadvantages attending other materials used in roofing, preventing, in agricultural districts, many useful houses and sheds being erected or rendered waterproof, it is submitted that the improved Roofing Felt, will in a great measure—and in some instances altogether—obviate them, and prove most serviceable from its lightness, durability, and impermeability to water and damp, in covering Houses, Cattle-sheds, Workshops, Barns, &c. &c. The sides, as well as roofs, of light structures for plants, being likewise a non-conductor of heat; besides its economy in repairs, the timber where it is used may be so light as to save its whole expense; it requires no other coping, and may be applied by any person of common ingenuity; being flexible and portable also, it is free from breakage, the expense of carriage is inconsiderable in comparison with slates, tiles, &c. and it is not liable to contraction like slate.

Sold in sheets 32 inches by 20, at 5*d.* each (being less than 6*s.* 6*d.* per square of 100 feet), with printed directions for applying them.

Orders will meet with prompt attention, if addressed to H. C. BOWDEN, 18, East India Chambers, Leadenhall-street, London; or to the following agents:—

Liverpool	Messrs. Gruener and Co., 11, Market-street.
Plymouth	Thomas Stevens, Esq.
Birmingham	William R. Lloyd, Esq.
Sunderland and Newcastle	Messrs. John Ritson and Sons, Esq.
Hull	William Ward, Esq.
Bristol	Messrs. Moor and Hewitts.
Runcate and Deal	Messrs. Edward Hodges & Co.
Whitehaven	William Todd, Esq.
Glasgow	Malcolm Carmichael, Esq. St. Enoch-square.

Cork—Messrs. Richard Wallis and Co. Belfast—Messrs. Gruener & Co., Dun-har's Dock.

Who have also on sale McKIBBIN'S improved SHEATHING, Bolter, Railway, and other FELT. The "Improved Roofing Felt" will be found much more durable than the common Felt made in lengths, and not subject, like it, to continuous sheets of other material, to be stripped to stumps; it is moreover easily repaired, and from the simple mode of application recommended, the wet cannot percolate through nail-holes, being only fastened down at the overlaps.

TO ARCHITECTS, ENGINEERS, CONTRACTORS, BUILDERS, MASONRY, AND PLASTERERS, MERCHANTS, SHIPPERS, AND THE PUBLIC IN GENERAL.

**JOHNSON'S CO'S PATENT STUCCO CEMENT.**—The following are the positive advantages possessed by this invention over every Cement hitherto introduced.—It will effectively resist decay. It will never vegetate nor turn green, nor otherwise discolour. It will never crack, blister, nor peel off. It will form a complete Stone casing to any Building covered with it. It so closely resembles Stone that it is impossible to detect it. It never requires either to be painted or coloured. It will keep fresh and good in the cask in any Climate for any number of years. It is the only Cement that can be depended upon for export. It is the only Cement that can be used with confidence by the Sea-side. It may be used in the hottest or coldest Climates at any season. It will adhere to any substance, even to Wood, Iron, or Glass. It will carry a larger Proportion of sand than any other Cement. It matures by age, and becomes perfect when other Cements begin to perish. It may be worked through the Winter, as frost has no effect upon it. It may be used on the Inner Walls of new Houses, which may be papered over or painted over. It may be laid or pointed with this Cement will remain undamaged by the severest Storms. Any Plasterer may apply it, the Instructions for use being very clear and distinct. The first cost of this material does not exceed that of the cheapest Cement now in use; but with all the above-named extraordinary and valuable advantages, nothing can approach it in point of economy.

Architects and Builders who have used this Cement have declared that it requires only to be known, to be universally preferred.

Specimens may be seen, and a Prospectus fully describing the Cement and its mode of application together with volume of Testimonials, from every part of the Kingdom, may be obtained on application to MANN and CO., SOLE AGENTS for the Patentees, 5, Maiden-lane, Queen-street, Cheap-side, London; of whom also may be had,

**JOHNSON'S CO'S PATENT STONE-COLOUR STUCCO PAINT**, expressly intended for Painting over exterior Walls of Houses that have been covered with Roman or other Cements, and which have become discoloured. It is in every way better suited for this purpose than White Lead Paint, which will frequently come off in flakes, being in direct chemical opposition with cement. Whereas MESSRS. JOHNSON'S CO'S PATENT PAINT having an affinity for Stucco, binds itself with it, stopping the action, thereby rendering the wall proof against weather, and in the finish producing a pure stone-like effect, producible by no other Paint whatever. It is cheap in application, and may be used by any Painter, in any climate, even in the most exposed Marine situations.

**WARMING BUILDINGS by HOT WATER.**—J. WEEKS and DAY, King's-road, Chelsea, having had a most extensive practice for 20 years in the erecting of APPARATUS for the heating of houses, and of churches, mansions, warehouses, halls, baths, horticultural buildings, &c., will be happy to give estimates for warming buildings of every description to which heat is applicable. The hot water apparatus is to be seen in action on their premises.

**PAINTING BRUSHES.**—TO PAINTERS, BUILDERS, &c.

**J. KENT and CO., 11, GREAT MARLBOROUGH-STREET, LONDON**, offer to Painters, Builders, and Dealers in Painting Brushes, goods of a quality far superior to those generally offered for sale, and of which they beg to call the attention of those who study quality and durability to cheapness. Lists and prices forwarded on application.

**BUILDERS, PLASTERERS, and others**

should compare the Prices.—Yellow Ochre, 8*s.* per cwt. Lamp Black, 2*s.* 6*d.* Blue Black, 1*s.* 6*d.* Venetian Red, 1*s.* 6*d.* Gold Size, 9*s.* per gall. Copal Varnish, 1*s.* 6*d.* 1*s.* 6*d.* Paper Varnish, 1*s.* 6*d.* 1*s.* 6*d.* at PEISLEY'S noted Cheap Lead and Colour Warehouse, 55, JUDD-STREET, NEW-ROAD. Brushes, Varnishes, Dry and Ground Colours, at lowest prices.

**VARNISH.**—It has long been a desideratum amongst the consumers of Varnish to obtain a good and brilliant variety of drying, hardness, and durability are the qualifications necessary, but these are seldom if ever found united. The experience of a life-time devoted exclusively to the manufacture of this article, the great and important discoveries of modern chemistry, and the daily improvements in machinery, have enabled Messrs. George and Thomas Wallis to produce Varnishes (both oil and spirit) unrivalled in every respect, and they confidently recommend them to the trade, as deserving of notice both in price and quality.

Builders, Coachmakers, Painters, and others may depend on being supplied with a genuine and undiluted article. Fine Oil Varnish, 1*s.* 6*d.* per gallon; best White Spirit Varnish, 2*s.* 6*d.*; Best Spirit French Polish, 1*s.* 6*d.*; White Lead, Oil, Turps, and Colours of every description at the very lowest prices.—WALLIS'S Varnish, Japan, and Colour Manufacturing Co., 64, Long-acre, one door from Bow-street. Established 1750.

**H. BESSEMER'S PATENT GOLD PAINT.** Sole Agents, R. TILLEY & GARROD, 245, Blackfriars-road, London.

The above METALLIC PREPARATION is intended to supersede the use of Gold Leaf, as it gives an equally beautiful effect; is extremely durable; will bear washing equally well with any other description of fine paint; and in comparison, costless, requiring only to be applied with an ordinary brush. It will be found particularly adapted for the following purposes.

**HOUSE-PAINTERS and DECORATORS.** For exterior and interior Decorations, Iron Works, Mouldings, Cornices, Centres, Brackets, Figures and Casts of every description, whether in Plaster or Metal, Writing and all other purposes, where gold is required to be introduced.

**SHIP-PAINTERS and DECORATORS.** For such Ornamental Work, either within or without, as may require to be painted, and for cheapness, affording an opportunity of embellishment so desirable, but which is frequently neglected from its great expense.

**PLASTER FIGURE-MAKERS.** For general use upon the Figures, Casts, and Medallions manufactured for ornamental purposes.

And for various other uses here undescribed, but which its low cost may likewise admit it to. To be had wholesale at the lowest rates at most Colour Warehouses in the Kingdom. Sold in bottles, 6*s.* each.—A liberal allowance to the trade.

**PLUMBERS, PAINTERS, BUILDERS,**

and OTHERS supplied with CROWN and SHEET WINDOW GLASS, SHEET PLATE, &c. &c., for Pictures, Glazing, &c. &c., in any quantity, at Manufacture Prices.

TURPS, per gallon . . . . . 2*s.* 6*d.* LINED OIL, ditto . . . . . 1*s.* 6*d.*

SHEET LEAD, in sheets, per cwt. . . . . 1*s.* 6*d.* Ditto, cut to sizes and PIPE . . . . . 1*s.* 6*d.*

WHITE LEAD (Ground) per cwt. . . . . 1*s.* 6*d.* Colours, in Brushes, &c. &c., equally low, and quality warranted. Complete Lists, priced, may be had on applying to R. COGAN, 6, Prince-street, Leicester-square, London.

**SHED-ROOFERS, FIGURE FRAMES, and CABINET MAKERS** can be provided with flattened Crown, flattened Sheet, and the patent Sheet Plate, Lists of which, showing the price for any Square, from 14 by 12 to 40 by 30 of Best and second quality, will be sent (gratis) upon receiving the address. Builders, Glaziers, and others having to Contract, sending a copy of their specifications, with a list of dimensions to R. COGAN, will receive by return of post the lowest prices for all qualities and sizes of Crown, Sheet, and Sheet Plate, &c. Glazing estimated for, if required.

**NURSERYMEN, MARKET GARDENERS, and OTHERS** requiring Small Glasses, will find a great variety of sizes in a large Stock of which is constantly on hand (than is kept by any other House in London).

**COMMON SHEET and CYLINDER.** The advantages of common Sheet Glass over Crown for Glazing are decidedly greater, and is generally used where strength or superior appearance is required; a light 6 feet 6 in. long, with openings of any width, needs only one lap. This Glass is considerably stouter than Crown, and may be had from 1*s.* 3*d.* per foot.

Also may be had, **COGAN'S PATENT CHIMNEY FOR GAS OR OIL**, which effects a great saving in the consumption, produces a more brilliant light, prevents smoke, and is cheaper than any other Patent Chimney sold.

**LAMP SHADES and GAS GLASSES,** of every description.

**GAS CONTRACTORS, FITTERS, GLASS MERCHANTS** and others supplied with Lists of nearly 100 Patterns, with prices affixed, sent to any part of the Kingdom gratis.

**ARCHITECTS, MODELLERS, and OTHERS**, supplied with FRENCH ORNAMENTAL SHEETS, for covering Models of Public Buildings, Geological Curiosities, &c. &c. of all sizes and shapes. List of Prices may be had on application.

French Table Flowers, China Vases, Fancy Glass Ware, &c. &c. of all the latest Figures in every variety.

R. C. having just completed his Show Rooms for the above articles, begs to invite the inspection of the Public. A liberal Discount to Bazaar keepers and others.



## NOTICE.

We must ask the indulgence of our readers for postponing this week the *Cyclopædia of the New Building-Act*, which arises from the indisposition of its author.

# The Builder.

NO. XC.

SATURDAY, OCTOBER 26, 1844.

**A**MONG the many subjects which have occupied our thoughts, but which time and space have not permitted us to follow during the present year, is that of fire-proof construction: we can, indeed, hardly undertake to go into the matter before next year, but we publish the following letter, which we have received upon that which is not merely an important branch of architecture, but which is, indeed, legitimate architecture itself.

SIR,—The other day, in looking over some of the former numbers of *THE BUILDER*, I observed in No. 30 your leading article was upon "Fire-proof Buildings;" since that time I believe very little notice has been taken of that important subject in your journal; now, Sir, will you allow me to suggest that I think you would be conferring a great favour upon the building community at large, if you would become the vehicle by which some one of your numerous correspondents who would not think it too much trouble would send correct plans and sections, likewise a detailed account, of any fire-proof building at present existing; or if that should be considered inconvenient, probably some talented individual might be found kind enough to forward you a plan of his own on this most important, and at the same time badly understood subject.

If your own views of the case should at all correspond with the ideas of your humble petitioner, and this letter be deemed sufficient for the furthering of this good cause, please to give publicity to it.

A sincere well-wisher,  
Union-street, Borough, G. M.  
October 16th, 1844.

Some approaches are indeed being made towards fire-proof construction in various places, and some buildings have been executed, the construction of which has been guided by that intention; but, on the whole, as little has been done to render our buildings permanent against the ravages of fire, as against those of moisture and frost.

The roofs of the Houses of Parliament are being formed of metal instead of wood, and the country may be congratulated upon this circumstance, and may bless the wisdom which directed such a precaution; but the Royal Exchange, relative to which such daily panegyrics appear, and which has repeatedly been declared to be fire-proof, is no more so than a tar-barrel, or a gunpowder firkin; and the huge masses of timber in its roofs and floorings would, in a single night, repeat the havoc which destroyed its predecessor; the very ceiling of the merchants' piazza, about the painting of which the public has heard so

much, will, most probably within a hundred years, "try by fire," and overthrow in a few hours every pier around its court, as ignition played at skittles with the columns around the court of the former Exchange and won the game, leaving none standing before the bowls of flame which she rolled at them; hither and thither were they all staggered, as easily as the strong man overthrew the pillars, and as in that moment came down the house of Dagon, as easily was the merchants' house of pride reduced to atoms and fragments of disjointed stones.

This part of the error might have been avoided simply by the effect of a little correct architectural feeling; if, instead of in making only the paltry flat plaster ceiling (which will be bacon-dried in ten years, and which is a species of external decoration wholly unsuited to the climate of England, and to the carbonized atmosphere of her cities), the same expense had been incurred in honourably covering the piazza with legitimate, scientific, architectural, fire-proof vaulting, bearing its own ornaments, in solid form, as all true external architecture in England must; and surviving time, accident, neglect, and violence.

Those who have managed the erection of this building, it will be found, have travelled almost as widely as possible from caution.

F. B.

## NEW METROPOLITAN BUILDING-ACT.

REPORT OF A COMMITTEE APPOINTED BY THE GENERAL SESSION OF THE PEACE, AUGUST 15, 1844.

1. To examine and consider into what districts the new portion of an area pointed out by the Act within the jurisdiction of the court might be conveniently divided, and whether any, and what, alterations might be expedient in the districts subsisting and appointed under the former Building-Act; and to communicate with the Home Office, and all other authorities, on the subject, at their discretion, and report thereon to the Court, who might then consider such matter and report—and forthwith determine thereon. And,
2. To revise the present standing orders of the Court as to District Surveyors, and to consider what arrangements might be most conveniently made for obtaining the consents required by the Act from the Home Office; and to submit such revised rules to the Court, at their next meeting, for consideration and for adoption, if approved by the Court.

The committee so appointed perceived—

1. That the new Act, as to the districts and officers to be appointed in pursuance thereof, was to come into operation on September 1; and, as to buildings and other matters, on January 1, 1845. (S. 1.)
2. That (s. 3.) the operation in regard to localities was to be extended beyond the boundaries of the former Act (limited to the bills of mortality and the parishes of St. Marylebone, St. Pancras, and St. Luke, Chelsea) to an area including all places lying on the north side or left bank of the river Thames, within the exterior boundaries of the parishes of Fulham, Hammersmith, Kensington, Paddington, Hampstead, Hornsey, Tottenham, St. Pancras, Islington, Stoke Newington, Hackney, Stratford-le-Bow, Bromley, Poplar, and Shadwell; and to all such part of the parish of Chelsea as lies north of the parish of Kensington; and to all places lying within 200 yards from the exterior boundary of the district thereby defined, except the eastern part of the boundary bounded by the river Lea: so that the enlarged area would extend to the parishes of

Fulham, Hornsey,  
Hammersmith, Tottenham,  
Kensington, Stoke Newington, and  
Hampstead, Bromley,  
not being included in the former Act, and as to which, therefore, no districts or district surveyors had been heretofore appointed.

3. That it should be lawful for the justices of the peace for this county and the city and liberties of Westminster, at their General Quarter Sessions, respectively, or any adjourn-

ment thereof, with reference to their county and city and liberties, and they are thereby empowered, but subject nevertheless to the consent of one of her Majesty's Secretaries of State, to appoint the districts to which the respective places within their jurisdiction should belong for the purposes of this Act; and to unite, enlarge, and alter such districts for the more convenient distribution of the business. (S. 64.) And that it should be lawful for the said justices, in their General Quarter Sessions respectively, or any adjournment thereof, with reference to their respective counties, and they are required, but subject nevertheless to the consent of one of her Majesty's principal Secretaries of State, to nominate and appoint as surveyors such and so many discreet persons, of the full age of thirty years, and properly educated and skilled in the art and practice of building, as the said justices should think fit. But that the present surveyors (s. 70) should be continued in office; and that all surveyors thereafter appointed should be subject to a previous examination as to their practical qualifications by a Board of Examiners nominated by the Commissioners of Woods and Forests (s. 66), and should produce to the clerk of the peace a certificate of qualification from such Board of Examiners one week before an election of any such surveyor. And that every surveyor hereafter appointed should make a declaration of official fidelity, to be administered by the justices in their General Quarter Sessions, before any such surveyor should be competent to act.

4. That, in case of any vacancy by death or removal, the justices should, within one month, at their General Quarter Sessions, or an adjournment thereof, appoint a successor (s. 74); and that in the meantime the official referees appointed under the Act might appoint a competent person to perform the duties of the vacant district; and that such official referees (s. 75) may also represent to the justices any opinion they may form that a district is too extensive for any surveyor, and may appoint a competent person to assist any surveyor who cannot promptly and efficiently discharge the duties of his office. And,

5. That an appellate jurisdiction (s. 57) is given to the justices for the county of Middlesex and for the city and liberties of Westminster, at their Quarter Sessions respectively, as to certain convictions affecting nuisances situate within their respective county or city and liberties.

To these provisions of the new Metropolitan Building-Act your Committee have referred, that their proceedings and opinions may be rendered more generally intelligible to the Court. And they would therefore also state, that some difficulties were presented by the provisions of "The New Act (7 & 8 Vict. c. 71) for the better Administration of Criminal Justice in Middlesex," and which passed three days before the former-mentioned Act. These difficulties were, that, by the 11th section of the Middlesex Act, it is provided that Sessions of the Peace in and for the city and liberty of Westminster should cease to be holden, and the Sessions to be held in and for the county of Middlesex, mentioned in the 2nd section, should be holden by adjournment within the said city and liberty, and should have full jurisdiction over all things cognisable by the Sessions for the said city and liberty; while, by the 57th section of the Metropolitan Building-Act (and which passed after the Middlesex Act), appeals as to premises in the city and liberties of Westminster are to be heard at the Quarter Sessions thereof; and, by the 64th section, the justices for the city and liberties of Westminster, at their General Quarter Sessions, or any adjournment thereof, are to appoint the districts to which the places in that jurisdiction should belong, and unite, enlarge, and vary the same, and, by the 65th section, are to nominate and appoint the district surveyors—and which occasioned doubts as to the course which the Middlesex magistrates might hereafter take as to the places within the city and liberties of Westminster, and the appointment of surveyors for those places. But as, with respect to those doubts, your Committee have been favoured with the opinion of *The Registrar of Buildings* under the Metropolitan Building-Act, and of the legal adviser of the Commissioners of Woods and Forests, "That the magistrates for Middlesex sitting by adjournment at Westminster



would have all powers as to appeals, districts, and the appointment of surveyors in and for the city and liberties of Westminster which the Sessions for Westminster might have exercised had not their Sessions been discontinued by the 11th section of the Middlesex Act;" and as no practical question need at present arise on that matter, since no variations, or new districts, or appointments of new surveyors are immediately occurring in the city or liberties of Westminster, your Committee proceed to advert successively to the following topics referred to them by the Court:—being

1. The existing districts under the former Building-Act, and the propriety of variations in them.

2. The districts into which the new enlarged area, within the county of Middlesex, should be distributed.

3. The measures to be now taken by the Court for carrying the Act into effect. And,

4. The standing orders as to district surveyors which it might be expedient for the Court forthwith to adopt.

As to all these subjects your Committee may generally state, that, dependent as all their recommendations must eventually be on the opinions and concurrence of the high official authorities invested by the Act with a controlling power, they deemed it expedient, after collecting needful information from all accessible sources, to communicate with the Right Honourable the Earl of Lincoln, and, by his suggestion, with the official referees and the Registrar of Buildings; and that your Committee, acknowledging the most prompt and courteous attention from them, have the satisfaction to apprise the Court that they have reason to believe that their suggestions are perfectly approved, and that no difficulties in the way of the accomplishment will arise.

*As to the First Topic, or the Existing Districts.*—Your Committee present you a statement, which, from official returns and parliamentary papers, they have been able to prepare, and which will supply information that it will obviously be desirable to possess and preserve.

#### EXISTING DISTRICTS.

MIDDLESEX AND WESTMINSTER.—NOT AT PRESENT TO BE VARIED.

DISTRICT.	Surveyor, and Date of Appointment.	Number of Houses.	Income in 1842.	Whether Emoluments be in a declining, stationary, or progressive State.
St. Mary, Stratford-le-Bow.....	{ J. H. Good, November 1, 1838 }	4,285	£ s. d. 235 14 0	Declining.
All Saints, Poplar.....	{ Henry Flower, November 10, 1836 }	about 7,000	210 17 0	Progressive.
St. George-in-the-East.....	{ Edmund Woodthorpe, July 11, 1839 }	3,447	112 11 0	Declining.
St. Botolph without Aldgate.....	{ John Davies, July 11, 1839 }	8,200	363 14 0	Progressive.
St. John, Wapping.....	{ Thomas H. Wyatt, April 12, 1832 }	7,294	372 15 9	Progressive.
St. Anne, Limehouse.....	{ Edward N. Clifton, April 13, 1844 }	13,500	122 5 2	{ Declining, but probably will improve.
St. Catherine Ratcliff.....	{ Charles Hamor Hill, January 16, 1817 }	6,253	53 5 0	Declining.
Mile-End, Old Town.....	{ William Grellier, November 1, 1838 }	4,661	108 18 0	Declining.
St. John, Hackney.....	{ Matthew Wharton, July 15, 1802 }	14,409	541 18 6	Declining.
St. Matthew, Bethnal-green.....	{ Rich. C. Carpenter, April 4, 1837 }	6,608	83 1 0	Stationary.
Mile-End, New Town.....	{ George Edwards, July 15, 1802 }	8,750	556 0 0	Progressive.
Christ Church and Shadwell.....	{ Robert Sibley, April 16, 1829 }	7,000	276 11 0	Declining.
Whitechapel.....	{ Samuel Angell, April 14, 1831 }	1,491	69 1 0	Stationary.
St. Leonard, Shoreditch.....	{ George Legge, January 18, 1844 }	2,943	44 0 0	Declining.
Norton Folgate.....	{ George Pownall, January 16, 1840 }	4,557	160 15 0	Declining.
St. Luke's, Old-street.....	{ Henry Baker, July 7, 1825 }	15,000	1,104 0 0	Progressive.
Glass-house-yard.....	{ John White, July 2, 1807 }	14,280	943 6 0	Progressive.
St. Mary, Islington, and St. Sepulchre Without.....	{ George Gutch, May 12, 1825 }	3,746	752 17 0	Progressive.
Clerkenwell.....	{ Samuel Becheroff, May 12, 1825 }	about 6,000	363 7 6	Progressive.
Saffron-hill Liberty.....	{ William Pilkington, July 1, 1784 }	5,618	168 15 0	Declining.
St. Clement Danes.....	{ Henry Ed. Kendall, April 15, 1823 }	3,993	170 4 0	Stationary.
St. Mary-le-Strand, and The Savoy.....	{ Edward M. Foxhall, November 3, 1827 }	7,567	{ Average 650 0 0 }	
St. George the Martyr.....	{ James Gray Mayhew, November 1, 1823 }	3,774	172 10 0	Declining.
St. Andrew, Holborn, above Bars.....	{ Edward C. Hakewell, January, 1843 }	1,823	{ In 1838 it was stated to average 100 0 0 }	
Liberty of the Rolls.....				
St. Giles-in-the-Fields.....				
St. George, Bloomsbury.....				
St. Pancras.....				
St. Mary-le-Bone.....				
Paddington.....				
St. Luke, Chelsea.....				
St. Margaret and St. John, Westminster.....				
St. Martin-in-the-Fields.....				
St. Anne, Westminster.....				
St. George, Hanover-square.....				
St. James.....				
St. Paul, Covent-garden.....				
St. Clement Danes, and St. Mary-le-Strand, Westminster.....				

With respect to these districts, your Committee, after much and anxious inquiry and consideration, cannot recommend any immediate alteration. No public convenience would result adequate to the individual injury that would be inflicted by a diminution of emoluments and districts on the present surveyors—who by the Act are continued; and especially as the provisions of the Act which enable the official referees to appoint assistants where needful will induce punctuality and exertion, and careful fulfilment of duty by the present surveyors; while the increased powers of the Court to fine or dismiss surveyors will also secure all parties affected by their conduct from any causes for well-founded complaint.

But though your Committee do not advise any immediate interference in the subsisting districts, they would unhesitatingly suggest the following alterations as vacancies occur by removal or death.

To divide each of the under-named parishes into two districts, viz. Islington, St. Mary-le-bone, Paddington, St. Pancras.

To separate the parish of St. Sepulchre Without from Islington, and add it to the district of Saffron-hill Liberty, St. Clement Danes, St. Mary-le-Strand, and the Savoy. And

To separate the parish of Shadwell from Spitalfields and Mile-End New Town, and add it to the district of St. Catharine's, Wapping, Ratcliff, and Limehouse.

The extent of the four parishes enumerated, and the information collected respecting them, induce your Committee to recommend the division of each of them into two districts, the limits of which can be determined by the Court when a vacancy shall occur; and as Clerkenwell intervenes between Islington and St. Sepulchre Without, and Whitechapel and St. George's-in-the-East between Spitalfields and Mile-End New Town and Shadwell, your Committee presume that the propriety of the alteration proposed can admit of no doubt.

*As to the Second Topic, or the New Districts Proposed.*—Your Committee feel sanctioned by the universal concurrence of those who have long and professionally considered the subject, and submit to the Court the adoption of the parochial system, or the establishment of each parish into a separate district, as most intelligible and generally convenient. In the case of Kensington only would they deviate from that practice; and the peculiar localities of that extended parish, now rapidly increasing on the northern and southern extremities, and which may readily be divided into north and south districts by the Great Western-road, thus effecting a nearly equal division with regard to the actual duties and prospective improvements, your Committee trust will induce the Court to approve that deviation from the general rule. And for their information as to the new districts they would introduce a table, which careful investigation has enabled them to supply.

#### PROPOSED NEW DISTRICTS.

*All on the Parochial System, except as to Kensington; that to be divided by the Great Western-road into two districts—North and South Kensington.*

Names of Districts.	Number of Houses.	As to probable Increase of Buildings.
Fulham.....	600	About thirty houses now in progress of building.
Hammersmith.....	2563	There will be a greater number of houses erected in the three next years than there were in the three last years.
Kensington { North ton... (South	1543 2601	The number of houses will be increased very considerably in both districts, and especially in the North.
Hampstead.....	1434	There will shortly be an increase in the number of houses.
Hornsey.....	924	On the Eastern side, near Newington-green, new houses are likely to increase; as to the other parts of the parish, there is no probability that buildings will much increase, which may arise from the property being copyhold.
Tottenham.....	1519	There is a quantity of ground to let on building leases in eligible situations.
Stoke Newington.	705	The number of new houses likely to be built may be fairly averaged by those of the three last years, which have averaged ten a year; but, though that district appears small, there are four candidates for that appointment.
Bromley.....	1185	The new houses likely to be built by this time next year, including those now building, may amount to 200.

Kensington should comprehend that part of Chelsea which is north of Kensington; also, a portion of St. Margaret, Westminster, which is detached from that parish, and nearly surrounded by Kensington.

Hornsey should comprehend an outlying portion of Clerkenwell at Muswell-hill, and abutting on the Coney-batch-road.

And all, according to the Act, to include all places attached to each district lying within 500 yards of the exterior boundary of the whole area pointed out in the Metropolitan Building-Act.

*As to the Third Topic, or the Measures to be now taken by the Court for carrying the Act into effect.*—Your Committee would suggest, that, on the county day of the present Quarter Sessions (October 17), the Court may appoint the new districts before enumerated, and also order that the election of a surveyor to each of such districts shall take place on November the 28th, being the county day of the Middlesex General Sessions of the Peace, and which, as being the second Sessions in November (under sect. 2 of the Middlesex Act), would have the power of Quarter Sessions, at which surveyors are to be appointed. Your Committee presume that it will be understood that all the elections will take place on that day, and that all the justices may vote for each district separately, and for any qualified person who shall have conformed to the rules of the Court, and who shall have declared himself a candidate for such separate district. By the adoption of such course, the districts



will be all established, the surveyors to each will be nominated, and the Act may, as provided, come into full operation on the first day of the ensuing year.

*As to the Fourth Topic, or the Revised Standing Orders as to Districts and District Surveyors.*—They would—1. Declare the old and new districts, as mentioned in the report of the Committee.

2. Approve the alterations suggested in Islington, Marylebone, Paddington, Pancras, St. Sepulchre, and Shadwell, when vacancies occur.

3. Order, that as to the election of new and future district surveyors, no person be admitted a candidate unless duly qualified under the New Metropolitan Building-Act (7 & 8 Vict. c. 84), nor who shall be a builder, or engaged directly or indirectly in building in any department, or who shall be a dealer in building materials, or shall be surveyor or agent to any estate within the district for which he may be a candidate.

4. That, ten days before the day appointed for the election of any district surveyor, every person proposing to become a candidate shall personally attend before the Committee for General Purposes, and produce satisfactory evidence that he is of the full age of thirty years, and also a certificate from the Board of Examiners, appointed under the Act, of their approval, and such other evidence of qualification as the Committee may require, and then be authorized by the Committee to be admitted as a candidate.

5. That the Committee forthwith transmit to her Majesty's Secretary of State for the Home Department a list of all persons admitted as candidates, with duplicates of any necessary documents presented to the committee, so as to facilitate the obtaining the concurrence of the Secretary of State in the election of any candidate, and his making the declaration before the Court required by the Act.

6. That the names of all the candidates so admitted as qualified by the Committee for General Purposes be transmitted to the justices of the peace for the county three days, at the least, previous to the election; and that the election for such admitted candidates do take place at the appointed Court day in the usual manner.

7. That all surveyors appointed shall hold their appointments only during the pleasure of the Court, and subject to the provisions of the Act, and to such alterations in their respective districts as the Court may order from time to time.

8. That no surveyor appointed by this Court shall at any time be directly or indirectly concerned in building in any department, nor shall deal in any building materials, nor act as surveyor or agent of any estate within his district; and that any person so offending shall thereupon become disqualified for his office of district surveyor; and that such office shall be forthwith vacant by the Court, and a successor appointed as in case of death.

9. That every surveyor to any district appointed by this Court shall from time to time, within seven days after the first day of every month, deliver to the clerk of the peace, signed by him, a duplicate of the return by the 78th section of the Act required to be made by him to the registrar of metropolitan buildings; and that the same shall be duly filed and preserved by the clerk of the peace for this county.

10. That, as the Court are required to appoint a successor within one month after a vacancy shall occur by the death or removal of a surveyor, the clerk of the peace shall, unless as to districts in which a notice shall be given of an intention to alter such district, forthwith advertise such vacancy in four morning and two evening papers, and give notice that the election of a qualified successor will take place at the next practicable county day after such notice shall be given; and that all candidates must obtain the certificate of the Board of Examiners, and attend personally ten days before the time of such election before the Committee for General Purposes, who shall adopt the appointed proceedings thereupon.

11. That on the Court days of the Easter and Michaelmas Quarter Sessions the clerk of the peace shall present and read to the Court the lists of all the district surveyors, and of their respective residences, and of their offices within their districts, as approved from time to time by the Court; and that such list shall be

so periodically printed and transmitted to the magistrates for the county.

On these provisions your Committee will not dilate. They believe that they are suggested by experience, and that they will be practically serviceable. They know that they will meet the wishes of official persons, with whom it is desirable to co-operate when no principles or paramount duties forbid co-operation; and they are assured that they will facilitate that acquiescence in the acts and appointments by the Court which it is expedient to promote. And whilst upon that matter and the other subjects of their report, they offer their assurances, that they have devoted much laborious attention to the duty entrusted to their fulfilment, they will feel abundantly compensated if their labours should prove useful, and if their suggestions should be generally honoured by the approval and concurrence of the Court.

JOHN WILKS, Chairman.

October 7th, 1844.

[This report was received on the 17th inst., and was ordered to be adopted.]

#### KING WILLIAM THE FOURTH'S STATUE IN THE CITY.

It is generally expected that the city authorities will fix upon Monday next for the inauguration of this statue. The pedestal is completed; it stands about thirty feet high, and is composed of granite obtained from the Foggin Tor Quarry. Round the base of the pedestal the stone is chiseled out in the form of a high cable, midway there is a sunk scroll, and at the summit oak leaves. The colossal figure is sculptured out of the same granite.

#### METHODS OF PAINTING ADAPTED TO MURAL DECORATION.

BY C. L. EASTLAKE, ESQ.,

Secretary to the Royal Commission on the Fine Arts.

[THE great interest which has been felt relative to the decorations of the Houses of Parliament, induces us to lay before our readers the following valuable paper on the subject, written by one who is pre-eminently qualified for the task, and in which the various processes adopted by the ancients as well as by the moderns are fully detailed. Those who desire still further information respecting its capabilities and prospects, particularly in a cold and damp climate like our own, will find an elaborate article thereon in the current number of the *Quarterly Review*.]

Four modes of painting adapted for walls have been employed in ancient and modern times: Tempera, Encaustic, Fresco, and Oil-painting. The first three were known to the ancients; the fourth method, invented by the moderns and originally applied to moveable works, has been also employed in mural decoration.

Tempera is so commonly practised that it can hardly be necessary to enter into a minute description of its process. It has, however, an interest from its antiquity, and from its having been more generally in use in Italy than any other method, immediately before the introduction of oil-painting. This circumstance and certain difficulties in its practice appear, in some cases, to have led to a union of the two methods. Tempera is applicable to the surface of smooth, dry stucco, or to any similar levigated ground which has either been incorporated or covered with a due proportion of size or glue. It does not, like fresco, necessarily require to be executed at once, and admits of the use of all colours which are not prejudicial to each other. White lead is, however, excluded, because, being unprotected in tempera from the action of certain gases, it soon loses its brightness. The white used is principally *gesso marcio*,\* that which white earths are sometimes added. The binding vehicle may be formed of animal

glutens, such as size, yolk of egg,\* &c., or a viscous fluids and gums procured from the vegetable world, such as the milky juice of certain trees and plants, solutions of gum-Arabic, gum-tragacanth, &c.

The practice of tempera-painting may be said to be carried to perfection in modern scene-painting, in which imitation is chiefly confined to large effects. But in this application of the art the difficulty of blending tints to the extent required in figure-painting, so as to equal the completeness and finish of oil-painting, is not encountered. The thinness of the vehicle and the almost immediate change of the tints in passing from the wet to the dry state renders a certain abruptness of execution unavoidable. This peculiarity is compatible with great truth of imitation when the work is seen at a sufficient distance, and the crispness of execution which is the result, is, with the moderns, the characteristic of tempera.

The early Italian masters, when they painted altar-pieces in this method on cloth, endeavoured to attain the requisite finish by continually damping the back of the painting. This enabled them to complete a given portion while in a wet state, and to give it any degree of softness that was desired. But this was only applicable to pictures executed on a thin and porous substance; tempera pictures on wood or on walls, in which finish is aimed at, cannot be so treated without some modification of the vehicle, or by continually moistening the surface in front. Some of the early Florentines and painters of the neighbouring schools adopted a more laborious method, but less satisfactory in its result. They attained the completeness they sought by minute hatchings. A tempera picture in the National Gallery, attributed to Perugino, is a specimen of this laboured process.

The varieties of practice in the early examples of tempera are also partly to be attributed to the varieties of the vehicle. The Greek illuminations in MSS. immediately preceding the 13th century, are generally painted in tempera with a very thick vehicle; and this system was adopted by the Italians, even for paintings of a much larger size, up to the time of Giotto. He appears to have been the first to introduce a thinner medium. In his works, while the tints are blended, the minute handling, which is almost unavoidable with the older practice, is not apparent. The thinner vehicle was composed of yolk of egg diluted with water, and combined with the milky juice of shoots of the fig-tree. It may seem extraordinary that this last material should have been detected by chemical analysis in an early Florentine picture; the result was, however, verified by the analysis of the milky juice of the fig-tree while fresh. A painting executed with this vehicle is not very easily affected by water or by oil; a varnish produces no other change than that of giving additional depth and lustre to the tints, and the colours do not dry so rapidly as in the ordinary practice of tempera. The fact that the more tenacious vehicle, with all its inconvenience, was revived or adhered to without change by other painters much later than Giotto, is not an uncommon instance in the history of art of attachment to habits, however defective, which time may have recommended.

The Italian artists of the 16th century had generally abandoned the practice of tempera as an independent art, and the examples of it are rare, especially when applied to the decoration of walls. An instance occurs at Trascote, near Bergamo, in the private chapel of the Suardi family; the artist was Lorenzo Lotto.

It appears from various passages in the lives of the Flemish painters, that tempera-painting was commonly practised among them. On all occasions of great public festivals, this rapid art was put in requisition, and the tapestries which were executed in such abundance in Artois and Brabant, and which were wrought from cartoons coloured in tempera, had also greatly the effect of encouraging its practice.

\* The Italian writers restrict the term tempera to the vehicle of yolk of egg more or less diluted. The modern practice is to add, by degrees, a small wine-glass of white vinegar to a yolk well beaten.

† The Italian tempera vehicle, in which gums are the chief ingredients, is prepared as follows: take one ounce of gum-tragacanth, half an ounce of gum-Arabic, one ounce of parchment shavings (of white goat-skin), half an ounce of isinglass, boil in two quarts of water till the fluid is reduced to half its bulk. Before it is quite cold, add half a pint of spirits of wine, stirring well.

\* Plaster of Paris stirred with much water till it loses the power of setting. In the early Florentine descriptions of the process of tempera, white lead is mentioned; this is a proof that paintings so executed must have been subsequently varnished, and accordingly the early Italian works in tempera are always found to have been so treated. See *Centini, Trattato*, &c., p. 70.



The schools of tempera-painting were to the Flemish artists what the *Feria*, or market of Seville, was to Murillo and his contemporaries. For (though the latter uniformly painted in oil) such demands had the effect of promoting facility of execution and a large style of imitation, the influence of which may be traced in the more complete works of the respective schools, different as their tendency was in other respects. The rage for temporary decorations in the cities of Flanders, to do honour to distinguished individuals, had the additional effect of promoting a taste for allegory. The most extravagant combinations and allusions were excused in ephemeral productions, till by degrees the public were accustomed to such inventions; and the greatest artists, aware of the value of such materials as conducing to picturesque effect, ventured to introduce them in more permanent works, and recommended them by their talents.

The vehicles employed in tempera were sufficient to bind it when the colours were used in moderate thickness, but the danger of cracking prevented the application in much body. When, therefore, pictures in tempera appear to be executed with unusual substance, it may be suspected that other ingredients were added so as to give it sufficient tenacity, by which means it held a middle place between water-colour and oil-painting; the rapid drying which precluded the possibility of giving the work the requisite softness and completeness, was at the same time prevented. The colours prepared for painting in this method may be mixed either with water or oil.

There is every appearance in some unfinished pictures of the Venetian and other schools of the north of Italy that the tempera adopted by them was of this description, and it is also apparent, from such pictures, that the method was sometimes employed as a preparation for oil-painting. Various modes of this kind may be considered and described in an inquiry into the early process of oil-painting; but less too much importance should be attached to such preparations in tempera, it may be remembered that the practice of Rubens, Vanduyke, and Rembrandt, supposes no such system.

The tempera-painting of the ancients (although from passages in their writers evidently a distinct art from encaustic) appears to have been protected by a coat of wax, and thus may not be easily distinguished, in actual remains, from encaustic painting. But it is probable that in every case where a finished tempera painting was thus varnished, the surface was first covered with some glutinous application before the liquid wax was added. Without this precaution, the mutual relation or *keeping* of the tints would be in danger of being altered. Other methods of protecting tempera, so as to render it washable, have been discovered by modern chemists.

The ancient Egyptian paintings were executed on a stucco consolidated with an animal gluten, probably the serous portion of blood. On this was a thin coat of wax, and on this again the paintings were executed with the same vehicle of serum. The stucco of the Greeks was sometimes consolidated with thick milk, their tempera vehicle appears to have been gum-tragacanth (*Sarcocolla*), size, yolk and white of egg, &c.

In encaustic painting, wax was an ingredient from first to last. The precise process of this art among the ancients has been the subject of much controversy, but the actual remains of antique painting at Pompeii and Herculaneum, as well as numerous allusions in the writings of the ancients, prove that it was common among the Greeks and Romans. It was also occasionally employed during the middle ages, and it is even asserted that it is still practised, however rudely, by Greek painters of the present day.

The inquiries and experiments hitherto undertaken, seem to prove that two methods are practicable. In one, the wax is dissolved by a lixivium, and is then worked with water. In the other, it is mixed with a resin dissolved in spirit. In the first process a final coat of wax is essential to protect the painting. In the other method this varnish may or may not be used.

In the ancient encaustic, whatever were the ingredients, heat (as the term encaustic implies) was employed either during or after the process of painting. In the attempted revival

of this art, in the last century, the application of heat was also considered indispensable. The method practised was to apply a *cauterium*—a portable furnace, hot iron, or any similar instrument, so as gently to melt the coating of wax spread over the finished painting. The heat was sufficient at the same time to affect the wax incorporated with the colours, and thus a union was produced throughout the mass. If afterwards rubbed with a cloth the surface acquired a slight polish.

In the other process which, in its improved state, is more modern, heat is considered unnecessary, and the art is therefore properly called wax-painting, not encaustic-painting. The application of heat might still serve to consolidate and give transparency to an external coat of pure wax, but the presence of resinous substances in the vehicle, and with the colours, is supposed to render such application superfluous as regards the consolidation of the painting itself.

The solution of wax by means of alkaline lixivra was probably not unknown to the ancients. This was the method of Bachelier, Walter, Requeno, and others, but the specimens executed according to their system have not been considered successful as regards durability.\* The following communication from Mr. King, of Bristol, may be considered an improvement on the process in question.

"The conversion of wax into a substance soluble in water is effected by the vegetable alkali, known by the name of potash, being combined with tartaric acid. This is the *Sale di Tartaro* of the Italians, and is sold by all chemists and druggists in this country under the proper name tartrate of potash, and more commonly salt of tartar or soluble tartar. When the acid predominates, it is called supertartrate of potash, or cream of tartar. This is the best substance to be employed in my process, and in the following manner:—An indefinite quantity, say half a pound, of this salt being placed upon an iron shovel and exposed to the action of fire, becomes a black substance resembling coal, a sort of slag. It is to be thrown while hot into a vessel holding about six quarts of pure water, that is, filtered rain-water or distilled water. Shortly after it is quenched, it is to be ascertained that the fluid is saturated with the alkali by its taste, or better, by its effect upon the colour of test paper.

"No quantity of water can hold more alkali in solution than that which is sufficient to saturate the water at the same temperature. The undissolved portion is separated by filtering, and the residue will serve to saturate another quantity of water. By filtering, the saturated fluid is sufficiently freed from the dark colour which was caused by the burnt alkali. This saturated fluid is called a lixivium, and in it the purified wax is to be boiled until it is converted into soluble soap, and wholly dissolved so as not to separate from the fluid when cooled. According to the proportion of the quantity of wax to that of the water, the fluid will appear like milk when the proportion of wax is small, like cream or butter when it is greater; and even of the consistence of soft cheese when the wax is in excess. The consistence of cream is best suited for grinding the medium with more or less finely pulverized dry pigment body colours, such as ochres, raw or burnt terra sienna, raw and burnt umber, Cobalt, smalt, light red, red and white and black chalk, stone coal or anthracite, &c., answer best for dead colouring, and become brighter in the subsequent fusion and fixing by the use of the cauterium.

"Metallic colours, which are artificial oxides of metals, like vermilion or cinnabar, which is a sulphuret of mercury, red and white lead, chrome yellow, and others, are differently affected in the burning in, and the changes which they undergo are to be ascertained by previous trials. The latter class of pigments are more adapted to the finishing of pictures. Pigments of a vegetable nature, such as lakes, madders, &c. are altogether to be avoided, or very sparingly used, and not at all in masses. The connection of the medium (soluble wax), by grinding it with every pigment, is best performed in stone or earthenware (Wedgwood's) mortars and with pestles of the same materials,

and the colours thus prepared are to be kept for immediate use in glasses or common gallipots. Instead of a wooden palette, a plate-glass or stone slab is required for large masses, and a spatula of hard wood or horn.

"The surface to be painted on must be a solid dry coat of stucco ground with a mixture of such colours as will give a suitable tone of colour and depth. The first coat or ground is to be fixed by the *cauterium* with a moderate degree of fusion. The subject may be sketched on this ground with chalk or charcoal; and precise outlines, especially of minute forms, can be traced or sketched in with a metallic point or etching needle. The *cauterium* or salamander is not to be used again until the whole surface is covered and the effect advanced to a certain degree. It is clear that the manipulation of these materials, differing greatly from painting in oil, will succeed more readily in the hands of an artist who has had some practice in fresco or in distemper; and as the surface is in most cases perpendicular, some care is required to prevent the colour from running down.

"When the inustion by the *cauterium* is finished, and the whole surface of the picture cooled, it may be polished by friction with cloth or hard cushions, covered with some more or less rough texture, or with some of the implements used in polishing wood."\*

Those who recommend in preference the solution of wax in spirit, and the addition of resins, do not profess to have discovered the precise process of the Greeks, but they have not failed to remark that the ancient writers speak of resins as entering into the ingredients of painting.

The credit of having suggested the present systems of wax-painting, which are adopted with various modifications at Paris and Munich, is generally attributed to Montabert, who, in the eighth volume of his comprehensive "*Traité complet de la Peinture*," extols this art above that of oil-painting. In consequence of the difficulty of reviving the study of fresco-painting in France, the attention of many artists and chemists has been turned to the employment of wax-painting, and various churches and public buildings in Paris have been already decorated in this mode. In Munich, also, considerable works are in progress, executed in a method analogous to that of Montabert.

The advantage of wax as a vehicle is its durability. A wall painted white, partly with wax and partly with oil, exhibits the same tint for some days, but by degrees the oil colour darkens, and after some months the two portions are quite distinct; that which was painted in wax retaining all its brilliancy.

To this advantage is opposed, besides the difficulty of manipulation, the dull effect of dark shadows in pictures executed in wax. This is owing to the semi-opaque nature of the material, and is unavoidable as long as the absence of gloss on the surface is considered indispensable; but the colours become much more vivid after the surface is polished, and the admixture of resin tends to give clearness to the deeper shades.

Some of the French artists have gone farther; they have added a portion of oil to the cero-resinous medium, and by this means attain any degree of richness they please. In this last system the *mat* quality, or absence of gloss, is in a great measure abandoned, and the method is only to be considered a means of lessening the quantity of oil, and consequently of avoiding the danger of a horny and darkened surface.

Some German artists, again, have considered it essential that the resinous ingredient should predominate, and have recommended only a thirtieth part of wax, the rest consisting entirely of liquid resin (balsam).

Wax painting, properly so called, from its not admitting of much force (while its lights are assumed to be unchangeably bright), would suggest a particular style and choice of subjects; and as all colours (according to the French chemists) may be employed in it, it is considered to be particularly fitted for poetical subjects adapted to the lighter kinds of decoration. It is for such purposes that it has been chiefly employed in Munich.

The following is a description of the methods in general use at Paris and at Munich:—

\* Durosiez (Manuel du Peintre à la Cire, Paris, 1844, p. 18) assumes, that the presence of alkalis, such as ammonia and salt of tartar, in the substance of paintings must be especially injurious.

\* Extract of a letter from Mr. John King, chemist, 20, Mall, Clifton, Bristol. Aug. 21, 1842.



A wall which is to be painted in wax (and the same principle is applicable to all mural pictures) should not be quite perpendicular, but should incline inwards, with reference to the room, in its upper part. By this means the work is better seen, and dust is less apt to collect on it. The surface should be levigated; it is then to be thoroughly dried by heat, and lastly to be saturated with the following mixture: 10 parts of white wax, 2 parts of resin, and 40 parts of spirit of turpentine. This liquid is made to penetrate the wall or stucco by means of heat, and the application is repeated till the surface ceases to absorb. Holes or irregularities are to be stopped with a mastic composed of wax, resin, and whiting. Over this preparation a coat or two of wax colour is to be spread as a ground for the painting.

The wax used in painting should be bleached and perfectly free from extraneous matter.\* The resin recommended by Montabert is that called elemi; this, combined with wax and an essential oil, is the vehicle in which the colours are ground, and which serves to work them. The proportions are, 1 part of resin and 4 parts of wax, dissolved over a water-bath in 16 parts of essence of spike-lavender. The colours are ground in this gluten, diluted as may be required during the operation of grinding by the addition of the essence. They are then preserved in glass or earthenware vessels, and if they get hard (which can only happen after a considerable time) they may be dissolved with the essence or ground again, and are always fit for use. Instead of elemi, copal may be used by those who prefer hard resin.

The solution of wax alone is effected by the same essence, and this preparation is available when the artist wishes to increase the proportion of wax. The paste may be thinned with water by grinding it thoroughly with a muller, and gradually adding water to the amount of four times the weight of wax. This is called the milk of wax, and serves as a varnish for pictures executed in the above mode. The solution of elemi or other resins in the essence, without wax, may also be employed when the resinous ingredient is required in greater abundance. To these materials may be added the essential oil of wax (procured from wax by distillation), which evaporates more slowly than that of lavender, and may sometimes be of use in the practice of this art.

A process introduced in Munich by Professor Fernbach is not yet made known, but it is supposed to consist merely in the addition of liquid resin (balsam) to the wax, instead of artificial solutions of hard resinous substances.

The methods more commonly practised in Germany differ but little from the system of Montabert. The following descriptions have been obligingly furnished by the artists:—

"For large paintings it is desirable that the ground should be somewhat rough. In Munich it is prepared as follows:—A mortar composed of three parts of sand and one of lime is spread on the wall. When this is done, the whole surface, white moist, is rubbed with a linen cloth; the result is a granulated ground, like rough paper. For small works, ornaments, &c., the ground requires to be smooth, and in such cases finely-pounded white marble should be mixed with the lime instead of sand; the mortar so composed being then carefully spread and made even.

"The encaustic vehicle is prepared as follows:—To one pound of rectified spirit of turpentine add half a pound of Damara resin and a quarter of a pound of wax. The resin should be pounded to powder, and the wax cut up in small pieces. Both are then to be put into an earthenware or copper vessel, and the spirit of turpentine poured on them. Place the vessel on a moderate charcoal fire, so that the solution may take place slowly. When the ingredients are dissolved, the vehicle is ready for use, and should be kept in a glass bottle well stoppered, to prevent the volatile oil from escaping. Should the mixture become too thick in time, spirit of turpentine may be added. The colours are ground in such a quantity of this vehicle as is necessary to saturate them. If during the grinding the pigment tends to set (dry), spirit of turpentine should be added. For extensive paintings the

colours are kept in glass vessels. For smaller works they may be tied up in bladders, like colours for oil-painting. The same colours which are employed in oil may also be used in encaustic-painting.

"It is essential that the ground on which the painting is to be executed should be quite dry. Then the whole surface to be painted is to be washed over with milk. When this is dry, a ground of encaustic colour is to be spread on the wall, the artist selecting any tone he pleases. This being done, the surface is suffered to dry well, which will require some days, as it is important that the colour should be in no danger of being dissolved by subsequent operations. The artist can then begin to paint.

"In executing ornaments on a coloured ground, the ground must be composed of two or three coats (not too thick), each of which should be allowed to dry separately. The time required for drying varies according to the state of the weather. As soon as the pigment used for the ground is no longer easily dissolved—a degree of hardness which it often attains in the course of a day—the painter may begin to work.

"When the painting, whether consisting of ornaments or other subjects, is finished and sufficiently dry, the whole is to be thinly passed over with the encaustic vehicle applied with a large brush, and after a day or two this varnish is to be heated with a charcoal fire, to such a degree, however, as not to injure the colours. The result is an equal but moderate shine over the whole surface."

Another process, practised at Munich in 1843, may complete this list of recipes:—

To a pound of turpentine (resin), evaporated to dryness by heat, add half a pound of powdered Damara resin, and a quarter of a pound of bleached wax, cut into small pieces. To be heated as before; and, when used, to be diluted, when necessary, with spirit of turpentine.

A mode of cleaning wax paintings is described, together with the materials now used by the French artists, in Durosiez's pamphlet, before quoted.

The following description of the nature and advantages of wax, as adapted for general painting, was submitted to some German chemists by Dr. Roux, and received, among other statements by him, their written sanction:—

"Wax is, in chemical language a combination of cerine and myricine. It is a peculiar organic substance, resembling fat, but yet distinct from it. Wax is unaltered by exposure to air. It neither becomes harder nor softer, and therefore does not contract like the unctuous oils. Exposed to light, it becomes whiter. Grund, in his history of ancient painting, relates that he saw in an Italian church two large wax candles, which had been presented in the year 1445, and which he at first took for snow-white marble pillars. On breaking the surface, he found them equally white internally.

"Colours mixed with wax are entirely saturated by it. Wax and colours form together a more solid, less fusible substance than wax alone. The pigments remain closely united with the wax. No skin appears on the surface of the picture, even when the wax has been mixed in abundance with the colours. An under-painting executed with wax colours, has much more brightness than one executed in oil. A second painting on such a preparation appears bright and clear, on which account a painting in which wax has been used as the vehicle is always brilliant. When an oil-painting at twilight begins to become indistinct to the eye, a wax-painting next it is still clearly visible.

"Wax is dissolved in volatile oil, which is also used with the colours. This volatile oil evaporates in a short time, and assists the drying of the colours.

"Paintings executed with wax colours cannot crack (?), for the under-painting dries quickly from the ground. The ductility and tenacity of the wax prevent its cracking. This method of painting has also the advantage, that the dissolving power of the volatile oil which is used in the after-painting and finishing produces a union of the upper and under layers, by which means the whole coloured substance becomes intimately united."

The statement that wax has no tendency to crack is true as regards the substance itself; but a painting thickly executed in wax, and varnished soon after its completion, would very probably crack. The Germans evade this difficulty, and consider resinous varnishes unnecessary to wax-painting. The French artists do not exclude a final varnish. If such an addition be desirable, it is of more than ordinary importance to select a resinous solution that has little tendency to crack. The Damara varnish of Lucanas, and the excellent varnish of Soehnée (which seems to be analogous to Field's lac-varnish), have this reputation. The latter has also the agreeable quality of being perfectly dry to the touch within a few hours after its application, and of remaining so. It never becomes discoloured. A coat of white paint, having half its surface varnished with this liquid, and the other half with mastic varnish, exhibits a great difference of tint in a short time; the portion varnished with the Soehnée varnish retaining its first appearance unaltered. Its defect is its want of sufficient body; there seems also to be a difficulty in removing it from the surface even of an oil picture. The Damara varnish has the same qualities of not changing colour, and never cracking; it has more body than Soehnée's preparation, but is certainly not so clear.

Sir Humphry Davy, in his analysis of some of the colours of the ancients, found some vitrified substances, and accordingly expressed his conviction that glass frits would be the most durable of coloured materials, if they could be so prepared as to meet the wants of the artist. Dr. Roux is of the same opinion, and suggests that "as a white frit possessed of sufficient opacity is not to be obtained, the oxide of zinc might represent it among the vitrified colours. It is equally unchangeable." To these opinions is to be opposed a practical authority of great weight, who remarks that these colours, when ground to the degree of fineness necessary to render them applicable to painting, become liable to all the chemical changes and affinities of the substances which compose them.

The adaptation of oil painting to walls has generally found less favour with painters than any other method, from the numerous examples of a blackened surface which works so executed present. The process may be less objected to since it has been so ably employed in the Ecole des Beaux Arts at Paris.

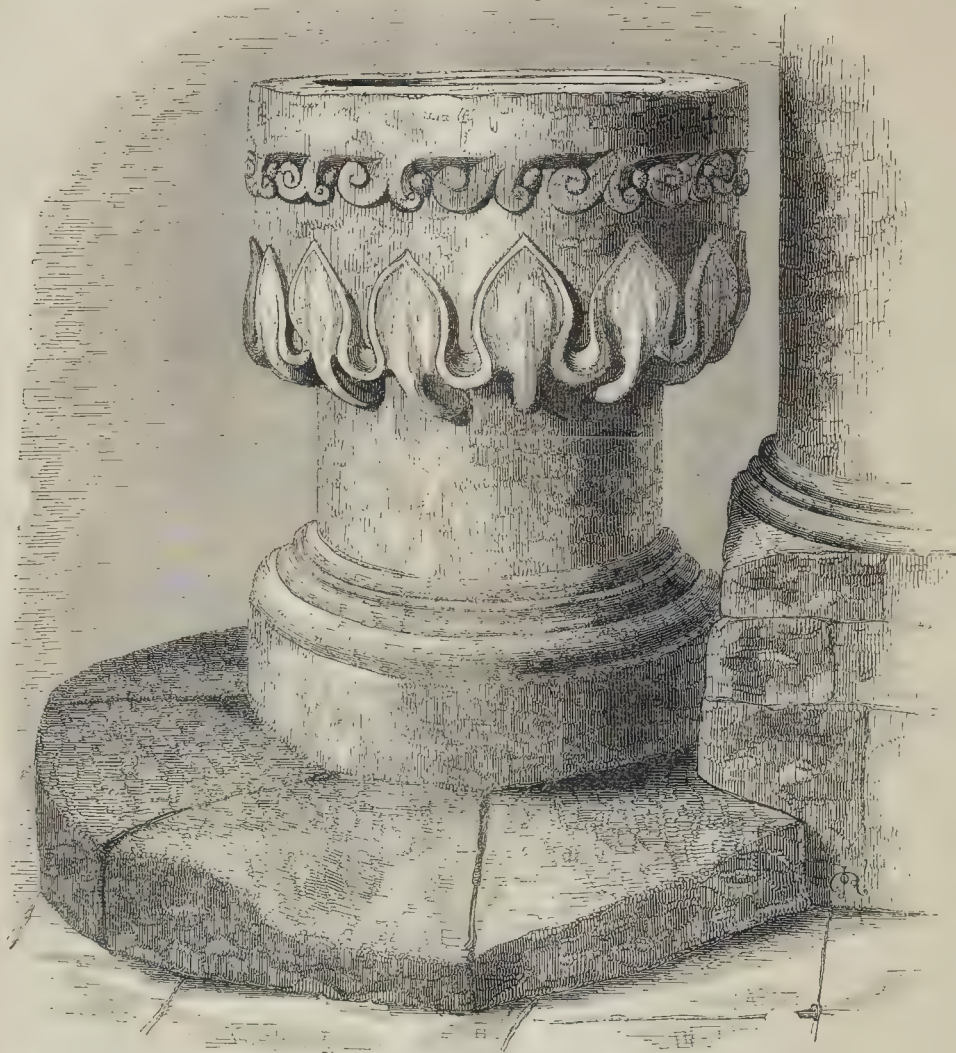
In this mode of painting, as hitherto practised, all absorption from the ground is cut off by the application of the first coat or hydrofuge preparation; it is, therefore, essential that the quantity of oil should be diminished in the under painting. For this purpose the half tempera method, which, it appears, was sometimes employed by the northern Italian schools as a preparation for oil-painting, would be well adapted. But the application of a composition impenetrable to damp is not incompatible with an absorbent ground for the painting itself. Such a ground could be made to bind firmly to the hydrofuge by various means; indeed the same mode which the Italians adopted for panels would quite answer this end. These various methods are, however, so intimately connected with the general question respecting the early practice of oil-painting, that, to avoid repetition, they may be reserved till that inquiry can receive due attention.

A method invented by M. Hussenot, called "Peinture à l'Huile en Feuilles," consists in the preparation of very thin sheets of oil pigment (for example, white lead), which may be rolled like cloth. They may be made of any size, or may be fitted together so as to exhibit no joining. A sheet of paint, so prepared, is fastened in a temporary manner on a panel, or on cloth attached to a stretching-frame, and the artist completes his picture. When dry it is rolled up, carried to the place for which it is destined, and permanently fixed to the wall, being then made to adhere throughout its whole surface, probably by the application of a coat of white lead, to the wall. The objection to this mode (to say nothing of the oil ground) for important paintings, is the extreme danger of accident in the rolling and unrolling. For ordinary purposes it offers great facilities, since the application of decorations in oil on the walls of rooms or on shop-fronts can be accomplished in a few hours, the work having been prepared without inconvenience in the study of the artist.

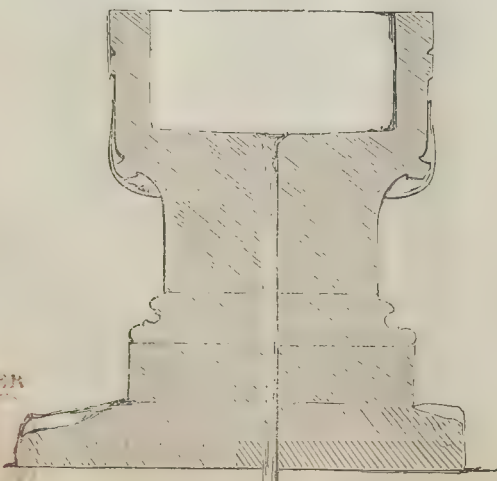
\* The "punic wax" of the ancients was nothing more than bleached wax. Pliny l. 21, c. 14, and Dioscorides, l. 2, c. 105. Compare Requeno, ib. v. 2, p. 86. Bleached wax is easily procured, but the white wax sold for ordinary purposes is mixed with spermaceti.



ANGLO-NORMAN FONT AT YATESBURY,  
IN THE COUNTY OF WILTS.



PERSPECTIVE VIEW.



SECTION.

TO THE EDITOR OF THE BUILDER.

SIR,—A few months since, whilst stopping at the rectory of Yatesbury, in Wiltshire, I was so fortunate as to make a sketch of the beautiful font in the church at that place. Up to the period of my visit it had borne the resemblance of a plain, rude stone, so completely was it filled up by the repeated coats of white-wash and yellow ochre which it had received during the course of several hundred years. As far as I could learn, no sketch had ever been made of it; Mr. Buckler, F.S.A., the indefatigable illustrator of the county of Wilts, had not been able to gain admittance to the interior of the church when he visited it. We are indebted for the restoration of this fine font to the exertions of the present rector of Yatesbury, the Rev. James Stoughton Money Kyrle, a jealous member of the Antiquarian and Cambridge Camden Societies, who has applied himself most perseveringly since entering the living to the examination and restoration of his church. On first seeing the font, we considered it to belong to the late Norman or transition period; on closer examination Mr. Kyrle found that the early English base was a separate stone of a kind different from the basin itself, and as he had discovered under the plastering of the south wall of the nave a

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very early Norman arch, evidence of the early period of the erection of the building, he considered the date of the bowl to be about the middle of the twelfth century, and that it had been remounted on this base at the first rebuilding of the church, early in the century following.

I am inclined to agree in this opinion from the curious half-scroll at the upper part of the font for in late Norman examples, a perfect scroll is generally seen. A cross  $\oplus$  is cut in the upper edge of the bowl; whether this be symbolical or is merely a mason's mark, I will not venture to determine. Mr. G. Godwin, in his interesting paper "On Masons' Marks," published in the "Archæologia," places this mark as peculiar to the early English period.

The font is very irregularly worked, the leaves on it not being parallel to the upper ornamented band; it is placed on the north side of the nave, against the western column, in its original situation, and has a drain for the emission of the water after baptism. Of this font I some months ago exhibited a drawing to the Society of Antiquaries.

The church is a picturesque edifice, consisting of a nave, north aisle, and chancel (the latter modern); it appears to have been rebuilt about the commencement of the thirteenth century, and very extensively repaired about the end of the fourteenth century, when the church was robbed of its south aisle. The patron of Yatesbury is the Rev. William Money Kyrle, of Much Marcle, in Herefordshire, whose family has presented to the living ever since the early part of the fifteenth century. The church is distant from Calne about four miles east, and is in the immediate vicinity of the Druidical Temple of Avebury, and the other stupendous Celtic works which form so remarkable a feature of the Marlborough Downs.

I am, Sir, your most obedient servant,

C. J. RICHARDSON.

22, Brompton-crescent.

#### THE WOOD PAVING IN OXFORD-STREET.

At a vestry meeting of St. Marylebone parish, held on Saturday, the 12th inst.,

Mr. Seale, the parish surveyor, brought up a report which he had been directed to furnish by the vestry, as to the state of the 4,000 yards of wood paving laid down by the Metropolitan Company between Wells-street and Rathbone-place.

The report set forth that, pursuant to the orders of the vestry, the surveyor had minutely examined the state of the wood paving in question. The surface of the said paving was rather rough and uneven, and there were many holes in it. The workmen of the wood company had, at his request, opened the paving across the street in three places in Oxford-street. Opposite No. 51 the blocks, which are of fir, were worn from their general thickness of six inches to four and a quarter inches. The paving facing No. 50 is of elm, and was found worn generally from six inches to three inches; and opposite to 31, also of fir, it was found under the coach-stand worn from six inches to three inches. This portion of the street, although in moderate condition on the surface, is so much worn, that it was found difficult to raise a whole block. To put it into good condition, he considered the whole ought to be relaid, bottom upwards, about one-half or two-thirds of the old blocks being drawn out and new ones substituted.

At this stage of the proceedings a number of the worn blocks were produced and laid on the table for the inspection of the vestry.

Mr. Harbut said that he believed, even with that convincing proof before their eyes, there were some gentlemen so wedded to wood paving that they would not believe that wood paving was a failure. (Laughter.) He moved that the report of the surveyor be adopted by the vestry, and it be forwarded to the Metropolitan Company, together with an official notice that the vestry, in accordance with the terms of their contract, required them to put the 4,000 yards of wood paving, between Wells-street and Rathbone-place, in a state of efficient repair, to the satisfaction of the parish surveyor, forthwith. What, he would ask, was the history of this splendid wood paving? The fact was, this piece of paving had, at the outset, cost the vestry the

sum of 2,000 guineas, and although it had not been down four years, it had cost the vestry 210*l.* per year to keep it in repair, in all 2,710*l.*, which was at the rate of 3*s.* 6*d.* the superficial yard per annum. If the same space of Oxford-street had been paved with granite it would have

cost 600 per cent. less than this wood paving; and even the macadamized road had only cost 1*s.* 11*d.* per yard, whilst this rubbish had cost 3*s.* 6*d.*

[The resolution was carried by a large majority.]

#### GATEWAY-TOWER OF PORTHAML, WALES.



#### TO THE EDITOR OF THE BUILDER.

SIR,—The above perspective view is of the gateway-tower of Porthaml, which is a very picturesque object, situated in a delightful spot about ten miles from Brecon. It was probably built in the early part of the sixteenth century, by Sir William Vaughan, first sheriff of Brecknockshire, who resided there. His descendant, Walter Vaughan, left a daughter and heiress, who, in the year 1677, married John, first Lord Ashburnham, from whom this property is inherited by the present Earl of Ashburnham.

There is not much mention of the place, as far as I have been able to ascertain, in the records of the county; but I think, if we may judge from the remains, it was formerly a place of considerable strength and magnificence. The interior of the archway is finely groined, and its ribs are supported at the angles by enriched corbels. The mouldings are all very richly executed in the Tudor or perpendicular style of workmanship, which is clearly shewn in the square drip to the window and the four-centered arch to the gateway.

It was doubtless originally much higher, as is seen by the one corner, upon which are placed some loose stones belonging to a battlement; and moulded stones from some other

parts of the old building are fixed along the top of the front to form a coping, after the taste of some country restorer. There is a staircase on one side in the thickness of the wall (the door to which I have shewn in my sketch), leading to a square room above the archway, with two windows opposite each other, and afterwards ascending on the same side to the top, where there is a narrow terrace around a pyramidal tiled roof, which is surmounted by a stone ball about a foot in diameter. The attached ivy is very luxuriant, and completely covers the three sides and part of the front of the tower, melting it with the surrounding scenery, giving it the semblance of having grown old with, and forming, indeed, a portion of, the natural landscape.

At the back of the tower, at the distance of about 20 yards, is a house of much more modern date, though still maintaining, in its principal features, a good deal of the manorial character.

It has been occupied by the family of its present tenant, Evan Prosser, Esq., for more than a century. I remain, Sir,

Your very obedient servant,

J. L. T.

Berkeley-place, Brecknock.



# A GLANCE AT THE INTERIOR OF THE CHURCHES IN THE DEANERY OF SPARKHAM, IN NORFOLK.—NO. VI.

WITH NOTICES OF THEIR ACTUAL CONDITION.

(Continued from p. 516.)

*Belagh.*—In a spot of how picturesque seclusion repose here, each one in his permanent abiding place, the forefathers of the hamlet! A tangled copse fills the small ravine on your left; in front the cemetery is nearly washed by an angle of the Wensum; behind, waving hay and corn robe the hill-side to its ridge, and far away to the right—although here perhaps the want of hedge-rows somewhat impairs the scenic effect—the mazy river flows through open pastures, which rise in the distance to where the fine church of Swanton Morley, with its embowering trees, closes the prospect. Reader, has the tomb never come over thy musings in wilder guise? Then hast thou not, like ourselves, a kinsman taking his latest sleep where the giant palms wave their green crests over him on the banks of the Camarons; never, as we, assisted to consign a poor sea-boy to his ocean-grave, after night-fall, in the latitude of the "still-veiled Bermoothes." Far different the homestead of the departed environing the parish church of St. Mary the Virgin at Belagh.

Would that we could write of it, in the words of the poet Mason—

"No modern art

Had marred with misplaced symmetry the pile."

On entering, our attention was drawn at once to a mural tablet over the tower-arch, on which we read:—"A.D. 1809-10. The chancel of this church rebuilt; the north and south transepts added; the tower, buttresses, windows, roof, and battlements substantially built and repaired; and the interior of the church handsomely fitted up at the sole expense of Sir John Lombe, *Baronet*, patron."\* We shall not quarrel with an old gentleman of fourscore for inclining to break Priscian's head in this chronicle of his munificence: let us rather pass on to examine how far it was guided by a correct taste and Catholic principles.

And giving the restored church a cruciform character will hardly be deemed exceptionable, though for ourselves we would decidedly have preserved its original ground-plan. Modern builders are only too fond of resorting to this "apt and appropriate figure;" often, perhaps, in order to conceal the poverty of their resources, whether pecuniary or artistic. Transepts form a poor substitute for the well-developed chancel and nave, with or without aisles, of days when men without stint of means thought *most of all* on what was best adapted to the services and requirements of God's household. Those sitting in the "cross aisles" for the most part lose sight of the priest in his ministration at the Holy Table; but this is held light of by a generation that exclaims loudly against high-altars, and erects the scandal of high pulpits instead. We confess, however, that the transepts are in our view more bearable than is the vulgar plastering on the projecting turrets raised from the groundsel at each of their four external angles.

The roof of this church is slated at a low pitch, and at the time of its restoration was supplied with copper eaves-gutters, which have since been stolen. Three lofty windows, of as many lights respectively, are each of them charged in the central one with the Lombe escutcheon in painted glass; the mullions, simply crossing in the head without foliations: two fire-places have been supplied beneath the windows of the transepts, to which the turrets just mentioned are made to serve as chimneys.

A thought struck us during the survey, that we were inspecting the work of a Vitruvius whose exploits will find notice in their proper sphere, and inquiry proved that the conjecture was a correct one. But some fine antiques within the church shall first have our regard. And in the central avenue between the transepts, on a large slab of grey marble, the portraiture of a knight in complete armour, and his lady—their hands clasped in prayer—are graven on separate brasses, with an inscription: "Pray for the souls of John Curson, knight, and the lady Jane, his wife." The first died, we are informed, on the feast of St. Fabian, 1471, and by his will, dated ten days previous, re-

\* Well were all this exchanged for the simple exclamation—'Behold, the heaven of heavens cannot contain Thee, how much less this house which I have rebuilt!'

quires to be buried in the church of Belagh, at the chancel-door under the rood-loft, and to have a grave-stone of eight marks' price. The female's head gear, her caul ornamented with two projections like butterfly's wings, bespeaks the reign of Edward IV.

A word also on the tower and the font. The first is circular in its lower portion, but forms above a *quasi* belvedere, which is octagonal and has a battlemented parapet, the bell-chamber being pierced with no less than eight large windows, although the alternate ones are now blocked. They are of perpendicular character, and evidently of later erection than the base part: a ladder supplies the want of staircase here, but we found it much lumbered with coals and other accumulations. The font, an octagon of moderate size, has the panels of its bowl charged with shields; the stem and circular base are recent and—we had almost said as a necessary consequence—mean. But we are yet suffered to rejoice over splendid, though comparatively rare exceptions.

On the north side of the chancel we find a mural tablet by Bacon, erected to the memory of the late Sir John Lombe, who died in 1807: it represents the east end of a Gothic church, with turrets at the angles, the altar window of course forming a chief feature. Generally speaking, our monuments savour altogether too much of worldliness. We had infinitely preferred seeing the baronet of the nineteenth century his simple effigies in like posture with the knight's of the fifteenth—both thus confessing, as it were, that "Man can carry nothing away with him when he dieth, neither shall his pomp follow him." The dead, as they are released from the cares, so they no longer need the insignia of life. In the grave the chancellor requires no woollack, the orator no tribunal, the general no soldiers, the admiral no shipping; all they have to do with—the last great Audit. "The semblances of the departed should seem either as men worshipping, or men that have 'fallen asleep.'"\* Some may ask, when then may the *Saturnian* hope for patronage? He has secular places in all their diversity—the palace, the house of parliament, the guild-chamber, the private mansion, the park, the square—to range over and adorn with the highest efforts of his art, without infringing on the sanctuary, the vestibule of another existence. The advantages of our present state of things would have been dearly purchased at one solemn lesson of a different kind, and they have cost us a thousand. Taking matters as they are, however, Sir John Lombe's monument contrasts well with the heathen sarcophagus, *inane pondus*, which disfigures an inclosed grave in the churchyard.

We had gladly been spared the duty of further comment on the interior of this fabric, but the influence of evil example must, if possible, be arrested. The tokens of exclusiveness may not be so invidious and glaring as they are too often met with elsewhere; beyond this remains small scope for approval. The coved ceilings, relieved in the dome with flat *groinings*, which are continued down the chamfered angles of the lantern in shallow pilasters, were better seen, and we hope also appreciated, in a conventicle. A low wainscoting within the altar-rails, formed of Norman arches, already exhibits symptoms of decay: much good oak has been ill expended on the unsightly dossal or altar-screen, on the huge pulpit, desks, and pews. Every thing betrays the designer's utter ignorance of what constitutes correct taste and ecclesiastical propriety.

Seem we to assume authority to ourselves in these strictures? *that* be far from us; but "before the mischief of past years can be remedied, the whole extent of the evil must be detailed."

**PROFITS OF TIMBER ON ESTATES.**—The late Mr. Fleming, of Hampshire, was one of the largest landed proprietors in the county, owning at his death 15,000 acres, so richly wooded, that he is supposed to have cut 500,000*l.* worth of timber, from first to last, and yet left the whole as full as the land will bear. Mr. Fleming's expenditure in the town and neighbourhood of Southampton averaged 18,000*l.* a year, and immediately after his departure for the Mediterranean the loss of such a large expenditure was most sensibly felt.—*Hants Advertiser.*

## SPONTANEOUS COMBUSTION IN BUILDINGS.

THE cause of the recent fire at New Cross has been traced to the spontaneous ignition of some vegetable black which was stowed in the paint-room. A few weeks back, we drew attention to a similar catastrophe, which originated in the accumulation of pigeons' dung in the great tower of the Church of Pisa, and not long since we remember reading in one of the philosophical journals a statement that oil-paintings on canvas have been known, under certain circumstances, to generate heat sufficient to produce a flame. Having these facts before him, Mr. Booth, the lecturer on chemistry, has, in a most praiseworthy spirit, drawn public attention to the subject, and calls for a full and searching inquiry into the phenomena under consideration. He says, that "in the incipient decomposition which precedes ignition, gaseous compounds readily ignitable are formed, generating a highly-combustible atmosphere, so that when heat sufficient to generate flame is produced this will at once act along the whole surface of the area, producing, as with the fire-damp, a simultaneous blaze." A full investigation of the subject, conducted by the first chemists of the day, would of necessity lead to most useful results, and surely the fire insurance companies would soon find their account in originating the inquiry and defraying every expense attending it.

## CHURCH-BUILDING INTELLIGENCE, &c.

### Consecration of Christ Church, Clifton Park.

—On Tuesday last the Lord Bishop of Bristol consecrated the new church at Clifton-park. The situation chosen for the church is exceedingly beautiful, and, according to present appearances, will be the centre of numerous terraces, squares, and other dwellings for the more opulent class of society. The building itself, by its pretensions to a better style of architecture than has usually prevailed in our sacred edifices of modern construction, seems to invite criticism. We take the following from our contemporary, the *Bristol Gazette*:—"Christ Church is designed in the early English style of architecture, or in that style of architecture which prevailed in England between the years 1200 and 1250, as exemplified by parts of the cathedrals at York, Salisbury, Peterborough, Carlisle, and Durham. The church comprises a nave, 104 feet long by 36 feet wide, with an apsidal chancel 27 feet deep, and a north and south transept. The total interior dimensions of the church are 131 feet from east to west, by 36 feet from north to south across the nave, and 78 feet including the transepts; the height from the aisles to the ceiling is 50 feet, and from the plinth to the ridge of the roof, 64 feet. The chancel is ascended by five steps, and is separated from the nave by an arch 44 feet high. The transepts are also divided from the nave by arches 34 feet high; the characteristic features of the style, with disengaged columns and deeply-recessed mouldings, being carried out to the greatest extent that the funds at the disposal of the committee would permit. Sittings are provided for upwards of 1,000 persons, including 347 open sittings. The mason's work was begun by the 1st of Feb. 1843, and the walls were ready to receive the roof in the month of September following; and the building was completed, fit for consecration, in about eighteen months from the commencement of the works, notwithstanding the loss and inconvenience to which the committee was subjected by the bankruptcy of the contractor for the mason's work. The architect who superintended the whole is Mr. Charles Dyer, of Park-street; and the contractors for the principal works were Messrs. G. Strawbridge, G. Monk and Son, W. Edkins and Son, J. Fowler and Son, Williams and Gay, T. Allen, and H. B. Osborne."—*Farley's Bristol Journal.*

### Re-Consecration of Codford St. Mary Church.

—On Wednesday, Oct. 2, the church of Codford St. Mary was consecrated by the Lord Bishop of Salisbury. This church has been nearly rebuilt. The old tower and a small portion of the south wall appear to be all that belonged to the original structure externally. The south wall having fallen in the course of 1843, whilst the rubbish was removing from around the foundations, it was resolved to build an additional aisle. In carrying out this



intention, it was found necessary to take down the old walls, and thus various fragments of carved stone, clearly indicating the age of the original church, were brought to light. The date is supposed to have been about 1000. The additional aisle is built in the Decorated style, which pervades the entire building; the early English windows are formed on the north side of the chancel, and the east window is perpendicular. The term Decorated must not convey a notion of lavish expenditure—all has been done with a due regard to economy, but there is nothing which offends good taste, nothing deficient, nothing calculated to weaken the impression that this is the place where God hath set his name. The east window of the church is filled with stained glass of various allegorical and heraldic characters. The fittings are of stained and varnished deal, bearing a very ecclesiastical appearance, and harmonising well with the ancient oak, which has been carefully applied to use as far as practicable. The sittings are open, and to this outward demonstration of spiritual equality, if we may judge from a growing sense of its propriety, the church-builders and church-restorers of the present generation will speedily conform. The altar and pulpit hangings are of crimson cloth, beautifully worked by some young ladies, with suitable devices and emblems. — *Farley's Bristol Journal*.

**New Church near Farnborough.**—A small church has recently been erected on the heath, within sight of the Farnborough station, on the South-Western Railway, where her Majesty meets the rail from Windsor Castle. The edifice, which is now ready for consecration, is intended for the use of the inhabitants of Cove and South Hawley. It is built of heath stone, the materials of which Windsor Castle is composed, with the corners and ornamental work of pie stone, which gives it an imposing appearance. The architecture preserved throughout is the Norman style, from the design of Messrs. Stevens and Alexander. The eastern and side windows of the chancel are filled with painted glass, the gift of the Rev. C. Laurell, who has been nominated to the incumbency. Interiorly the church is plain, open seats and other conveniences being provided. The cost of erection has scarcely exceeded 1,200*l*. A lady residing in Bath, who admired the style of the church, presented the sum of 600*l*.

**Salisbury Cathedral.**—This cathedral is said to have as many doors as there are months in the year, that is 12; as many windows as there are days in the year, that is 365; and as many beams and columns as there are hours in the year, that is 8,766. What most struck me in the internal construction of the church was the extreme slenderness and fineness of the so-called "flying buttresses" supporting the steeple. The builders seem here to have spun their stone through the air in some inconceivable manner, like the silky thread of a spider. I wondered how these long, thin lines of stone could support themselves in the air; yet they have supported, not only themselves, but the entire steeple, for 600 years. The clusters of round columns, which support the roof, are also far more light, and less massive, than is usual in Gothic churches. This contributed much to the general effect of lightness and airy beauty which the whole structure of the cathedral conveyed. — *Kohl's England and Wales*. — [THE SECRET ART WAS A KNOWLEDGE OF ARCHITECTURAL DYNAMICS, WHICH TAUGHT THEM TO DRESS AWAY ALL BUT THE SUPPORTING MASS, THROUGH WHICH THE PRESSURE RUNS.]

**Church Bells.**—The *Irish Ecclesiastical Journal* informs the clergy that they can substitute cast-steel bars for the ordinary church bells with considerable advantage, as regards both tone and cheapness. Any clergyman can procure for thirty shillings a bar of cast steel producing a better tone than the ordinary small church bells, which cost from 4*l*. to 6*l*. — *Limerick Chronicle*. — [The change is similar to that in modern repeating-watches.]

**Parsonage, Sremerston.**—The Commissioners of Greenwich Hospital have given 200*l*. in aid of the erection of a parsonage-house at Sremerston, near Berwick-upon-Tweed. They have also promised a similar sum towards the building of a new church at Nent-head, in Cumberland. — *Newcastle Advertiser*.

**Calcutta Cathedral.**—The Bishop of Calcutta, in a letter to the secretary of the Society for Promoting Christian Knowledge, dated May 3rd, 1844, states that the tower of the new Cathedral of Calcutta "is now raised to the first tiers of stones above the lancet windows, about 90 feet from the plane of site, and presents a most commanding object. The internal scaffolding of the lantern is being removed with the centering, to allow of the stones being elevated with greater ease than they could from the outside. The building has not settled more than a quarter of an inch in the last six months, so that the walls of the choir and transepts will soon rise, the ornamental work being safe from disturbance. Up to April 1st, we had expended 209,028 C. rupees, 13 anas, 5 pice, about 21,000*l*.—not more than we expected."

**New Church near Newbury.**—It is intended to erect a new church at Kingsclere, near Newbury, Berks. The town contains a population of 2,730 souls, and there is only one church, with 600 sittings. The Earl of Carnarvon has generously consented to appropriate 100*l*. per annum, as an endowment to the church, out of her rectorial tithes, so long as his lordship retains possession of the property, and Lord Bolton has consented to appropriate 100*l*. per annum to the same purpose. The Ecclesiastical Commissioners have promised liberal assistance.

#### RAILWAY INTELLIGENCE.

**Windsor Junction Railway.**—The contemplated Windsor Junction Railway, which is to be constructed on the atmospheric principle, is to consist of two branches—one from Windsor, to form a junction with the Great Western Railway at Slough, and the other (the terminus being near Windsor Bridge, on the Berkshire side) to proceed direct to London; but in order to carry this plan into effect it will be necessary to obtain the consent of the Crown. By the present proposed arrangement it is intended to provide a private station for the exclusive use of her Majesty and the Royal Family, to which access may be obtained from the Home Park, and within a stone's throw of the Royal residence. It is not expected that any opposition will be made to the proposed plan on the part of the Crown, the more especially as it embraces a structure that will be rather an ornament to the Home Park, instead of the present boundary wall, which is, throughout the whole distance, not more than a few yards from the river, and from which it is divided by only the towing-path. Mr. Page, the civil engineer, has received instructions from the provincial committee to proceed with the surveys and plans, and to make his report without delay, which is to be submitted to the Queen.

**Caledonian Railway.**—The negotiations between the Caledonian Railway Company and the Monkland and Kirkintilloch, and Glasgow, Garnkirk, and Coatbridge Railway Companies, were brought last week to a successful and satisfactory conclusion, and formal deeds of agreement among the contracting parties were executed and delivered. Similar arrangements were completed some time ago with the Wishaw and Coltness Company. According to these agreements, the three existing companies have become bound to widen the gauges of their respective lines, so as to correspond with the gauge of the Caledonian Railway, and in all other respects to improve their works, to the satisfaction of the engineer of the Caledonian Company. The improvements are to be completed before the Caledonian Railway is opened to the public from Lanark to Garioch, where the junction with the Wishaw line is intended to be effected. By means of these railways, the Caledonian Company have secured, upon very moderate terms, an access to the north side of the city of Glasgow, and also a connection with the north of Scotland; and while they thereby confer a great benefit on the existing lines, they will save the cost of upwards of ten miles of railway through a difficult country. The Caledonian Company have also made advantageous terms with the promoters of the Clydebank Junction Railway for the use of their line and stations for the traffic of the Caledonian. This completes the connection with the south side of the city, and with the

harbour of Glasgow and the Paisley and Greenock Railways. These preliminary arrangements being thus effectually made, the parliamentary notices of the Caledonian Railway will be published in a few days.

**Midland Railway Projects.**—A special meeting of the proprietors of the Midland Railway has been held for the purpose of deliberating upon the subject of their engaging in the construction of several new lines, to branch off from their own line in the following directions:—"1st. A railway from the Midland Railway, at Nottingham, to Newark and Lincoln. 2nd. A railway from the Midland Railway at Swinton, by Doncaster, Bawtry, and Gainsborough, to Lincoln, and thence passing near Boston, Spalding, and Wisbech, to join the Eastern Counties Railway, at March. 3rd. A railway from the Midland Railway at Syston, by way of Oakham and Stamford, to Peterborough. And for the purpose of considering in what manner the necessary capital for the construction of all or any of such lines of railway shall be raised," &c. &c. These important projects were adopted; and an additional capital of two millions and a half was ordered to be raised by the creation of 62,000 new shares of 40*l*. each.

**Edinburgh and Granton Railway.**—The extension line to Granton from the terminus at Trinity is progressing rapidly; it runs west from the Station house, immediately behind the Baths, where it crosses the public road, skirting the whole north end of the field to the west. At Wardie the line crosses the road which at this point is to be thrown a good way south, and for which the gardens have been carried back to the extent of about 40 feet. From near Wardie Hotel to the head of Granton Pier the line will proceed north of the road by an artificial breast-work erected along the beach. When finished, this will form one of the most compact and elegant lines of railway in the neighbourhood. — *Edinburgh Advertiser*.

**Dundee and Perth Railway.**—The promoters of this undertaking have effected an arrangement with the company carrying a railway through Fife, who have made an alteration in their plans, the effect of which will be, that the whole traffic of the north of Scotland to Edinburgh and the south must pass along the Dundee and Perth Railway. The whole traffic to Glasgow and the manufacturing districts in the west of England must also pass over the line, whether through Fife, to Edinburgh and Glasgow, or by the Scottish central line, with which it communicates.

**Railroads in Sweden.**—A letter from Stockholm, Sept. 23, says:—"Sweden will soon have railroads. An association of capitalists and merchants, at the head of which are the rich houses of Totti and Alfweden, Miguelson and Co., Peyron, Bergmann, and Engelsen, has obtained permission from the king to construct a railroad from Engelholm, on the Bay of Kullen, by Helsingborg, Landskrona, Lund, and Malmö, to the port of Cimbricksham, in the province of Gothland. By this line it will be possible to avoid sending goods by water to Elsinore, and thus save the Sound duties, which are enormous."

**TWO NEW BRIDGES IN CONNECTION WITH THE LANCASTER AND CARLISLE RAILWAY.**—About three weeks ago the foundation-stone of the extensive bridge, which is to consist of seven arches of 60 feet span each, and the parapet of which will be upwards of 100 feet in height, was laid with the ceremony usual on such occasions. The pier was proceeded with to a considerable height above the bed of the river Lowther, over which it is intended to span at a place called Yew's Crag, behind the village of Clifton, from the London-road, and about two miles distant from the town of Penrith. It appears that the work of this pier will have to be undone, by reason of a mistake in the dimensions, or some alteration in the plan of the ground-work, the fresh one having to be upwards of a square foot more. This is an unfortunate circumstance, because of the season being so far advanced, and the river so sudden and violent in its rise and fall, it being fed by the mountain torrents of Mardale fells, and other mountainous districts. The other large bridge, which will cross the river Edmont, near Yanwath Hall, will be proceeded with forthwith.



## Correspondence.

THE PREVENTION OF OFFENSIVE SOUNDS  
IN ROOMS.

TO THE EDITOR OF THE BUILDER.

SIR,—In order to drown the sound between an upper and lower room of large dimensions, the usual plan of pugging, as advised under the head of answers to correspondents, in *THE BUILDER*, No. 86, has been adopted; but the sound is still audibly conveyed through the ceiling into the lower room. Now, what is the plan you would recommend to destroy the sound?

T. W.

Cambridge, Oct. 5.

[We incline to think there must be some imperfection in the manner wherein the application has been made, as we have never found it fail except in cases where a direct and offensive concussion has been occasioned over the apartments required to be quiet. Perhaps some of our correspondents may be in possession of some secret for the prevention of the offensive effects of sound in rooms.—Ed.]

THE "JENNY" USED ON SCAFFOLD-  
FRAMES.

SIR,—I should be much obliged if one of your readers could inform me of the newest improvements that have been effected in the "jenny" used on the scaffold-frames, and where drawings of the same may be obtained.

I am, Sir,

X. Y. Z.

## Miscellaneous.

**FRENCH AND ENGLISH MINES.**—At the meeting of the British Association, for the promotion of science, held at York, Colonel Sykes, F.R.S., president, in the chair.—Mr. G. Porter read a long and interesting paper, compiled from documents furnished to him by the French government, "On the Mining Industry of France," which contained some curious and interesting comparisons with that of this country. In 1814 the quantity of coals raised in France was but 665,610 tons; in 1826 it amounted to 1,301,000 tons, whilst in 1836 it was 2,544,000. In 1811 the number of coal mines at work was 256, employing 29,500 workmen, who on the average raised 116 tons each. In 1836 the value of a ton of coals was 11s. 3d., whilst in 1841 it was reduced to 7s. 9d. There was no data by which to ascertain the amount of mineral fuel which was annually raised in the United Kingdom, but it was probably ten times greater in quantity than in France. From parliamentary returns, it appeared that in 1841 the quantity of coal transmitted coastwise was 7,410,000 tons, and that exported 1,840,000, besides which a very large quantity was used upon the spot in various manufacturing districts where it is obtained. It is a curious fact that in England the average amount raised by one man is 253 tons, being 120 per cent. higher than in France. An elaborate memoir was then given in the paper on the iron districts, in which were 12, containing 894 establishments in 1836. In 1841 these had increased to 1023. In 1836 there were 57,537 men employed, who created property to the amount of 4,957,000*l.*, whilst in 1841 the number of hands was reduced to 47,830, although the value of the production had increased to 5,671,000*l.* For one ton of pig iron manufactured in France there were four in England, although it was singular, that whilst in France 47,000 persons were employed, those in England were but 42,000. This extraordinary discrepancy the author attributed to the deficiency in the process of manufacture and the additional cost of fuel. The production of other metals was of small importance, and he considered that a very fair prospect of future legitimate and extensive commerce from this country might be looked forward to in France.

**NEW THEATRE IN SHOREDITCH.**—Several houses have been pulled down during the last few days opposite the terminus of the Eastern Counties Railway, High-street, Shoreditch, for the purpose of constructing a spacious theatre, which is to be under the direction of Mr. Nelson Lee. The works have already commenced.

## NAMING AND NUMBERING OF STREETS.—

(From the Herald.)—The new Metropolitan Building Act, which comes into operation on the 1st of January, creates a new board for the general superintendence of buildings in London. The new board would render the public an important service if they would undertake such a registration of houses that every house in a street should have a distinct number, and that no two streets should be called by the same name. Great inconvenience is now occasioned by the neglect of this very simple matter of municipal arrangement. The last Act for the registration of voters directs that in every claim to vote, the number of the house shall be inserted for which the vote is claimed; but in some streets many of the houses are without numbers, and the instances are numerous of two or more houses in a street having the same number. In Regent-street, St. John's, Westminster, there are five Nos. 13, and six Nos. 14. Equal or greater confusion arises from the multiplication of the same street names. We find in a London Directory 23 King-streets, 20 Queen-streets, 26 Charles-streets, 25 Church-streets, 23 John-streets, 4 Water-lanes, 2 Water-streets, &c. A serious loss, as well as inconvenience, arises to the public from this source. The expenses attending the delivery of letters are increased some thousands of pounds by the puzzling uncertainty of addresses. A letter from the country, directed "King-street, London," is, perhaps, first delivered in King-street, Cheapside, whence it may be returned with the words, "Try King-street, Holborn," and perhaps 20 district postmen may each have to walk a mile before the right King-street and the right person be discovered. Nor does the fault lie altogether with careless directions. A stranger to London cannot be blamed for ignorance of the extent to which the amplification of an address is necessary. Thinking to be both precise and explicit, he may direct a letter, "John Smith, Water-lane, City, London," and his letter may be sent to three different Water-lanes, all in the city, and all within a stone's throw of each other—Water-lane, Blackfriars; Water-lane, Thames-street; Water-lane, Fleet-street; and perhaps in each Water-lane there may be a John Smith. The evil is one which we believe the corporation of London and the commissioners of paving generally have power to remedy; and we may hope it will be the duty of the new registrar to call their attention to the subject.—[This duty could not well be performed by the board mentioned; it is the duty of Commissioners of Paving and their surveyors, upon whom by the general Metropolitan Paving-Act it is cast.—Ed.]

## HAMPSHIRE HEATH.—(From the Times.)

—The inhabitants of Hampshire, who have been long threatened by Sir Thomas Maryon Wilson, the lord of the manor, with having their beautiful heath encircled with squares, streets, and courts, and for an Act to enable him to effect which Sir Thomas has petitioned Parliament at intervals, ever since the year 1829, have been in much consternation during the past week, upwards of eighty workmen having been employed in levelling the fences between the various fields belonging to Sir Thomas, between the Vale of Health and Highgate. On the 12th inst. Sir Thomas commenced operations on the heath itself, which, as the copyholders have rights of common and other valuable rights therein, may still, it is hoped, be preserved to the public by the committee of copyholders. Sir Thomas's property immediately adjoins Cuen-wood, the grounds of which will be commanded by the intended cemetery. The committee of copyholders will, it is supposed, call a meeting of the copyholders as early as possible, intimation having already been given to Sir Thomas that the copyholders dispute his right to interfere with the heath, which in his recent applications to Parliament he has always professed he had no intention of doing.

**RETRIEVING MUD LANDS.**—A proposal is on foot to establish a chartered company for retrieving the mud lands of Great Britain and Ireland, deepening the navigable waters abutting thereon, and appropriating the retrieved lands, and in some instances the waters, in remuneration. The capital it is proposed to raise for this great national object is 500,000*l.*, in five thousand shares of 100*l.* each.

**PUBLIC WALKS, PARKS, &c.**—We are glad to find fresh proofs of the general interest manifested in this excellent object, in the rapidly augmenting subscription list, which, since the last list was advertised, has been increased by about 1,780*l.*, and now amounts to nearly 22,500*l.* The most recent subscriptions include a handsome donation by Mr. W. Atkinson, of 500*l.*, and one of 250*l.* by our representative, Mr. Milner Gibson, M.P. There are also several liberal subscriptions from a distance, from parties thus gratefully acknowledging and maintaining their connection with the town. Mr. J. Thomson, of Primrose, Clitheroe, has given 100*l.* Amongst the supporters of the measure in the clergy of the establishment, it gives us pleasure to see the names of two of the canons of Manchester, the Rev. C. D. Wray, and the Rev. R. C. Clifton, for 25*l.* each. There is another class of subscriptions of which as yet we have only the commencement, but which have a peculiar value, as the contributions of the working classes themselves. These subscriptions are by far the most significant and decisive answer that can be given to those who object, that when parks are provided, the people will not use them. Few will suppose this likely, when they find that the workmen in a calico-printing concern (that of Messrs. Thomas Hoyle and Sons) have subscribed 67*l.* odd; and those of a machine-making establishment (that of Messrs. Sharp Brothers and Co.) upwards of 50*l.*, in aid of the fund for public walks and parks. If these are not satisfactory proofs of the earnest approbation and cordial support of those for whom these parks are mainly needed, we know not where to seek them.—*Manchester Guardian.*

**PROPOSED PUBLIC PARK IN LEEDS.**—Some of our benevolent townsmen, among whom we may mention our public-spirited mayor, are desirous that Leeds should not be behind other towns in the formation of public parks or walks for the healthful and rational recreation of all classes. It has been suggested that the zoological and botanical gardens, which comprise nearly 20 acres, in a beautiful situation and well laid out, might be purchased for this purpose. Some of the larger shareholders in the gardens are, we know, disposed to transfer their whole property in them to the town-council, or some other body, for the benefit of the public; and we think it likely that many others would follow this liberal example, thinking it more agreeable to see their fellow-townsmen of the humbler classes enjoying themselves in the gardens than to walk there in comparative seclusion. Those shareholders who took shares as an investment, and who could not afford to give them to the public, would probably accept a moderate sum for that which now yields them no dividend. A subscription would, therefore, be required to purchase the garden for the public; and we think this would be forthcoming, as the amount would probably not be very large. A yearly subscription would also be requisite to keep the gardens in order. We hope to be able shortly to report progress in this laudable attempt to promote the health and recreation of the industrious classes.—*Leeds Mercury.*

**NEW BREAKWATER AND HARBOUR OF REFUGE.**—We can state now, from unquestionable authority, that it has been decided by government that the port of Weymouth is to form one of the Harbours of Refuge about to be established in the Channel, and that a Breakwater will be built, extending from the eastern part of the island of Portland to a length sufficient to secure a protection for the shipping interest, as well mercantile as naval. This national undertaking will, we hear, be on a grand scale, and being about the centre position in the channel, will be a most efficient harbour of refuge between the two large naval depôts of Plymouth and Portsmouth. It is expected the proprietors of the Great Western railroad will promptly avail themselves of this favourable circumstance for laying down a line from Bristol and Bath, through the most advantageous and convenient track of country, to Weymouth, as no doubt this latter port, from its peculiarly apt locality, and becoming a general depôt for shipping, will be hereafter the chief entrepôt and link for commercial connection and transition, through the medium of the channel islands, from the midland counties of England to the Continent.—*Sherborne Journal.*



## Tenders.

TENDERS delivered for alterations to a house in Dancan-place, City-road.—Mr. James Harrison, No. 1, Holford-square, Pentonville, Architect. October 17.

Bugg .....	£245
Hambrook .....	244
Locke and Nesham .....	238
Smith .....	225

TENDERS delivered for Repairs and Alterations at Mr. H. Weston's, 242, High Holborn.

Pearse and Gerrier .....	£346 0
Brighton .....	345 0
Watmore .....	309 0
Judd .....	291 8
Fawcett .....	280 0
Williams .....	263 0
Chesterman .....	259 0
Spikins .....	254 0
Harrop .....	247 0
Gerry .....	229 0

The tenders were opened in the presence of the contractors.

## NOTICES OF CONTRACTS.

For the Building of Four Almshouses in the city of Ely.—T. and G. Archer, Solicitors, Ely. October 29.

For the supply of Guernsey Granite Chippings, and Kentish Ragstone to the Board of Guardians of the Parish of Camberwell, Surrey.—Thomas W. Plum, Clerk of the Board, Havil-street, Camberwell. October 30.

For the Construction of 1,000 Yards of the Glasgow, Garakirk, and Coatbridge Railway, together with a Viaduct and a Swivel Bridge. Also of 1,120 Yards of the Eastern Extension of the same Railway, near Coatbridge.—Mr. Niel Robson, Civil Engineer, 51, St. Vincent-street, Glasgow. October 30.

For Sloughing and Bottoming the Burton Pidsae west Drain.—Robert Gibson, Keyingham, or George Iveson, clerk to the Commissioners of the Keyingham Level Drainage. October 30.

For the Construction of Lots 1 and 2 of the Great Southern and Western Railway (Ireland). Lot 1 comprises a distance of about 9½ miles; Lot 2 comprises a distance of about 10½ miles.—Sir John Macneill, Engineer to the Company, 28, Rutland-square, Dublin. November 1.

For the supply of Manel, Red Pine, and Larch Timber to the Great Southern and Western Railway (Ireland).—Sir John Macneill, Engineer to the Company, 28, Rutland-sq., Dublin. Nov. 2.

For the Construction of 1 Mile and 65½ Chains of the Ashton, Stalybridge, and Liverpool Junction Railway.—The Secretary of the Company, at the Manchester and Leeds Railway Offices, Palatine-buildings, Hunt's Bank, Manchester. November 4.

For the supply of Paving, Flint, Winstone, and Bombay Granite, &c.—Frederick Tritton, Clerk to the Trustees for Lighting, &c. the South District of St. George the Martyr, 11, Three Crown-square, Southwark. November 5.

For supplying her Majesty's Dockyard at Chatham with White Lead, and her Majesty's Dockyards at Deptford, Woolwich, Chatham, Sheerness, Portsmouth, and Devonport, with Red Lead.—The Secretary of the Admiralty, Somerset-place, London. November 5.

For the Erection of a new Barrack Establishment at Bristol.—C. J. Selwyn, Major and Commanding Royal Engineer, Exeter. November 7.

For the performance of such Bricklayers', Carpenters', Masons', and other Works to be done in the Cleansing, Building, and Repairing of the several Public Sewers and Drains within the Ranelagh and Counters' Creek Districts.—Lewis C. Hertelet, Sewers' Office for Westminster, No. 1, Greck-street, Soho-square. November 8.

For Works in the Construction of a New Dock in Kingston-upon-Hull.—Mr. John B. Hartley, Civil Engineer, Liverpool. November 11.

## COMPETITIONS.

PREMIUM of 25 guineas for the best and another of 15 guineas for the second best design for laying out for building purposes a plot of land, containing about nine acres and a half, situate in the borough of Reading, having a frontage of upwards of 900 feet, and being of the depth of about 460 feet. Further particulars of J. J. Blandy, Esq., Solicitor, Reading; or of Messrs. Gregory, Faulkner, Gregory, and Bourdillon, 1, Bedford-row, London. November 15.

## NOTE.

The article inserted in our last number on "Paper-hangings" has the appearance of being the entire paper read before the Decorative Art Society on the 9th instant; this is by no means the case. In justice to Mr. Cowtan, we feel bound to state that we simply gave what

METROPOLITAN ASSOCIATION FOR IMPROVING THE DWELLINGS OF THE INDUSTRIOUS CLASSES.—The object of this association is to provide a remedy for great existing evils, by enabling the labouring man to procure a comfortable, cleanly, and healthy habitation, at a less expense than is at present paid for very inferior and unhealthy accommodation, arising from want of ventilation, bad drainage, and the crowded state of apartments. To effect this, it is proposed to erect—1st. Dormitories for single men, or large rooms divided into compartments, with a separate bed to each occupier, which could be afforded at as low a rate as is paid at present by each person when three or four sleep in one bed. 2nd. Well-drained and ventilated buildings to be let to families in sets of rooms with an ample supply of water on each story. We find among the patrons of this measure the names of Lord Ashley, the Earl of Devon, Viscount Ebrington, Lord Francis Egerton, Lord Robert Grosvenor, Viscount Morpeth, and the Marquis of Normandy.

THE SINKING OF THE CUSTOM-HOUSE QUAY, DUBLIN.—On Tuesday evening, the 15th instant, a very singular occurrence took place at the Custom-house quay, and immediately in front of the Custom-house—a portion of the quay, about 130 yards, having suddenly sunk from its usual level, upwards of 7 feet, and in some places 15 feet in depth. The breadth of the breach varies from 5 to 7 yards, and, what is very strange, the outer wall next the river kept its place, sinking a little, but not slipping from its original position. The breach was immediately filled with water, as the river rushed into it, and a good deal of apprehension prevailed for some time, as it was feared that additional damage might be done to the Custom-house itself, which is built upon piles, and the site was originally a marsh. It is the opinion, we understand, of very able engineers that the building has been erected too near the river; and a scientific gentleman said he had no doubt that the vast superincumbent weight of the immense pile has, in no slight degree, aided in the action of the water, in causing the occurrence. The appearance of the place is very curious, and several eminent engineers have stated that it is a singular circumstance how the outer wall stood while the back portion fell so low. We understand that the foundation of this portion of the quay was on a blue clay bottom, which must have been cut away by the constant ebbing and flowing of the tide; but the difficulty which arises here in reference to the preservation of the outer wall is not so easily solved. The wall, however, was built on a foundation sunk very low; the materials of the wall too are all very heavy stone, while the back was filled in loosely without any precaution as to the foundation, and this may account for the accident to the latter. From the neglected state of the Custom-house sewers, scientific men are of opinion that the foundation which supports the building itself (one of the finest in Europe) must eventually suffer. This should be looked to in time, as further neglect may cause a serious calamity.—*Freeman's Journal*.

PUBLIC WALKS.—It would seem that the government intend to expend money on "public walks," and the example of Sir R. Peel, in his gift of 1,000, for a park at Manchester, has attracted some attention to the subject. It appears that Parliament voted 10,000, for public walks in the year 1840, and by a return printed in the session of 1843, only 500, was stated to have been expended, in the following manner:—"The Provost of Dundee—Improving Magdalen-yard 300; and the Provost of Arbroath—improvements in the neighbourhood of that town, 200." It is added in the return "the remaining 9,500, is still in the Exchequer."

Mr. James Dunning Harvey (second son of the late Mr. Harvey, master mariner and civil engineer for roads, &c.), has executed a survey of Weymouth, the north end of Portland and parts adjacent, with the line of the intended Breakwater; also of Weymouth and Portland, with Race and Shambles, and the line of the proposed Breakwater, on a scale of 4 inches to a mile. These surveys will tend materially to elucidate the important claims of Portland Roads, as the best position for a central harbour of refuge in the British Channel.—We understand the dockyard at Cherbourg is increased considerably.—*Dover Chronicle*.

PUBLIC BATHS IN BIRMINGHAM.—A meeting of highly influential inhabitants of this town and neighbourhood was held in the committee-room of the Town-hall on Tuesday morning last, Mr. W. Beale in the chair, for the purpose of making preliminary arrangements for a town's meeting to consider the best means of providing public walks and baths for the use of the inhabitants. Amongst those present were Messrs. James Taylor, James James, H. Luckcock, W. Chance, G. Barker, and William Scholsfield; Aldermen Beale, Phillips, and Cutler; Messrs. W. Phipson, Joseph Sturge, Clement Igleby, James Turner, J. Tyndall, Abel Peyton, C. Geach, T. E. Lee, B. Cheshire, J. H. Beilby, T. R. T. Hodson, John Beale, Bourne, E. Aldridge, J. Plevins, M. Banks, T. Ragg, D. Barnett, C. Lawden, and H. Simons, and many other gentlemen. Alderman Cutler opened the proceedings by calling attention to the importance of the subject, and detailing the acts of the Select Committee of the House of Commons appointed to consider the best means of providing places of recreation for the inhabitants of populous towns. On the report of this committee being made, the House granted, at two different periods, the sum of 15,000, to aid the inhabitants of large towns in the formation of public walks and places of recreation. Alderman Cutler also stated the correspondence which had taken place between the corporation and the Government on the subject. Resolutions in furtherance of the objects in view were passed, and a vote of thanks having been carried to the chairman, the meeting separated.—*Birmingham Gazette*.

DEEPENING OF THE RIVER AT GLASGOW.—We are informed that, since the 29th March last, nearly 11,000 cubic yards of mud, sand, and gravel, have been dug out of the bed of the river, betwixt the Stockwell and Wooden Bridges, being fully more than one-third of the quantity necessary to be taken out by spade labour, before the introduction of the dredging-machine. This improvement, when completed, will be equally useful and ornamental, and will remove the unseemly appearance of the bed of the river being exposed at low water in the very centre of the city.—*Glasgow Herald*.

PROPOSED NEW ROAD FROM HUNGERFORD BRIDGE TO KENNINGTON.—It is in contemplation to create a new street or line of road from the terminus of the Suspension Bridge, in the Belvidere-road, Lambeth, to the main road commencing at the Asylum, leading to Kennington and Vauxhall. On Monday last surveyors were engaged in measuring the line of road, and ascertaining the value of the property through which it will pass. From the terminus the road will cross the York-road, through the Lower Marsh, and emerge at the corner of Oakley-street, in a direct line with the Kennington-road.

NEW BARRACKS.—The Board of Ordnance have in hand the erection of various new spacious barracks in the north of England, which will involve an enormous outlay. They also contemplate, if the contract for them has not been already taken, building barracks at Worcester and Bristol, in neither of which cities has there hitherto been any accommodation for troops.—*Hampshire Telegraph*.—It has been finally determined to erect a barracks capable of containing 1,000 men at Portsea.—*Hampshire Advertiser*.

ANCIENT THEATRE DISCOVERED UNDER GROUND.—In the city of Parma has been discovered at a great depth, and in good preservation, the theatre of the ancient town. The government has ordered further excavations to be immediately commenced, and has purchased a number of houses belonging to individuals, which stood in the way of complete exploration.

MARY-LE-BONE AND PADDINGTON HOSPITAL.—The munificent offer of 2,000, has been made towards the funds of this hospital by an anonymous subscriber, upon condition that the committee are prepared to commence building within twelve months. The subscriptions already amount to 15,000, including 100, from her Majesty the Queen Dowager.

NOTTINGHAM IMPROVEMENTS.—A new street is to be formed in Nottingham, from the end of Lister-gate to Wheeler-gate, an improvement much needed. Many improvements have, within the last few years, been made in Nottingham.



apparently were the most interesting and useful parts of it. We hope the Society will publish the essay in a complete form; it will prove an excellent pendant to Mr. Crabb's contribution on Design, and materially assist in diffusing the principles which ought to actuate those who have the power to improve the public taste. We have been much pleased in observing that the daily press, during the present week, have united with us in giving publicity to some of Mr. Cowtan's views.

## TO CORRESPONDENTS.

T. R.—We cannot publish the problem: T. R. needs only to sum up the areas of the five triangles of his Pentagon, and extracting the square-root he will have his answer.

N. H.—k.—We must beg of our correspondents to call to his mind the fable of the Old Man and his Ass. That portion of our paper to which he objects is exceedingly valuable to many of our readers, and, indeed, were it omitted, he would have to pay 6d. instead of 3d. for each number.

Communications from the following have been received, and are under consideration:—"Officiator," on the late land-slip in Dublin;—"A Brightonian" on the Portico of the New Royal Exchange;—"Joseph Jopling" and "T. L." on Tudor Arches;—"J. P." on the construction of Sewers;—"Thos. Faulkner"—"On the Priory of Holywell, in Shoreditch";—"Vincent Yardley" on the Vaults for the new Houses in the line from Oxford-street to Holborn;—"A Subscriber and Builder" on Webster and Johnson's newly-invented Saw.

Current Prices of Wood and Metals.  
October 22, 1844.

	£.	s.	d.	£.	s.	d.
Box, Turkey, bd. per ton..	2	0	0	6	0	0
CEDAR, Pencil, per foot ..	0	3	0	0	4	0
Cuba .....	0	3	0	0	4	0
N. S. Wales .....	0	3	0	0	4	0
Green, per ton .....	5	5	0	9	0	0
EBONY, Ceylon, large .....	6	0	0	7	10	0
small .....	4	10	0	5	15	0
Madagascar, small .....	5	0	0	6	0	0
LIGNUM VITE, Jamaica .....	3	0	0	5	0	0
St. Domingo .....	8	0	0	12	0	0
MAHOAGNY, Cuba, per foot ..	0	7	0	1	4	0
St. Domingo .....	0	7	0	1	6	0
Honduras .....	0	4	0	0	10	0
TIMBER:—						
Teake, African, per load ..	12	0	0	0	0	0
Oak, Quebec .....	3	15	0	4	10	0
Fir, Riga .....	4	2	0	5	0	0
Dantzic and Memel ..	3	15	0	4	0	0
Swedish .....	3	15	0	3	17	6
Pine, Quebec, red, per load ..	4	0	0	4	2	6
yellow .....	3	10	0	0	0	0
Miramichi & St. Johns ..	4	10	0	0	0	0
Waincoat Logs, 18 ft. each ..	5	5	0	0	0	0
Lathwood, Memel, &c. fm. 12	0	0	0	0	0	0
Deals, Gefle, 14ft. 3in. by 9	31	0	0	32	0	0
Stockholm .....	27	0	0	28	0	0
Gottenburg, 12ft. 3in. by 9	26	0	0	27	0	0
Christiana, 1st & 2nd ..	28	0	0	30	0	0
St. Petersburg, Memel, ..						
Dantzic, 12ft. 14 1/2 in. 18	0	0	0	20	0	0
Quebec yellow Pine, ..						
first quality .....	17	0	0	18	0	0
second ditto .....	10	0	0	12	0	0
White Spruce, 120 ..	16	10	0	19	0	0
Dantzic Deck, each ..	0	18	0	1	6	0
Plank, Dantzic Oak, load ..	9	0	0	10	0	0
STAVES, Baltic, per 1200 ..	160	0	0	0	0	0
Quebec Pipe, 1200 ..	65	0	0	0	0	0
Punchoon .....	17	0	0	0	0	0
COPPER—Brit. Cake, p. ton						
Tie .....	84	0	0	0	0	0
Sheet, p. lb. .....	0	9	0	0	0	0
Old .....	0	8	0	0	0	0
South Amer., ton ..	72	0	0	73	0	0
IRON, British Bars .....	5	15	0	0	0	0
Rods .....	6	10	0	0	0	0
Hoops .....	8	0	0	0	0	0
Sheets .....	8	10	0	9	0	0
Cargo in Wales, Bars ..	5	0	0	0	0	0
Pigs No. 1, Wales ..	3	5	0	3	15	0
No. 1, Clyde .....	2	15	0	0	0	0
Russian, C.O.N.D. ..	16	10	0	0	0	0
LEAD—British, Pig, p. ton ..	16	10	0	0	0	0
Sheet, milled .....	17	15	0	0	0	0
Shot, patent .....	19	15	0	0	0	0
Red or Minium .....	21	10	0	0	0	0
White .....	23	10	0	0	0	0
Litharge .....	20	0	0	0	0	0
Pig, Spanish .....	16	0	0	16	10	0
American .....	15	10	0	15	15	0
STEEL—Swedish Keg .....	15	15	0	16	0	0
Fargot .....	16	10	0	0	0	0
TIN—In blocks, p. cwt. ..	3	12	0	0	0	0

Ingots .....	3	12	0	0	0	0
In Bars .....	3	13	0	0	0	0
Banca .....	3	5	0	3	0	0
Straits .....	3	4	0	3	0	0
Peruvian .....	2	17	0	0	5	0
Plates, p. box, 225 shs.—						
No. 1. C. 134 by 10 in. 1	4	0	0	1	11	0
I. X. ....	1	10	0	1	17	0
SPELTER—On the spot, ton	22	10	0	22	15	0
Delivery .....	22	10	0	0	0	0
ZINC, English Sheet .....	32	0	0	0	0	0
ORSEDEW .....	0	3	0	0	0	0
QUICKSILVER .....	0	4	6	0	0	0

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## NOTICE.

THE Cyclopædia of the Building-Act is now in type, and will be published in our next number, wherein, among other illustrations, it is our intention to give a drawing of the magnificent old carved Chimney-piece, taken from the ancient Hickes's Hall, St. John's-street, and now in the south-east committee-room of the Middlesex County Sessions' House.

# The Builder.

NO. XCI.

SATURDAY, NOVEMBER 2, 1844.



THE movement which has taken place with regard to architecture within these few years might occupy a large space in our columns, and still much remain to be said upon the subject. This movement, though it has at present produced little good, and has in some instances been the occasion of harm, is no doubt the forerunner of a regeneration of the true art and mystery of architecture. It has awakened public attention to the subject, and has enlisted in the cause many who are able as well as willing to assist judiciously, and to the purpose; and deducting the ordinary drawbacks from ill-advice and mere talkativeness, and making due allowance for the shackles and hindrances which they are sure to produce, it will be found that some sterling promise is opening to the cause, which must inevitably fulfil the wishes of the skilled and the sterling, who either devote their lives to the science, or admire and to their utmost foster it.

The various unprofessional societies which have lately sprung up, and which are devoted principally to ecclesiastical architecture, must in the end work a great deal of solid advantage, whether by awakening taste or arresting spoliation or demolition,—whether by improving new structures, or by restoring old buildings which would otherwise have gone to decay, or to violent destruction. It is true that much of the effect of these societies is lost by want of concert, and; as must be expected for some time to come, by a want of the scientific and technical attainments which relate to practical architecture. Some may say this at once incapacitates them from claim to touch any subject of architecture existing or to be formed: we cannot, however, go so far as that, for we are obliged to confess, that had the practising profession of architecture itself taken up the subject in earnestness, with a good heart, such societies would hardly have been necessary; but every one must admit that no party is indeed particularly to blame. The Reformation came as the natural consequences of the state of ecclesiastical matters at that juncture; had the fullness of time in that respect not come, the tyranny and cupidity of Henry the Eighth and the rapacity

of his courtiers would have been as powerless as the church then was to put off the humiliation which its sins had brought upon it; but the church being doomed to be humbled, the pride of its architecture was naturally humbled too. At that very critical time, the architecture of the ancient Romans was revived in Rome and other parts of Italy; and none were more active than the popes themselves in ousting the scientific Pointed Architecture, altering ancient Gothic edifices with a modern-antique masking, and setting the same example to all Europe,—notwithstanding Welby Pugin, who is as deficient in knowledge of history, secular and ecclesiastical, as in all the mechanical arts and sciences which were exercised by the Freemasons (even every joint of his carpentry being on false principles, and such as no competent carpenter ever practised),—would have one to believe ancient church architecture declined by the spread of Protestantism, carried on by that "*Tyrant Elizabeth*," as he is pleased to call her, no doubt admiring the sweet-souled Mary, her sister, the legs of whose very bed, up to the sacking, if it had any, were steeped in the blood of episcopal martyrs (a thing little heard of even in pagan times), and whose proceeding may be taken as a model of that which men of his class would fain try the experiment of reconstituting: the popes having set the example, the ancient Roman architecture, under various phases of degeneracy, spread again from Venice to Ireland, and from the Mediterranean to the Baltic; and from the exact similarity of the curves in the Jacobine scrolls and filigree work with the moresco works of Spain, many of which indeed seem pricked off from the same moulds and templets, they thence appear to have been executed by the Moors, who were expelled from Spain by its Catholic sovereigns, for no doubt in the years 1609-10, when Philip the Third enforced his edict, and thrust out from the kingdom a million of souls, with the other Moors hosts of workmen, who, till then, had been busied on their own arabesques, became from their skill the employed carvers and artificers wherever they could obtain toleration or encouragement,—showing, as far as any collateral testimony can, that Catholicism itself, in its zeal, caused a still further erratic movement from Christian architecture.

We wish all the legitimate power which could result from enthusiasm and activity, to be the crowning result of these societies; and that till they have obtained the requisite quantity of information and science they should be more pacific than active, confining themselves for the next five or six years principally to the acquirement of knowledge and the arresting of spoliation; so that in after-times they may have little cause for regret; and that in particular they should be very tender in the promulgation of dogmas, lest they inevitably lose repute for discretion, and be not esteemed of authority.

We caution them at present to doubt with themselves, till they find the truth; and especially to be careful, and even timid, in all matters of construction, not daring to utter opinions with regard to methods in carpentry and masonry which have obtained traditionally, practically, and scientifically; nor lightly to believe those who, in proportion to their want of practice, technical breeding, and abstruse study, esteem themselves entitled to reform, change, or restore. The most dangerous rock, upon which some of these societies are now falling, is the restoration of ancient things in new edifices, merely as examples of styles which once obtained, and because they had a certain descrip-

tion of taste (the best of the day) esteem them fit subjects for imitation; whereas nothing could, or at least should, be more notorious than the fact that improving science caused the free-masons to cease from particular methods, and to go on improving till architecture had attained a zenith; and that their master-masons would not have admitted, even into the rank of apprentices, those perverse enough not to follow the most advanced architectonic science, when the way had been pointed out by the genius of others.

We have not space at present for enlarging further upon so important a matter, but must defer doing so till another occasion.

M M M.

A SPECIAL meeting of the Oxford Society for Promoting the Study of Gothic Architecture was held on Wednesday, October 30th, for the purpose of receiving the report of the committee appointed June 17.

There will also be meetings on Wednesday, November 13th, and Wednesday, November 27th. All these meetings will be held in the society's room, at eight o'clock in the evening.

## DECORATIVE ART SOCIETY.

On Wednesday evening, the 30th of October, a paper was read by Mr. Fildes, "On Beds and Bedding." After noticing the varieties in use among the ancients, and the sleeping arrangements of modern times, both in foreign countries and England, the paper concluded with an account of the materials that enter into the composition of the various articles of bedding, with remarks on the possibility of improving them, so as to increase the comfort of this indispensable article of furniture. In the discussion which ensued, various suggestions were thrown out for the consideration of manufacturers on practical improvements in the preparation of feathers, horse-hair, spiral springs for mattresses, &c.

On Wednesday, the 13th inst., a paper will be read "On Colour and Gilding," in application to decorative purposes.

## INTERCOURSE BETWEEN ENGLAND AND HAMBURG.

Mr. Elmes's project of constructing wet docks, with a spacious lock and much enlarged harbour, at Gluckstadt, on the Lower Elbe, and connecting it by the recently opened railways to the Baltic, *via* Keil, and to Hamburg, *via* Altona, is not only one of the most important improvements in the intercourse between England and the countries adjacent to the Elbe and Baltic that have yet appeared, but will effect one of the greatest political and commercial revolutions of modern times. Gluckstadt is situated in one of the finest reaches of the Elbe, about 28 English miles from its mouth, with a clear channel of above a mile in width, and from 40 to 60 feet deep at high water, and from 30 to 40 feet deep at low water in front of the harbour, which is also protected by a natural breakwater, which is high and dry at every tide. In addition to the trading ships using this splendid new harbour, the steam-ships of London and Hull will make many more voyages a month than they now do to Hamburg, from the difficulty and danger of the navigation above Gluckstadt; and a new company, called the European Steam-Packet Company, is started for the purpose of effecting a daily communication from Harwich to Gluckstadt, which can be accomplished in 21 hours, and one hour by railroad to Hamburg will make 22 hours from Harwich to Hamburg; and when the branch railway from Colchester to Harwich is completed, 2½ hours more from London will make 24½ hours from London to Hamburg, which now takes from 50 to 70, and often in winter 80 hours.—*Observer*.



## THE BEST METHOD OF PROTECTING BUILDINGS FROM LIGHTNING.

WERE our houses, magazines, and ships, built of iron, or did they consist of a framework of iron filled up with stone, brick, or wood, they might bid defiance to the ravages of accidental or wilful fire, as well as to all the lightning of the tropics. Strike where it might, the deadly fluid would be conducted quietly to the ground. In the meantime, however, we must have recourse to a less perfect system of protection, till advancing knowledge and receding prejudice shall have introduced iron buildings, and iron ships, as well as iron ploughs, iron roads, and iron bridges.

As the conducting powers of *lead, tin, iron, zinc, and copper*, are as the numbers, 1—2—2·4—4 and 12, copper is the best material for conducting-rods. The quantity of metal in the rod should not be less than what is contained in a cylinder *half an inch* and *two-tenths* in diameter. The metallic rod should be flattened rather than round, so as to have the greatest surface that is consistent with strength. The conductor then formed, should communicate with all the detached masses of metal in the building, such as leaden ridges, gutters, and metallic pipes. It should be placed as near the wall as possible, and pass directly into the ground. It should be attached to the most elevated point of the building, and if the structure is to consist of numerous ranges, such as the new Houses of Parliament,\* long, pointed rods should project from the most prominent parts into the atmosphere.

In place of adopting the usual method of external conductors, we would recommend the introduction of a vertical iron bar into the thickness of the principal walls of the building. These bars should communicate with a horizontal wall-plate of iron uniting the whole, and from this wall-plate should rise all the external conductors which are to project into the atmosphere. These iron-plates and bars might be so united as to form a sort of carpentry which would add to the strength of the edifice.†—*Edinburgh Review*.

## LECTURES ON ARCHITECTURE AND ANTIQUITIES.

## Lecture V.

## ROMAN ARCHITECTURE.

(Continued from p. 531.)

ROME was adorned with an incredible number of fine buildings; temples were erected in honour of every deity in the pagan mythology, many of which have been swept away, but of which descriptions remain in the works of poets and historians, to enable us to judge of their splendour. Even in the days of the Republic, the private residences of the wealthy citizens began to display the utmost magnificence of architectural grandeur, and the palaces (for so they may be termed) of Pompey, of Caius Marius, of Lucullus, rivalled each other in sumptuous decorations; and Pliny states that there were at one time in Rome one hundred palaces of the greatest splendour. Great was the contrast, therefore, to those earlier times when these temples were only large enough to contain the statue of the god, when the houses were only *cabins (tectæ)*, with walls of mud, and roofs of boards, or, as in the time of Romulus, when even the palace of the king was thatched with straw, so that Ovid and Livy call the residences of the early kings, *cottages*.

The conquests of the Romans, by which they became acquainted with, and masters of, the finest works of antiquity, caused the simple buildings of their capital to make way gradually for more elaborate works. Yet even Julius Cæsar, in the height of his power, was obliged to obtain leave to erect a pediment in front of his private dwelling. We may suppose that some of the more early structures, in which Grecian architecture was attempted to

be introduced, exhibited singular anomalies, and possessed but little of the refined taste of the Greeks. Thus Plutarch relates that columns brought from ancient temples to Rome were cut and repolished after their arrival, to produce a greater degree of elegance and lightness; but he adds that what they obtained in these qualities they lost in grandeur and symmetrical proportion. The ruthless conquerors, animated by avarice rather than by a true feeling of taste, despoiled the temples of Greece as well of their columns as of statues and paintings: thus Sylla carried away a great many columns from the Temple of Jupiter Olympius, at Athens, to adorn the temple of Capitoline Jove, at Rome; and forty columns of the Temple of Juno Lucina went to adorn some public building also at Rome; and numerous columns are to be seen in the different churches, which, in all probability, originally belonged to pagan temples of remote antiquity and destination.

Among the most useful and necessary works with which Rome abounded, we may reckon those in which the *ARCH* was a principal feature, viz. in her aqueducts, bridges, and cloacæ (sewers). For many hundred years the Romans had no supply but the turbid waters of the Tiber, or from its immediate neighbourhood. About 312 years B.C. (or 442 after the foundation of Rome), the first aqueduct was commenced by the censor Appius Claudius Crassus, and from him it was called the *AQUA APPIA*: he was also the originator of the famous road called the *Appian Way*. This aqueduct was eight miles long, and the greater part of the distance was along the ground, or by subterraneous lines, and for 193 paces it was carried upon arches. The higher part of the city was supplied by its waters.

The next aqueduct in order of time was constructed about thirty-nine years afterwards, by Marcus Curius Dentatus and L. Papirius Cursor, censors, from the spoils taken in war from Pyrrhus. It was brought from the environs of Tibur, at a distance of more than twenty miles, from the springs that flowed into the Anio, and thence it was called *ANIO VETUS*: it was chiefly underground.

After another lapse of 127 years, the *AQUA MARCIA* was brought into Rome by the Prætor Martius (although this supply is said by Pliny to have been originally commenced by Ancus Martius). It was brought from springs in the neighbourhood of Subiaco, twenty miles above Tivoli, and was reckoned the purest and coolest of all the waters that supplied the city:—

—“*Marsaque nives et frigora ducens Marcia.*” STATIUS.

Pliny says, “Of all the waters in the world, that which we call in Rome the *Marcia* carrieth the greatest name by the general voice of the citizens, in regard both to its coldness and salubrity, and we may esteem this water for one of the greatest gifts that the gods have bestowed upon our city.” About 460 paces were carried on arches.

The fourth supply of water was called the *AQUA TEPULA*, introduced by the censors C. Servilius Cæpio and L. Crassus Longinus; it commenced about eleven miles from the city, derived from springs connected with the Anio.

The *AQUA JULIA* was the work of the magnificent Agrippa, so called in honour of his wife, the daughter of his imperial friend Augustus, and widow of the lamented Marcellus. It was carried on arcades for a length of 6,400 paces.

Agrippa also conducted the *AQUA VIRGO* into Rome, so called from the circumstance of a girl having first pointed out, to the soldiers engaged in exploring, the source of the stream, ten miles from Rome; it supplied chiefly the Campus Martius, and the VIIth and IXth regions; its waters were in great request for bathing; thus Statius:—

“*Quas præcepit Anien, atque exceptura natatus Virgo juvat.*”

For seven hundred paces this aqueduct was carried on arches.

The *AQUA ALIETENA* was conveyed by Augustus from the lake Alietinus, a distance of twenty two miles, and it appears to have been intended entirely for the use of the *Naumachia*, or places for sea-fights, which

that emperor had formed in the XIVth region. For 355 paces it was carried on arches.

These seven aqueducts formed the supply of Rome until the time of Claudius, who finished two magnificent works commenced by Caligula, one called the *AQUA CLAUDIA*, which derived its source at a distance of thirty-eight miles from Rome, and 10,000 paces of it were carried on arches; the second, called the *ANIO NOVUS*, was forty-two miles long, whereof more than 6,000 paces were on arches.

As the Romans carried their architecture into their provinces, their useful works were therein introduced, as well as those which sprang from luxury or vanity. Some of the provincial aqueducts, in Gaul especially, were of extraordinary splendour and extent, many of which still supply the towns with their waters. The chief of these were at Lyons, the ancient *Lugdunum*, where there were no less than four, erected during the reigns of Augustus, Tiberius, and Claudius, crossing valleys and rivers at a great height; at Metz; at Evora; at Bourgas; at Segovia, by Trajan; and the most superb of all at Nismes, whose origin is attributed to Agrippa, long the governor of that city. The whole length of this aqueduct is about six French leagues, and in the middle of its course is the famous *Pont du Gard*, which crosses the deep valley of the river Gardon, at a height of 150 feet above the river, in three tiers of arches, some of which are 60 feet wide.

There were eight bridges over the Tiber into ancient Rome, now mostly in ruins; the most noted of them was the *Pons Sublicius*, which Horatius Cocles singly defended against the army of Porsenna; and the *Pons Triumphalis*, now called after the Vatican, by which those who had obtained victories in Gaul and Spain entered the city in triumph.

The emperor Trajan built a famous bridge over the Danube, which was demolished, some assert through envy, by Hadrian. It had twenty piers, 150 feet high and 60 feet wide, with arches between, 170 feet wide; it was designed by Apollodorus. The bridge of Alcantara over the Tagus, erected by a Roman governor in honour of Trajan, is 670 feet long, and 200 feet above the river, and consists only of six arches, each 80 feet wide. A famous single-arched bridge is that over the river Allier, near Brioude, in Auvergne (*Pons veteris Brivatæ*); the piers stand on two rocks at the distance of 195 feet, the arch is 84 feet above the water.

The *CLOACÆ*, or Sewers, were also wonderful works; that called the *Cloaca Maxima*, planned and commenced by the elder Tarquin, was so large that a loaded cart of hay could easily pass through it. (Strabo.) It was about 1,500 feet long, 16 feet broad, and 30 feet high. Some authors are unwilling to refer to so early a period as that of the Tarquins the covering over of this sewer with the arch as it now exists, and they incline rather to ascribe it to Agrippa, who is known to have cleansed and repaired it, and who certainly had to reconstruct it for the distance which it passed under his superb Pantheon—an eighth part of the whole length of the Cloaca. But to enter further into this question will involve a discussion on the antiquity and discovery of the arch, for which this is not exactly the place.

The Roman “ways” or roads were also astonishing works, and extended not only from Rome itself to every corner of Italy, but into the remotest parts of their provinces, where neither fens nor marshes proved obstacles in their progress. In England, remains of their great military ways are numerous; of these the road known by the name of Watling-street is conspicuous; it extended from London to York.

In their monuments we see also proofs of the magnificence of this extraordinary people. The most stupendous of these are, the mausoleum of Hadrian, now the Castle of Saint Angelo, 250 feet in diameter,

—“the Mole which Hadrian rear’d on high, Imperial mimic of old Egypt’s piles;”

BYRON.

the tomb of Scipio; the pyramid of Caius Cestius; and the immense structure erected to the memory of

“The wealthiest Roman’s wife,”

Cecilia Metella, wife of the rich Crassus, whose “love or pride” raised that

\* We earnestly hope that this splendid national structure, which is to be adorned internally by the genius of our artists, will be protected externally by the science of our philosophers. We fear, however, that the expression of this hope is not sufficiently early to enable the architect to embody a system of metallic conductors in the very walls of the edifice.—*Ed. Rev.*

† Bell-wires and metallic pipes for water and gas in modern houses require to be carefully connected with the principal conductors; without this precaution they are risks directed against the lives of the inhabitants.—*Ed. Rev.*



"stern round tower of other days,  
Firm as a fortress, with its fence of stone,  
Such as an army's baffled strength delays,  
Standing with half its battlements alive,  
And with two thousand years of ivy grown,"

BYRON.

The private residences of the emperors and citizens of note corresponded with the magnificence of the public buildings. The ruins of the Palace of the Cæsars nearly cover the Palatine hill; it was begun by Augustus, considerably added to by Tiberius, and enlarged by Caligula, who formed the gigantic project of uniting the Palatine hill with the Capitol by a bridge. Nero extended the palace to an immense distance, as far as the Cælian and Esquiline hills, and was so profuse and extravagant in the decorations of this palace that it was called Nero's Golden House; the galleries were a mile in length, the ceilings of the dining-halls represented the motion of the firmament.\* Domitian rivalled him by enlarging this abode, and by the lavish expenditure he displayed therein. Trajan stripped it to adorn the Temple of Jupiter Capitolinus; it was destroyed or much injured by fire in the reign of Commodus, but was restored by him, and repaired and enriched by Alexander Severus and almost every succeeding emperor until the time of Theodoric. It is now a heap of undistinguishable ruins, and "the spider spreads the veil in the Palace of the Cæsars, and the owl stands sentinel on the Imperial mount;" and cabbages and artichokes may be purchased in the halls of those Cæsars who wielded the greatest sceptre ever held by the hand of man.

Hadrian's villa, near Tivoli, occupied an area of nearly five miles in extent, and its ruins still excite the wonder of the traveller. It resembles a city rather than a villa, for within its circuit were temples, baths, gymnasium, a theatre, and lodging-houses for his friends, his officers, and soldiers. In his palace he imitated all the best buildings of Greece, and the gardens were made to resemble the Elysian fields, and even the infernal regions. Among the admirable Greek sculptures found in the ruins of Hadrian's villa, were the Faun, the VENUS DE MEDICI, and the Flora; and that such matchless works of art were not confined to the chambers of the very highest in rank, we gather from the fact, that in the ruins of the villa of the historian Sallust were found the Silenus and Infant Bacchus, the Hercules and the DIVO GLADIATOR. Mr. Hope well observes that each of these imperial baths seemed a palace in splendour, and a city in size; whilst an early writer (Ammianus Marcellinus) compares them to provinces rather than to cities.

It would fill a volume only to mention the names of the hundreds of temples which once adorned Rome, of the circuses, gymnasium, thermæ, porticoes, naumachie (places wherein sea-fights were displayed), fora (in the time of Augustus to the number of forty-five), basilicas "for the administration of justice, and the despatch of business, vast and superb beyond description, and even shambles so sumptuous, that on a medal of Nero appears a building inscribed 'Macellum Augusti,' which, from the richness of its columns, might be mistaken for an amphitheatre." (Hope.) Many extraordinary structures have been briefly noticed, and enough has been said to convey some notion of the magnificence of ancient Rome, of her pride and pomp, when pouring out her countless thousands

"along the Sacred Way  
The triumph came, and winding round  
With acclamation, and the martial clang  
Of instruments, and cars laden with spoil,  
Stopp'd at the sacred stair \* \* \* \*

And the victor springing from his seat,  
Went up, and kneeling as in fervent prayer,  
Entered the Capitol." ROGERS.

"Now all is changed,"

"The Goth, the Christian, time, war, flood, and fire,  
Have dealt upon the seven-hilled city's pride;  
She saw her glories star by star expire,  
And up the steep, barbarian monarchs ride  
Where the car climb'd the Capitol; far and wide  
Temple and tower went down, nor left a site." BYRON.

We need not wonder at the magnificence of ancient Rome, if we reflect that she was abso-

lutely mistress of the (known) world; that she came, and saw, and conquered; that monarchs trembled on their distant thrones lest they too should adorn a Roman triumph, and grace the victor's chariot-wheels; from which humiliation neither the Numidian monarchs Syphax and Jugurtha, nor the Asiatic queen Zenobia, nor the British Caractacus, nor the Macedonian Perseus, nor the Jewish Simon, were able to protect themselves:—

"Well might the great, the mighty of the world,  
They who were wont to fare deliciously,  
And war but for a kingdom more or less,  
Shrink back, nor from their thrones endure to look,

To think that way! Well might they in their state  
Humble themselves, and kneel and supplicate  
To be delivered from a dream like this!"

ROGERS' Italy.

Some invoked death, and so escaped the fearful trial: Hannibal by the poison, Cleopatra by the asp, and he\* who, when the fatal cup harmed not, fell on his own sword.

The spoils of the then known world were at the command of Rome, and the genius of the Roman people seemed to take a delight in expanding itself, like their all-conquering eagles, in rearing structures which should serve as trophies of their greatness and proofs of their claim to universal dominion. But the states of Greece were hardly larger than some of our English counties; their works were frequently interrupted by the enemy at their gates, and their democratic jealousy would not allow their citizens to erect any handsome private edifices; thus their magistrates, watched with a severe and scrutinizing glance, were hardly better lodged than the meanest citizens of Rome.† The resources of the two nations were widely different, yet the Greeks produced that faultless system of architecture upon which mighty Rome formed her own school, for her orders are but plagiarisms from the Greeks, engraving her blemishes upon their beauties.

G. R. F.

(To be continued.)

#### OPENING OF THE NEW ROYAL EXCHANGE.

THE above spacious edifice was opened on Monday last by her Majesty in person, attended by Prince Albert, the Duchess of Kent, the Duke of Cambridge, the Duke of Wellington, the Bishop of London, the ministers of state, several members of the corps diplomatic, and a long list of the nobility, gentry, merchants and civic authorities. On this occasion her Majesty was pleased to confer the dignity of baronet upon the Lord Mayor, now the Right Hon. Sir William Maynard, Bart. During the inauguration, an interesting ceremony took place in the centre of the Merchants' Area, on the spot where the statue of her Majesty, by Mr. Lough, is to be placed; this was the naming of the Royal Exchange by her Majesty. The Lord Mayor, as he preceded her Majesty, stopped when he reached this point, and the members of the corporation, together with the chief ministers of state, formed a circle round her Majesty, who then in an audible voice said "It is my Royal will and pleasure that this building be hereafter called the Royal Exchange."

We have so frequently during its progress had occasion to speak professionally of the building, that our readers will readily excuse us doing more on the present occasion than simply registering its opening.

IRON CHURCH FOR JAMAICA.—A church has been sent out to Jamaica, as a specimen, as many of the kind are likely to be required. The pilaster supports are of cast-iron, on which are fixed the frame roof, of wrought-iron, of an ingenious construction, combining great strength with simplicity of arrangement; the whole is covered with corrugated iron, and the ceiling formed in paneled compartments, covered with felt, to act as a non-conductor of heat. The body of the church is 65 feet by 40; the chancel, 24 by 12; a robing-room and vestry are attached. The windows are glazed with plate-glass, one-eighth of an inch in thickness; the two chancel windows, and four others, are of stained glass. The cost of this iron church is 1,000*l.*—*Glasgow Chronicle.*

\* Mithridates, King of Pontus, who had been in the habit of taking so many antidotes, that poison had no effect upon him.

† Demosthenes accused Midias that he had built a house at Eleusis by which all the others were thrown in the shade.

#### THE BIRKENHEAD DOCKS.

THE occasion of laying the foundation-stone of the docks at Birkenhead, intended by the projectors as a kind of rival to Liverpool, has created a great sensation in this and the surrounding district. Although there has been no particular complaint of the want of dock accommodation at Liverpool, it has been deemed a matter of infinite importance to the Cheshire side of the river to form docks in that neighbourhood, whence projected railways and various other means of forwarding the views of commerce are contemplated. The town of Birkenhead itself, which comprises Woodside, Monk's Ferry, Tranmere, and a number of other places, has for some years been laid out in streets; and owing to the indefatigable exertions, industry, and perseverance of Mr. William Jackson, the township has risen to its present state of importance, and which now commands the general attention of the inhabitants at large of this part of the country. To day was appointed for laying the foundation-stone of these docks; and such a numerous assemblage of individuals, I may state with confidence was never previously congregated on the Cheshire shore. The cost after the first stone was laid may be estimated as follows:—

The docks at Wallasey Pool (by the commissioners), 400,000*l.*; dock warehouses (private company), 600,000*l.*; New Market (commissioners), 20,000*l.*; Town-hall dock, 10,000*l.*; Park dock, 25,000*l.*; Tunnel from Grange-lane to Monk's Ferry, belonging to the Chester and Birkenhead Railway, 20,000*l.*; making in all 1,075,000*l.* These are works finished, or intended to be finished, as in the case of the docks and warehouses, the market, the Town-hall, the park, and the tunnel are nearly wholly finished. Such a great undertaking as this naturally has excited the utmost interest, and to-day may be considered as a memorable epoch in the annals of commercial enterprise.

So early as nine o'clock in the morning immense crowds of individuals flocked to the pier-heads, and the boats were so crowded by the curious from Liverpool, that the general passage by the boats for residents was quite impeded, and from their great loading serious apprehensions were entertained for the safety of the living cargoes. Fortunately, however, no serious accidents occurred; a few persons slipped into the river, but they were not injured beyond getting a mere ducking. In honour of the occasion, the ships of the Liverpool docks displayed their gayest colours, and various vessels in the river returned the compliment to the guns which were bombing from six o'clock in the morning from the Birkenhead shore. Many of the shops in Liverpool closed for the occasion, and various of the societies of trades, odd fellows, shipwrights, and others embarked for the Cheshire side, and joined in the general rejoicing. A grand procession was formed of the principal inhabitants and authorities to see the spectacle of laying the first stone of the docks, and every window in its line was filled, principally by the Lancashire and Cheshire witches. The procession left the Town-hall at eleven o'clock, and proceeded round the New-park; and after parading the principal streets, halted in a field beyond Mr. Case's house, where the first stone of the anticipated future prosperity of Birkenhead was to be laid. A vast number of individuals were congregated upon the spot, and on the approach of the procession, with Sir Philip Egerton at its head, the most enthusiastic cheers were given. The stone having been lowered into the place destined for its reception, containing, as it did, the coins and documents selected for the occasion,

Sir P. Egerton addressed the spectators at considerable length, after which the aristocracy of this and the surrounding neighbourhood partook of a sumptuous entertainment, served up in a spacious pavilion erected on a portion of the premises of the Chester and Birkenhead Railway, Mr. John Laird, ship-builder, of Birkenhead, presiding.

Liverpool, Wednesday, Oct. 23.

MONOLITHIC TOMB FOR THE REMAINS OF NAPOLEON.—A block of porphyry, weighing upwards of 50,000 lbs., has been taken from the quarries at Morlaix, to be used for the sarcophagus of the Emperor Napoleon.

\* The architects of Nero were Celer and Severus.



A GLANCE AT THE INTERIOR OF THE CHURCHES IN THE DEANERY OF SPARKHAM, IN NORFOLK.—NO. VII.  
WITH NOTICES OF THEIR ACTUAL CONDITION.

(Continued from p. 544.)

*Billingsford.*—We are always gratified on meeting with indications that the parochial clergyman holds it not enough, in respect of the wants of the fabric in which he is called to minister, merely to

"Talk with churchwardens about pews;"

but both by precept and example promotes, as far as in him lies, the stability of its general condition, and the decency and order of its arrangements. Such indications are by no means wanting in the fine church of Billingsford, which in Parkin's time seems to have been in a very dilapidated state throughout.

We should like to know the orientation of this church, that is, the precise degree of its inclination towards the east: the pile was probably dedicated to either St. Mary the Virgin or the Holy Trinity, and the exact position would furnish us with an inference in favour of one or other of these; for our ancestors "used to make the church point to that part of the horizon in which the sun rose on the day of its foundation, the day also, it should be remembered, of the patron saint."\*

It consists of a nave with clerestory pierced on each side by three windows, formed of quatrefoils inserted in circular mouldings; two aisles, a spacious chancel, and an octagonal tower with one bell only. The ancient covering of lead over the nave and aisles has yielded place to pantiles; the chancel is flat-tiled. Cause for regret exists in that, at the period of the reparations, it was not yet received as a dictum that "flat ceilings are inconsistent with Gothic architecture," and that, "next to a stone vaulted roof, none has so good an effect internally as an open roof exhibiting the timbers." This is peculiarly obvious in the coved ceiling of the chancel here, rapid in itself, and, far worse than that, rendering all but impossible the restoration of its once splendid east windows. Some of these, particularly one now blocked at the east end of the north aisle, are fine examples of the Perpendicular period; but that of the majority is geometrical tracery, approaching the Decorated. Shall we be excused in entering our protest against the "washings" to which the stone-work of these externally has been subjected? The lime-brush has done too much to impair the interior beauties of our churches—witness here the many-clustered pillars, with their finely-moulded capitals, and having the bases set on stilted polygonal plinths,—that its scope should be yet enlarged. Besides, we object to it on principle, as being an "irreverent" substitute for the mason's chisel.

This spacious and lightsome edifice is entered from a mean porch by crossing an ancient grave-stone, long ago "reaved" of its little commemorative brass. The floor here and in the central avenue, nearly co-extensive with the nave, is laid diagonally with pavements; those of the chancel, which mount in three platforms to the altar-rail, intersect at right angles with the building; the first step, set under a pointed chancel-arch—the place of the lost rood-screen—has its moulded nosing, and the riser under, wrought in Caen stone. The floor under the seats—for the most part open, but of debased character, and having the standards crested by very rude *fleurs de lis*—is by no means in similarly good condition.

The font, which has been advanced from its former position in front of the tower archway now into the body of the nave, and there elevated on a high octagonal plinth, represents two distinct styles. The lower portion, a cylindrical stem set on a hexagonal base, and surrounded by four small round shafts, bespeaks the Norman period; while a capacious bowl of octagonal form externally, where the compartments are paneled with double arches, and the spandrels supplied with quatrefoils, should denote a later era. The living—it appears to have been once leaded—is gone, and the drain no longer serviceable, a point we should hope of undesigned omission at the time of removal.

In the chancel, the canopy of the sedilia, if they had a canopy, has disappeared: a pointed arch enriched with crockets surmounts the piscina, the office of which is foliated. The space within the altar-rails is "wainscoted"

by a low brick wall faced with cement, and built so as to admit a current of air at the back. The rail and table of varnished oak are, with some reserve on the style of the balusters, unexceptionable. A north door, communicating with the grave-yard, almost demands the erection of a sacristy. Between it and the chancel a curious perforation, in the form of a square-headed window, crossed by a transom below the centre, is thought to have formed the confessional of the Papal requisition; it is now partly blocked. The steps from the rood-loft seem to have had their *debouchement* in the south aisle. The holy table appears at present without a dosset or screen over it, but we were informed that the decalogue engraven on zinc is in course of preparation, and will be set up there in obedience to the eighty-second canon.

We must not leave the chancel without noticing the zeal for its good and sufficient reparation—as well as that of the edifice generally—shewn by the present incumbent. *Transeat in exemplum!* Good it were if some who love to declaim against "superstitious filthiness at diriges, at month's minds, at trentals, in abbeys and chantries," would confess that the real filthiness of the churches in which themselves minister is indeed *most foul and lamentable to behold*.

At an inquisition taken anno 34 Henry III., the jury find that Richard de Bec had no right to fish, except for eels, in the sluices of the two mills here; and the present worthy occupant of Bec Hall may aver that we also are devoid of right to impugn his large seat in the north aisle. Parkin mentions "the remains of a large and handsome pew of oak, with a cover," as appertaining to the Hall in his time. Those which now disfigure the east end of this fine church have few claims to notice on the score of beauty; but they at least possess one merit—that of not being immoderately high. The finials of the ancient benches exhibited, it seems, in rude carving the armorial bearings of Curson and others. Full-length figures of the saints in fresco once adorned the walls; one of them discernible at no remote period over the north door might represent St. Christopher.

The panels of the reading-desk and pulpit contain portions of tracery, like that of the rood-screen at Weston: the former will be so far altered, we hear, that the minister may face southward. A lectern should by all means be introduced here, and two chancel stalls placed near it; one on each side, would have fine effect.

The tower, as already observed, is in form octangular: it has four perpendicular windows in the belfry stage, and a fine west window of similar design affords light into the nave beneath. The parapet is embattled, and the outline of its lower portions, by the introduction of massive buttresses continued within, relieved by the deep "responds" of the western piers. The set-offs of the buttresses at the chancel-end are curious.

The site may be dismissed in a few words—

"A gentle hillock crown'd  
With a peculiar diadem;"

and we were pleased to learn that its natural beauties will be enhanced by a judicious clumping of appropriate trees. Why should not there be a wish, yea a very earnest desire, for embellishing those places where "the field of God is sown with the seeds of the resurrection?"

**RIVER DON IMPROVEMENTS.**—On Thursday week, a deputation from the River Don Company met the committee of Town Council at the Mansion-house. The deputation stated the views of the company with regard to the improvements in the navigation. They proposed to make a still-water navigation of nine feet up to Doncaster with only one lock between the tide way, and to form a flood-drain extending from the Doncaster Mill as far as below Sandall weir, of dimensions capable of containing the whole of the flood waters. They also contemplate the embanking of Newton Ings and Crimpsall, in order to prevent the floods from coming into Marsh-gate. It is also a matter of impossibility to estimate these improvements too highly, because the prosperity of the town is intimately connected with the more efficient navigation of the river itself.—*Doncaster Gazette*.

BATHS AND WASHHOUSES FOR THE LABOURING CLASSES.

THE meeting which recently took place at the Mansion-house, and the interest it has excited, nor only in London but throughout the country, may be taken as evidence of the impression made by the sanitary report and the other confirmatory inquiries as to the physical condition of the labouring population, and of the increasing anxiety they have created in the minds of persons of all parties to do all that may be done immediately, and in the order of practicability by voluntary effort, without waiting for those larger measures which can only be achieved by well-directed legislation. Undoubtedly, the erection of a cheaper and superior description of public baths and accommodation on a large scale, which shall remove the business of washing from the single room in which the whole of a poor man's family are born, work, live, sleep, and die, will be legitimate objects of voluntary exertion. Open thoroughfares, free ventilation, and good drainage are imperatively necessary for the preservation of the public health. It has been shewn, though the proof was unnecessary, that mortality is greatly increased by the squalid, ill-lighted, ill-ventilated dwellings of the poorer classes. Such dwellings are the nurseries of typhus, which propagates itself into the neighbourhoods where wealth, relying on superior arrangements, deems itself secure. Dr. Farr states that the health or unhealthiness of various districts is indicated uniformly by the ventilation and drainage of dwellings.

A profuse supply of water to the dwellings of the humbler classes is essential to public health. All vermin loathe a well-washed floor. Medical men have often told us that they consider cleanliness more fattening and more contributive to a healthy frame than a large supply of good food. We see the principle exhibited in the grooming of horses, washing of dogs, &c.

Already several thousand pounds have been subscribed, though the committee has scarcely yet entered upon their duties.

**MEMORIAL TO THE LATE EARL OF LONSDALE.**—At a meeting of the Westmoreland magistrates on Saturday last, the subject of the erection of a suitable memorial to the late Earl of Lonsdale was introduced by Mr. Wilson, of Casterton Hall, who advocated the establishment of an institution for the benefit of the most unfortunate of all sufferers, those who are deprived of their reason, and stated that the erection and endowment of such an asylum had frequently occupied the benevolent mind of his lordship. An example of distinguished munificence has already been set by the gentlemen in the neighbourhood of Kendal. James Gandy, Esq., of Heaves Lodge, and John Wakefield, Esq., of Sedgwick, each having declared his intention to subscribe the sum of 500*l.* towards the undertaking. A lady, whose name has not at present transpired, has contributed 190*l.* towards the same object.—*Westmoreland Gazette*.

**NEW METHOD OF BURNING TILES AND BRICKS.**—Mr. Hodges, at the meeting of the Staplehurst Agricultural Association, said, that before long, great facility would be afforded for the draining of land, by a contrivance which would shortly be made public. There were several machines for making draining tiles, but the burning them and other expenses would always prove a great obstacle to their general use. This having occurred to him, he had, with the assistance of an ingenious man in his own employment, found out a mode by which any farmer who lived too far from a kiln could burn his own tiles, at a very trifling expense. The kiln would not cost more than 5*l.*, and it made inch-tiles complete at the rate of 18,000 in a fortnight. It would not be necessary to have any permanent building, and when a farmer had done with it, he could dispose of it to his neighbour none the worse for wear.

**NEW NAMES FOR STREETS.**—As much injury is liable to be inflicted upon tradesmen by any alteration of the names of their respective streets, a correspondent suggests that wherever such alteration takes place, the old name of the street should be written up under the new one.



## TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLSON.

(Continued from p. 520.)

116. **HOLLY**.—This, the hardest and most beautiful of our evergreens, is a native, and to be found growing wild in the woods—attaining a great age, with a height of 20 or 30 feet, and, under favourable circumstances, even known to reach from 40 to 50 feet. Every one acknowledges the enduring cheerfulness of its appearance; when every other tree has submitted to the wintry blast, and relinquished each vestige of its living beauty, this shines forth in sprightly relief from the frost-bound and snow-wreathed earth, or amid the driving sleet, its dark and glancing leaves and bright red berries strikingly contrasting with the bleak sterility which prevails around, seem to utter an eloquent homily on cheerfulness in adversity. There are many variegated varieties cultivated as ornamental shrubs, several of them of surpassing beauty, their glossy and jagged leaves being bordered and streaked with gold and silver hues: for a permanent, beautiful, and impenetrable hedge, it is not to be excelled, the only obstacle to its being made thus available being its extremely slow growth. It flourishes best in a sandy loam, but it is not at all fastidious as to soil; the seeds are inclosed in the cells of the berry, which are four in number, each containing one horny, oblong seed.

117. A custom of great antiquity exists of ornamenting churches and dwellings with holly at Christmas, accompanied by some other evergreens; and the circumstance of the custom having been practised at Rome by the early Christians has suggested its derivation from the Romans, who used the holly in like manner in their great festival of Saturnalia, which took place about the same time. That it was emblematical of peace and goodwill, we learn from its being the custom of the Romans to accompany their gifts at that season with branches of it; and that it is regarded even now in an analogous light among ourselves, is proved by our knowing that there are many, young and old, who could hardly believe Christmas to have arrived, were the space of wall over the mantel-shelf not adorned with its sprigs and berries; and the former especially, if no fun-fraught Rubicon depended from the ceiling. The disciples of Zoroaster, the fire-worshipper, believed that the holly-tree had no shadow from the sun; and his followers now, in Persia and India, are said to throw in the face of a new-born child water impregnated with its bark. Young people used to be fond of casting it leaf by leaf into the fire, which produced a crackling and bouncing that afforded them great amusement; and a custom still lingers of beating the feet with a bough of it when afflicted with chilblains, a penance akin to, and no doubt equally efficacious with, the martyr-like self-castigation of other days. In the language of flowers, it is the symbol of caution and foresight.

118. The wood of the holly is white and hard, suitable for veneering, inlaying, and making mathematical instruments; it is also much used for the purposes of the turner, whip-maker, millwright, and engineer. Its bark is, by boiling and fermenting, converted into bird-lime.

119. **HAZEL**.—This tree is very plentiful in England, and well known both in our hedges and woods; but rather as an underwood than as a timber-tree, although, if left to grow freely, it attains a very goodly size, especially the variety known as the Constantinople hazel, which was imported hither in 1665, and of which the fruit is twice as large as that of the common species. It is a pleasant, cheerful tree, when adorned with its flowers or catkins, depending gracefully from its branches, but has a still more enticing appearance when its boughs are loaded with the brown-shelled nuts, richly clustering on every spray:—the cob-nut is the produce of one variety, the rich filbert that of another: the squirrel climbs these trees and feeds on the nuts amongst their branches; the mouse and other small animals make free desert of them when they fall to the ground. The best soil for producing the filbert of a large size and free from maggots is a strong loam; for propagating by means of the nuts, they should be preserved through the winter in moderately dry sand; but when fruit is the object, the best method is by layers. The small coppice-wood of this species may be cut every seven

years; it is applied to the making of fishing-rods, hoops, spars, stakes, forks, hurdles, and a variety of other agricultural purposes; if left to grow without hindrance, it shoots up into poles frequently 20 feet in height.

120. **BOX**.—This tree grows to fullest perfection in Turkey, but is here seldom grown to any considerable size, although under favourable circumstances it will attain a height of from 20 to 30 feet; when a dozen feet high it presents a stem girding from 12 to 15 inches. It is generally found as an evergreen in shrubberies; the small shrub forming the bordering to flower-beds is a species of it, but not such as affords any serviceable wood: that which we use for superior purposes, especially where a fine cross grain is essential, is imported from Turkey. The wood is of a yellow colour, extremely close, compact, and hard; also heavy, and susceptible of a fineness of finish equal to metal. It is used for wood-engraving, the specimens of art produced from which, especially of late years, are scarcely inferior to the impressions from metal-plate engravings; it is also used for making mathematical scales, carpenters' rules, and musical instruments. It loses weight by long steeping in cold water.

121. **UPAS, or Poison-tree of the Island of Java**.—Amongst the marvels related by our earlier navigators, strange tales have been told of this tree—that it grows in a desert produced by its own pestiferous influence, its exhalations causing death to every living thing that approaches it, and the acrid milk or juice flowing from its stem when wounded being of the most deadly poisonous description, accompanied in its fatal certainty by the most excruciating tortures. The greater part of this is erroneous, but the virulence of its juice is unquestionable, a circumstance which, supposing the tree to be propagated in this country, must, or ought to, debar its common use, and would at least render it very unpopular amongst workmen. There is growing in the Horticultural Society's gardens at Chiswick, near London, an upas tree presented by the East-India Company, which, as it has not as yet killed or hurt any one, disproves the story of the poisonous influence of its exhalations; a strong sentiment of touch-me-not nevertheless pervades its immediate presence.

122. **BANYAN, Burr, or Indian Fig Tree**.—This tree is amongst the vegetable wonders of Nature, and is also one of the most beautiful of her productions; unlike any tree that grows in England, each forms a perfect grove, sometimes spreading to an amazing extent, being composed of many distinct stems, some of them of considerable magnitude, and probably never decaying so long as the soil continues to yield it sustenance. In the scorching clime of India it flourishes in more beauty and perfection than anywhere else; furnishing, as described by Milton,

“a pillar'd shade,

High over-arch'd, and echoing walks between;” and the leaves of which, according to that sublime poet, became the first clothing of the human race. The branches from the parent stem each throw out slender fibres, which, bending towards the ground, strengthen, strike under the surface, take root, and become themselves parent trees, that shoot out new branches, and produce roots in their turn, and so multiply *ad infinitum*, forming a beautiful and cooling shade; with large soft green leaves of a lively hue, and a small description of fig, which when ripe is of a bright scarlet colour. On the shores of the Nerbuddah, one of the boundaries of the Deccan, there is a magnificent and long-celebrated specimen still growing, consisting of 350 large trunks, and upwards of 3,000 smaller ones, and measuring nearly 2,000 feet in circumference, presenting a canopy under the shade of which 7,000 persons might repose; amongst its branches green wood-pigeons, doves, peacocks, large bats, squirrels, and monkeys, find shelter, and some of them sustenance. According to the tradition of the natives it is 3,000 years old, and it is believed by some to be the same that was visited by Nearchus, one of the officers of Alexander the Great.

123. **CYPRESS**.—Amongst the trees of the south of Europe, this is one of those which live to the most advanced age; it is also remarkable for presenting examples of very gigantic dimensions, both in girth and altitude, some of which are met with in Mexico: of these, one at Chapultepec, said to girth about

118 feet, and believed to be considerably above 5,000 years old, may be regarded as at once the largest and most ancient tree hitherto discovered. The cypress still exists on Mount Lebanon, and flourishes in the gardens of Constantinople; in the United States of America, its largest stocks are 120 feet high, and from 25 to 40 feet round—the latter dimension taken above the conical base of the tree, which usually measures at the ground from three to four times the diameter as generally taken; it is grown in England chiefly as an ornamental shrub, nevertheless frequently attaining a considerable size. It is a tall, upright tree, of a dark green hue, and rather sombre character; very hardy—enduring amid the war of changeable elements, from generation to generation, alike unmoved whether assailed by summer's scorching heat or winter's blighting cold. Its scent and shade have been said to be unhealthy, if not dangerous; its leaf is bitter; its fruit round in form, not larger than a common nut, and of an olive colour.

124. The cypress was in ancient times much planted in church-yards, an appropriation for which it might be chosen on account of its great durability; being, amongst perishable things, the most fitting as an emblem of immortality. In Turkish scenery its application in this way is carried to so great an extent as to become a remarkable feature, far-spreading forests canopied with their dark waving boughs vast cities of the dead; it being the custom in their cemeteries, when a body is committed to the earth, for the priest to plant a cypress at both head and foot of the grave, the superstition being that those trees which grow with their tall heads pointing towards the sky, denote the salvation, while such as take a downward bend (as happens with not a few), imply, on the other hand, the damnation of the soul whose mortal integuments they overshadow.

125. The timber of the cypress is of a beautiful and excellent description, very compact, and valuable as resisting the worm and all putrefaction. Amongst old examples of its use may be cited the gates of the church of St. Peter, at Rome, which Alberti found to be whole and sound after having been up 550 years. The coffins of the heroes of Athens, and the statue of Jupiter in the Capitol—the ark also, which is described in Scripture as being made of gopher-wood, is by some believed to have been of Cypress.

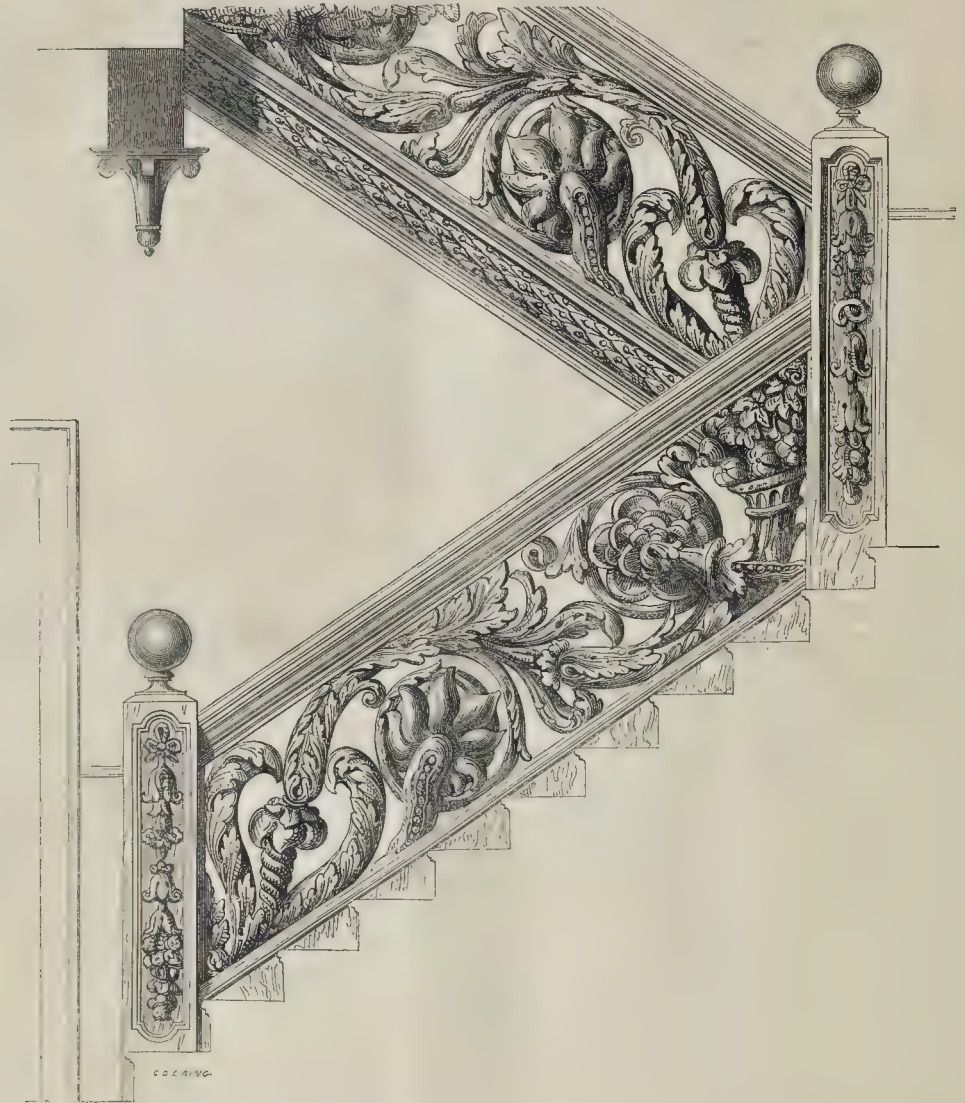
126. **ELDER**.—This tree is well known on account of its bunches of juicy berries, or at least it ought to be so from the variety of purposes to which its produce is applied. Its wood is very similar to that of the box tree, and will therefore be fit for similar uses: the pith, which it possesses in large quantities in both stem and branches, is cut into toys for young people—of the inner bark ointments are made—the flowers, before opening, are gathered for pickles—the berries are boiled into a glutinous syrup for colds and sore throats, or when quite ripe made into wine, which is esteemed a very pleasant beverage when spiced and drunk hot. In the north it is called the *Boor* tree, perhaps corrupted from *bower*; it was much planted of old in hedges of barnyards, &c. In earlier times many superstitions attached to the elder; it formed a charm for a variety of diseases, especially epilepsy; amulets were made of it, when grafted on the willow, &c., and the which properties are faithfully set forth in Blochwick's “Anatomic of the Elder,” translated and published in London, 1655. A cross made of the elder and willow, mutually unwrapping one another, is hung by some about their children's necks.

(To be continued.)

**THE HARDY MONUMENT**.—Monday the 21st ult. being the anniversary of the battle of Trafalgar, was appropriately selected as the day for laying the foundation-stone of this testimonial, which was done in due form by the esteemed lady of the high sheriff, John Floyer, Esq., amidst the cheers of the numerous assemblage. The site is Blagdon-hill. There was a goodly array of ladies present, which added much to the animation of the scene. Mr. Henry Goddard, of Bridport, is the contractor for the erection of the monument, which, from its elevated position, will be seen at a great distance both by sea and land. —*Dorset Herald*.



ANCIENT STAIRCASE BY INIGO JONES,  
IN CHANDOS-STREET, WESTMINSTER.



TO THE EDITOR OF THE BUILDER.

SIR,—I beg to send you a sketch of one of those numerous relics still remaining in London (and which are so little known or appreciated) of the talents of Inigo Jones as an architect and artist. The subject is a portion of a staircase still remaining in the house of Mr. Diller, writing-desk and dressing-case manufacturer, No. 5, Chandos-street, Westminster.

The width of the staircase is rather small; there are four flights, commencing at the first floor, ornamented with this beautiful carved work; there can be little doubt that the first two flights had balustrading of a similar description, but, if so, it has been removed many

years. The sketch is a copy reduced from a drawing, exhibited by the late Sir John Soane, R.A., in one of his lectures at the Royal Academy, who, speaking of the subject, thus alludes to the architect:—

"Inigo Jones, whose superior knowledge in architecture I have often had the pleasure of noticing in these lectures, was particularly happy in his staircases, both as to convenience and artist-like effect, even when confined to very small spaces. How superior is the decoration in these staircases" (two drawings of this staircase and one of the staircase at Amesbury, in Wilts., were exhibited) "to what we are accustomed to see in modern

houses of a similar class;—what comparative magnificence in the former, what poverty and meanness in the latter! Whatever we have gained in lightness and effect we have lost more in importance and character."

As soon as leisure permits, I will send you a sketch of the Amesbury example.

I am, Sir, yours, &c.,  
C. J. RICHARDSON.

22, Brompton-crescent.

P. S. Might not the house in Chandos-street have been the residence of Inigo? It is not far from St. Martin's-lane, where Horace Walpole states he resided.

MONUMENT TO THE EARL OF LEICESTER.

The following is a description of the monument which has been erected in Longford Church to the memory of the late Earl of Leicester.

The plan for the monument has been pro-

duced from the borders of Yorkshire, and is a fine magnesian limestone of a light cream colour.

The plan is a rectangular niche, slightly recessed in the wall, and projecting therefrom about one foot. It is fixed on a plain solid base, three feet high. The opening of the

niche in front is about nine feet high and four feet three inches wide, and is flanked by shafted jambs, having floral capitals, with the ball-flower in the hollow between the shafts, and the outer angles of the monument are strengthened by double buttresses, tabled in three stages. From the capital of



the outer shaft springs an equilateral moulded arch, with ball-flower enrichment; and from the inner shaft springs a trifoliated cinque-foiled depressed arch, the upper members of which form an ogive, connecting the under with the upper ribs. The spaces and spandrels between are filled with flowing tracery and carving. From the level of the top of the capitals the buttresses rise two stages higher, the lower one being paneled, and terminated with crocketed heads; and above these buttresses are lofty pinnacles, graduated in two stages, paneled on every face with hooded and crocketed terminations. The whole height of the buttresses is fourteen feet six inches from the base. The outer arch is crowned by a high pitched pedimented hood, with carved pateras on the face, and also crocketed. The triangle formed by the above over the crown of the outer rib is formed into a large trefoil, in which the armorial bearings of the late earl, quartered with those of the families of Dutton and Keppel, are inserted. The arms, crest, and supporters are enamelled on a solid slab of china, executed at the Derby china manufactory. Between the jambs, and upon the base of the monument, a plain slab is fixed, upon which the following inscription is carved in black letters, with illuminated capitals:—

To the Reverend Memory of  
THOMAS WILLIAM COKE, EARL OF LEICESTER.  
Born May 6, 1754.

Died at Longford June 30, 1842.

His public conduct as representative for fifty-seven years, of the county of Norfolk, was conspicuous for its decision, disinterested zeal, and unimpeachable integrity.

Pre-eminent

no less for his generosity as a landlord, than for his skill and enterprise as an agriculturist, he secured the deep affection

of an attached and prosperous tenantry;

while by his exertion and influence he extended in a most remarkable degree the cultivation and rural improvements of the country.

In his domestic relations

he was most affectionate, kind, and hospitable. His charity was munificent, without ostentation, and his piety simple and unaffected, but warm and sincere.

This Monument is erected by persons of various classes and opinions connected with this county, as some record of an example so excellent and instructive.

From the centre springs an octagonal pedestal, flanked by panelings with foliated heads. A beautiful marble bust of the late earl, from the studio of Mr. Francis, of London, is fixed upon the pedestal, and the whole of the back of the niche, above the slab and panelling, is diapered. The extreme width of the monument is 8 feet 9 inches, and its height from the floor about 20 feet.

It is fixed on the north side of the chancel (which has been recently restored), and harmonizes with the architectural character of that part of the building, which is a specimen of the early Decorated style, prevalent in the latter part of the 13th and commencement of the 14th century.

The work has been executed by Mr. Hall, of Derby, from the design and under the superintendence of Mr. Henry I. Stevens, architect.

#### WARMING AND VENTILATION OF THE NEW ROYAL EXCHANGE.

THE apparatus for warming is upon the mild hot-water principle, and is placed in the basement story of the building, but the arrangements are so contrived, that the fresh air which is drawn into the chamber containing the warming surfaces of the apparatus is, after being raised to a moderate but sufficient temperature, conveyed to the extensive suite of Lloyd's rooms in the upper floor of the building, and is there so equally distributed as to diffuse an equal temperature in every part, the general temperature being at the same time under easy and effectual regulations. The warmed and pure air admitted into the rooms is furnished in sufficient quantity to replace the amount of vitiated air which is continually passing away from the room by the ventilating channels in the roof, and also to supply all the air required by the draught of the open fires which are in the rooms, and intended to be used in conjunction with the warming apparatus, the union of the radiating heat of open fires with the admission of large

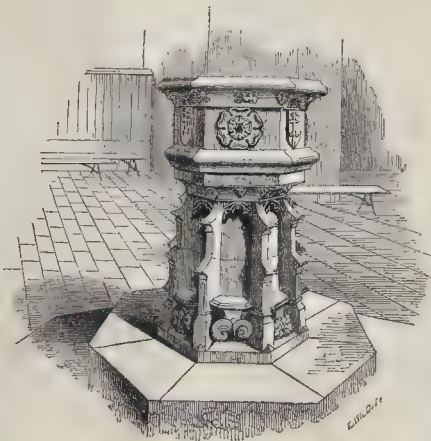
volumes of pure and only moderately-heated air being considered the perfection of comfort, and equally conducive to health when combined, as in this case, with a system of ventilation which sustains a constant renewal of the atmosphere of the room to an extent that answers the demand of every possible source of deterioration. Arrangements are also made for straining the outward atmosphere before it enters the chamber of the apparatus, and filtering it from those impurities which prevail in the London atmosphere to a great and injurious extent in reference both to healthful respiration and the tarnishing of interior decorations. The ventilation is effected by means of a system of flues for foul air which are placed in the roof, and which serve as chimneys for conveying all the vitiated air of the rooms to the ventilated tops, or windguards, which are placed upon the roof. The main air-flues run between the ceilings of

the rooms and the roofs, and the branch flues from each room conduct the foul air into the main flues; and as all the branch flues are furnished with valves, the ventilation or escape of air from the upper part of the room is effected with the same facility as the pure fresh air is admitted into them below.

The system of warming and ventilating of this suite of rooms is founded on what is termed the principle of natural ventilation, and the windguards referred to as being on the roof of the building act by exhaustion from the impulse of the wind on the exterior of the surface of the guards. The windguard here spoken of is Day's, which has been applied to very many buildings, both public and private.

The work has been executed by Mr. H. C. Price, civil engineer, and is founded upon the principle successfully applied by him to many other public buildings.

#### FONT IN ST. CLEMENT'S CHURCH, SANDWICH, IN THE COUNTY OF KENT.



TO THE EDITOR OF THE BUILDER.

SIR,—As you are collecting examples of ancient fonts, in my opinion a most laudable pursuit, I send you a sketch of a fine and rather early example of the perpendicular branch of the Pointed or Gothic style; and instead of giving any description of my own, I cannot do better than quote the one given by William Boys, Esq., F.A.S., in his "*Collections for an History of Sandwich*," 1792.

The font consists of an ancient octagonal bason and shaft, raised on a base of two steps, all of stone. The bason is perforated at the bottom: its interior diameter is 24½ inches, its exterior 34; its depth within nearly 10. The height of the shaft is 20 inches, and of its capital and bason almost 19 more. The eight faces are charged with shields of roses; alternately on the shields are first, the arms of France, three fleurs-de-lis, quarterly with those of England. 2nd. A merchant's mark; 3rd. The arms of the cinque ports; 4th. The arms of Ellis.\* Above these squares, at the eight angles of the moulding, are grotesque faces, except at the dexter side of the first shield, where the ornament is a bird like a heron, and on the sinister side is a coronet with balls between spires, terminated with fleurs-de-lis. At another corner is a small satyr mounted on the back of a larger. In the same member of the moulding, over the roses, are fruit and leaves, a satyr's face, four acorns salient, with their stalks bowed, and a flower. The first shield is suspended from the head of a human figure, with two long extended feathers in the place of its arms and shoulders; the second hangs from a cask. The third from

the flocks of an anchor; and the fourth from a hook. In the moulding of the capital of the shaft, at the angles, are oak-leaves; and under one of the roses is an angel holding a shield bearing a plain cross; under another is a whelk; under the remaining two are satyr's faces; under the shields are flowers. In the shaft are eight niches with demi-quatrefoil canopies between diminishing buttresses. At the bottom of the niches are pedestals ornamented at their bases with foliage, fruit, and flowers. The figures are removed. The feathers and coronet led me to think the font might be erected in the time of Edward the Black Prince, but there being only three fleurs-de-lis, it would seem of somewhat later date: perhaps the gift of Thomas Ellis, who was a commissioner of sewers in the third of Henry IV.\*

I am, Sir, your humble servant,  
Z.

[We should have preferred the sketch if it had been larger, and in plain elevation instead of in perspective: also if it had been accompanied by a plan, a section, and some details of its component parts. The delineations which we are now having executed of the fine early perpendicular example at West Drayton, Middlesex, which has an open stem, will at once exhibit our wishes on this subject.—Ed.]

STUPENDOUS CHIMNEY.—On Monday, Mr. J. Ashton, builder, of Blackley, commenced the erection of a chimney, which will, when completed, be the largest structure of the kind in this country. It is for Mr. Dobbs's chemical works at Wigan, and will be built entirely of bricks, with a coping of stone at the top. It will measure 50 feet across the base, 480 feet in height, 9 feet at the top, and will consume in its erection more than two millions of bricks.

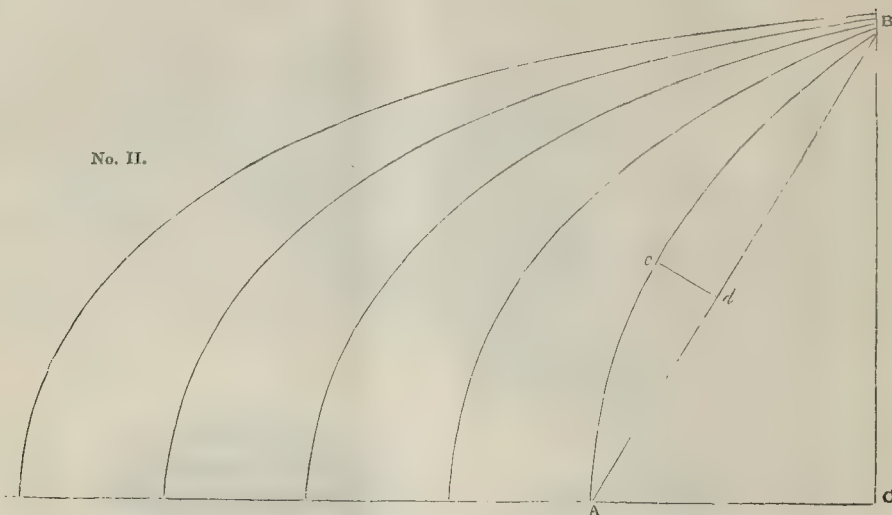
—Manchester Courier.

\* See preceding column.



## TUDOR ARCHES.

No. II.



## TO THE EDITOR OF THE BUILDER.

SIR,—The lines given in *THE BUILDER* (p. 532) are tolerably accurate, but had your engraver known how to describe the lines on each side of the approximate one by simple continuous motion, he would, no doubt, have produced them finer. The different characters of these lines may be further shewn by dividing the distance A B and B C into any convenient number of equal parts, and drawing chord lines to each division. The versed sine of each on the middle or approximate line from A to B will be equal, and also those from C to D; but the latter will be much less than the former; while to the other lines the versed sine to each following division will be gradually different.

If the "septenary system" were fully illustrated it would be shewn:

*First*, as in the example referred to, that a line may be described by simple continuous motion, beginning at A with a *finite* radius of curvature, and, while constantly changing, rise to a given point, C, and have there also, although increased, still a *finite* radius of curvature; intermediately bowing out more or less than in the example at B.

*Second*. A line may be described to pass from *finite* radius at A to *infinite* radius at C; bowing out more or less.

*Third*. A line may pass from *infinite* radius at A to *infinite* radius at C, to any given height and opening; also bowing out more or less.

For practical purposes, it will be seen by the examples given that lines of the first character may be drawn sufficiently nearly parallel to each other.

Of these characters of lines there are several motions, which might regulate a plasterer's mould in running the mouldings of an arch.

To my remarks on the line formed by the common mode of drawing a Tudor arch, after the word "while it is too flat immediately above B," I beg to add; it is too quick as it approaches to C. This, in general, in such arches is very apparent, especially when executed.

Example No. II. contains a series of arches with different openings, rising nearly to the same height. They could as easily have been drawn exactly to the same height, but it was considered that each line would appear more distinct with a little difference. A chord, A B, is drawn to one arch, to explain that the versed line, *cd*, or greatest distance from the chord line, may be in different positions between A and B, as well as that the curve may bow out, more or less, between A and B, while at A a tangent to the curve is perpendicular to A C.

Perhaps some of your contributors will try to produce such a gradation, or fill in a few lines between any two that will as perfectly harmonize with them as these lines do with each other.

JOSEPH JOPLING.

29, Wimpole-street, 30th Oct. 1844.

SIR,—There is no doubt that Mr. Jopling's lines for an arch of uninterrupted curvature are correct, and that the lines from double centres do not give a curve of equation; in large arches, such as bridges, vaults, &c., architects have therefore adopted the elliptic and parabolic curves in lieu of the double centred, but in Tudor architecture, and in designs of Gothic work, it is very doubtful whether the use of curves of the higher order lead to the true exposition of the style.

In the particular instance alluded to by Mr. Jopling, the curves delineated from the double centre and from the ellipsis nearly coincide, but there are many cases wherein an arch is very much depressed, or is very acute, to which the principles of the ellipsis will not apply, and certainly cannot afford a ready and quick means of solving the query of your correspondent, "how to draw a Tudor arch through three given points?"

For illustration of my opinion, that curves of the higher order are not conducive to the true exposition of Gothic architecture, I would refer to the system of groining adopted by the Gothic architects. It would be presumptuous to assert

that these masters were not acquainted with the art of projecting from the original curves by ordinates, the diagonal and other intermediate ribs thereby producing elliptic lines; but it appears evident that such was not *their practice*, though it was the system upon the revival of the style adopted by some modern practitioners; and to a mathematical mind it might at first appear to be the correct one; Professor Willis, however, in his interesting paper published in the "Transactions of British Architects" (who, by the by, are most indebted to non-professionals for their best papers), shews that this idea of the system is an error, and that the lines of these diagonal and intermediate ribs are segments of circles, producing by their variety of curve that play of light and shade which is lost in modern groining, where a correct mathematical uniformity is preserved.

There are three interesting chapters in the work of Philibert de L'Orme, who lived and wrote at a time when the practice of Gothic architecture could not have been wholly forgotten, and who expressly says that he derived his information relative thereto from the old masons. He states that the intermediate ribs of Gothic groining (which he calls "*hermes*, *formerets*, and *tiércerons*") must follow the sweep of the compass, from which the principal branches of the vault are delineated—"suivant la circonférence du compas après lequel *est tirée les brâches des voûtes*." His illustrations also shew this principle, and though in the other parts of his stereometry he freely makes use of ordinates, in this case he uses segments of circles.

I am, however, trenching upon new ground; my only intention was to shew that the old Freemasonic architects thought of effects other than those produced by complex mathematical lines, and that an arch struck from four centres may have points of preference over elliptic or parabolic curves.

I am, Sir, yours, &c.

T. L.

## PUBLIC PARK AT HULL.

THE Mayor of Hull has within the last few days received the following letter from her Majesty's Woods and Forests in answer to an application made for a portion of the grant of public money set apart to aid in the formation of public walks:—

"Office of Woods, &c., Oct. 21, 1844.

"Sir,—I have, on the part of the Commissioners of her Majesty's Woods, &c., to inform you that they some time since had referred to them by the Board of Treasury for their opinion thereon, the memorial of yourself and

other inhabitants of Hull, praying that some portion of the grant of public money, for the formation of walks, &c., near populous towns, may be appropriated towards the improvement of Spring Bank, for the benefit of the inhabitants of Hull; and that having caused a survey to be made of the spot in question by their surveyor for the district, they feel inclined, from the report which he has made to them on the subject, to recommend a grant of money towards the proposed improvement; but as they understand that Spring Bank is not of sufficient extent to meet the wants of the inhabitants, many of whom are desirous of

having a park formed in the neighbourhood of Hull, to which Spring Bank would be the principal approach, I have to request that you will inform the Board whether there is any probability of that project being carried into effect, and what steps are being taken for the purpose; as if so, they would be disposed to recommend a larger grant than they would feel warranted in doing if the improvement of Spring Bank is limited to that spot alone, without any view to further improvements.

"I am, Sir, your most obedient servant,

"CHARLES GORE."

W. B. Carrick, Esq., Mayor of Hull.



## CHURCH-BUILDING INTELLIGENCE, &amp;c.

*New Church at Douglas, Isle of Man.*—There will be 500 sittings reserved in this church for the poor. The project originated with a benevolent gentleman, who, during his sojourn on the island, being struck with the want of church accommodation for the poor of the town, voluntarily offered 250*l.* towards the erection of a new church; and another gentleman offered a donation of 200*l.* The bishop, on learning this, gave 250*l.* more, and by some other contributions the sum has swelled to the amount of 800*l.* for the object. —*Cambridge Chronicle.*

*New Church at Brockmoor, Staffordshire.*—The ceremony of laying the first stone took place on the 12th instant, by Lady Ward. All the sittings are to be free. The site of two acres for a churchyard was given by the trustees of the Earl of Dudley, and a sufficient sum from Lord Ward to enable the commissioners to build the parsonage; also 600*l.* from the Committee and Council of the National Society for the schools, on a site purchased by the rector.

*New Church at Lynn.*—The intended new church, we hear, is to be immediately commenced, the committee having accepted the tender of Messrs. Bennett and Son from a number of others. Mr. Salvin has furnished the design. —*Cambridge Chronicle.*

The Marquis of Exeter has given directions for the chancel of St. Mary's Church, Stamford, to be repaired, which is being done in a chaste and costly manner.

## RAILWAY INTELLIGENCE.

*New Railway Schemes.*—The following is from the circular of Messrs. Raiton and Sons, share-brokers, Manchester, of the 14th instant:—"There are at the present time plans matured or preparing to carry before the Board of Trade upwards of 90 new schemes for railway extension, requiring a subscribed capital of upwards of 60,000,000*l.*—to which may be added 20,000,000*l.* for the authorised one-third additional to be borrowed. The present abundance and low value of money (there being no foreign attraction more alluring) is highly favourable to the extension of public works at home. No matter to what extent the rifelessness of speculation may lead individual adventure, a great national benefit will be secured, available to all, without infringing on the circulation of the country, so long as we continue blessed with a succession of good harvests as the mainspring of prosperity; but should a failure ensue, and we become impoverished by a foreign purchase for the repair, we shall be deprived, in a corresponding degree, of the advantages we now enjoy. Manufactures and foreign trade may expand or curtail at will, but no art of man can put seasons out of course or alter their result. The Board of Trade has an irksome duty to perform to suit all interests, and keep clear of the confusion to which we are exposed."

*Diss, Beccles, and Yarmouth Railway.*—This line, running from Yarmouth through Beccles, Bungay, Harleston, and Scole to Diss, will afford Yarmouth and the intermediate towns a direct communication with London, being a saving of about 20 miles over any other railway between Yarmouth and London, and a proportionate increased saving between Eastern Suffolk and the south. A railway through Diss to Norwich on the one hand, and the southern district of Suffolk and the county of Essex and London on the other, will be constructed by such of the competing lines as shall be approved of by Parliament. By this line, therefore, it is proposed to bring the agricultural trade of Harleston, Bungay, Beccles, and the neighbourhood, and the commercial parts of Lowestoft and Yarmouth, in immediate communication with the northern and southern districts of Norfolk, Suffolk, Essex, and Middlesex, and, by means of the Norwich and Brandon Railway, with the northern and western districts of the kingdom. The engineer is Captain W. S. Moorson.

*Norwich and Brandon Railway.*—There are four thousand persons at present employed on the Norwich and Brandon Railway, 2,700 of whom are labourers and excavators. In the neighbourhood of Beccles and Attleborough the

greatest activity is observable, and workmen are employed night and day to facilitate the completion of the bridges in that vicinity. —*Norwich Mercury.*

*Railways and the Iron Trade.*—In his evidence before the Select Committee on Railways, last session, Mr. Hudson stated that in the case of the York and North Midland Railway, of which he has been chairman from the first, the price of the iron used was 11*l.* 10*s.* per ton; whereas, in the case of the Newcastle and Darlington line, which, it will be remembered, owes its existence mainly to Mr. Hudson's exertions, the price was only 6*l.* 5*s.* per ton, the cost of delivery being in favour of the York line. Mr. Hudson added, that for forty-nine miles of a single line of railway, 4,500 tons of iron are required. —*Railway Record.*

## Correspondence.

## ARTESIAN WELLS.

TO THE EDITOR OF THE BUILDER.

SIR,—The propriety of forming artesian wells within the boundaries of the metropolis, in order to supply the inhabitants with warm water for public baths and other purposes, having been mooted in the *Times* and *Athenæum*, permit me to offer, through the medium of your valuable journal, a few observations thereon.

The London basin, particularly that part denominated the valley of the Thames, consists of beds of clay, sand, and gravel, resting on cavernous chalk strata; it is the grand receptacle of the drainage of the upper lands, of periodical rains, and of waters percolating through beds, over, or through which, the Thames flows; and, consequently, previous to the change produced by civilization, it was nothing better than a morass fringed by forests.

The rapid spread of this noble city, and the great attention paid to draining the subsoil has naturally had the effect of reducing the periodical supply of water to narrower bounds, and confining it in many districts to the lower beds; but still we have vast depositories in the chalk beds, and the covering-soil is more or less saturated with water. Now, supposing the requisite number of artesian wells to be formed, the immense supply daily required for the wants of the metropolis would soon exhaust these internal reservoirs, and also drain the middle and upper beds; for every drop of water abstracted therefrom would, by passing into the river, be permanently lost to them. This general drainage of the strata may be considered a benefit, by those who scarcely look beyond the surface of things; and geologists, in particular, lay great stress on the necessity of drainage, which is good so far as applied to extensive areas not built over as London is.

Nearly the whole of London rests on the upper clay bed, and this clay having great absorbing powers, while it often renders underlying beds impervious to water, is strong, and possesses its cohesive powers only so long as it retains a sufficiency of moisture; remove this, it shrinks, cracks in innumerable directions, and becomes dangerous to heavy masses of bricks and mortar super-imposed upon it. It is from this cause that so many foundations of new buildings sink or partially give way almost as soon as the superstructure is raised, drainage taking place after the work is completed, instead of proper attention having been paid to drainage beforehand.

I have no doubt in my own mind that if the lower beds on which London rests were drained, as proposed, by artesian wells, a vast deal of mischief would arise from the general or local contraction of clay beds, occasioned by the lower as well as the subsoil drainage; and the cavernous chalk, deprived of its support, would in many places fall in, and occasion a corresponding depression of the surface. Were the subsoil and strata beneath, on which vast masses of building are disposed, thoroughly drained by all the appliances of art, much good might result, and greater stability be insured to the super-imposed masses; but, when a city like London rests on a bed of clay, the tenacity and strength of which depends upon its preservation of a certain degree of moisture, we ought to pause ere we give way to plans which in the end, in consequence of there being an *exhaustible* (not inexhaustible supply) of water, would recoil upon the pro-

jectors, and lay the seeds of great destruction of property.

Among the plans proposed for securing buildings from partially sinking, it is recommended to dig pits in the clay where foundations are intended, and to fill them in with sand well rammed in; but what, I ask, will become of the well-rammed sand when the clay cracks in every direction, so soon as it is deprived of its supply of moisture by general drainage of the subsoil and building thereon? Why, the sand would immediately disappear, together with the portion of building resting on them. It is true, the Romans sometimes used sand as a support for their foundations, but this applied only to thoroughly dry soil, in which no danger like this could possibly be apprehended. M.

Chelsea, October, 1844.

## LAND-SLIP AT THE CUSTOM-HOUSE QUAY, DUBLIN.

SIR,—It is to be hoped that some of your Irish correspondents will give us a professional account of the late land-slip on the Custom-house quay, and also the imagined causes of the accident, as well as the means resorted to for preventing further damage. It is also reported in the papers that fears are expressed for the safety of the Custom-house itself; perhaps we may learn from the same channel what danger is apprehended in that quarter. Some years since, I remember that great alarm existed on account of the Government warehouses, either at Sheerness or Chatham, being in a very dangerous state through the ruinous state of their foundation, and it was then contemplated to pull down and rebuild them, but Government was saved that expense through the talent of some professional person, who cut away the old foundations, &c. &c. Could you, or any of your very clever and obliging correspondents, furnish the information of the means resorted to on that occasion, as such knowledge at the present time might not only be interesting, but very important.

I think the following accounts amusing at the present time.

Monsieur Gautier relates the following:—Fortifications being built by order of the king (either in the Poles of Oleron, or Rhe), one face of the wall fell, or rather sunk down, notwithstanding it was built on a bank of rock, because the said rock had a hollow underneath that was not or could not be discovered.

Monsieur Blondel also relates that the vast walls of the church of Val de Grace sunk in on one side, though built upon a (supposed) good foundation, because there were underneath large hollows, which had been made in former times for taking out stones some fathoms lower, there having been a quarry there.

The supposed cause of the fracture of the dome of St. Peter's at Rome is the faulty state of the foundation, though M. Angelo caused the same to be laid with all possible caution. The damage arises, it is said, through the following:—the waters of a subterranean spring which run down from the high mountains of the Vatican and the Janiculus, have washed the foundations of this huge edifice.

I remain, Sir,

Yours very obediently,  
Oct. 23, 1844. OFFICIATOR.ST. THOMAS'S NEW CHURCH, WINCHESTER.  
ARCHITECTURAL COMPETITION.

SIR,—I cannot but help remarking how very much to the letter your prophecy has been fulfilled relating to the competition for the new church of St. Thomas, in Winchester, which was the subject of your leading article a few numbers back.

There were in all about fourteen competitors who exhibited designs, and from this number three were selected. The advertisement for plans, as you are aware, restricted architects to the sum of four thousand pounds, as being the outside of the contemplated expenditure, and as regards accommodation, 1,000 sittings were to be provided upon the floor of the church.

The design which the committee have adopted, or rather the toy which captivates them, is by a Mr. Webb, of Camden Town, according to the signature, although apparently the property of Messrs. Elmsley, and Co., one of that firm having had an interview with the committee; and although he does not lead the committee to understand that they are to have



a decorated tower and spire, as shewn in his design, 150 feet high, yet, he wished to cram them with the belief that his design, consisting of nave, clerestory, aisles, transepts, chancel fitted with stalls and tower to the base of the spire, might be executed for the specified sum of 4,000*l.*, until his interview with the committee, when he hesitated to confirm this statement, but was actually allowed to take his competing plans home, in order to cut them down to the necessary sum, and to make the requisite alterations.

Messrs. Elmsley and Co. are permitted to amend, alter, and re-consider their design; so much so, that instead of retaining the tower (I cannot add spire) in the middle of the church, they may remove it to one of the aisles, or any other more suitable position, and instead of preserving the same number of intercolumniations in the nave, they may be reduced, in order to obviate the glaring impracticability of their plan as sent in.

How unjust is such a proceeding! If one competitor be thus allowed to alter, why are not the others placed upon the same footing; and if one design be found to exceed the amount specified, why is it not at once discarded from the competition as impracticable? I think, perhaps, I can answer these queries myself; namely, it is because such a false and unjust system (as in the present instance) has crept into architectural competition, that an architect, being well aware that to behave in an honourable and an honest manner would be absurd and utterly useless, in order to gain any chance of success, resorts to the mode (as in the present case) of introducing towers, spires, and other appendages to his design, which cannot possibly be built for the money, but which, at the same time, have such decided advantages on paper over their less pretending yet more honest neighbours, that in the eyes of a committee-man such a design is sure to captivate and mislead: such a system cannot, however, be too much reprehended, and I hope you will lend your assistance to overturn such a dishonourable course of procedure, and in the present instance to render it abortive.

I am, Sir, your obedient servant,  
A SURVEYOR AND LOOKER-ON,  
BUT NO COMPETITOR.  
Winchester, October 29th, 1844.

#### METROPOLITAN IMPROVEMENTS.

SIR,—It appears to me an extraordinary proceeding in the carrying out of the metropolitan improvements, that the Commissioners of Woods and Forests, or the surveyors under them, should have planned the vaults for the intended houses through the line from Oxford-street to Holborn without having provided a certain portion of the necessary drain to pass under the vaults from the houses towards the sewer, thereby doing away with the necessity hereafter, as the buildings may progress, of excavating the earth to the depth of 15 to 20 feet at the back of each vault (thus endangering the stability of the brickwork), for the purpose of constructing such drain from the house to the common sewer. I cannot help thinking that it would be useful in the formation of other lines in the intended improvements for some arrangement to be entered into between the above-named authorities and the Commissioners of Sewers, to enter the drains at once from the intended houses, and also those from the gullies in the line of street, and thus avoid the interminable excavations that otherwise will ensue for that purpose. I am induced to trouble you with these remarks in the hope that if they appear to you correct, you may be induced to offer some suggestions to those whom it may more immediately concern. Apologizing for intruding upon your time, I remain, Sir, your obedient servant,  
VINCENT YARDLEY.

5, Thorney-street, Bloomsbury,  
October 23rd, 1844.

[We advise the parties concerned to make application to the office of Works and Buildings, and to the Commissioners of Sewers.—Ed.]

#### PUBLIC BATHS.

SIR,—Public baths are contemplated, and will undoubtedly be established in various parts of the metropolis; but as yet no details have been entered into, and few, if any, suggestions have been made beyond those of *Punch*, who

proposes the appropriation of Covent-garden Theatre, while *The Times* prefers the *Fleet Prison*, as the rendezvous of abolitionists. Seriously, Sir, I do sincerely hope for the honour of the nation that every populous parish in London will have its public baths for the rich as well as for the poor; that the buildings will be such as to do credit to the times in which we live, and to the architects employed in their construction.

It does not follow that the poor alone are to have baths. Let us copy the example of the Romans; bring public bathing into fashion, and in a few years it will become an essential necessary of life. A few architectural plans and suggestions would not be amiss at this juncture.

October 28, 1844.

#### DUTY ON BRICKS.

SIR,—Is there no possibility of having the duty taken off bricks? that on tiles and slates has been repealed many years. I have no doubt you, as well as all brickmakers, builders, and other consumers of this valuable material, will concur that the duty ought to cease; why should we not manufacture bricks for building as well as tiles and pipes for agricultural purposes, without being subject to a duty of 6*s.* 1*d.* per thousand? I think a strong effort should be made in order to obtain a total and immediate repeal of the same.

I am, Sir, your obedient servant,  
T.—v.—k. T. J.

[While we should be glad to see every possible reduction of taxation upon building-materials as upon all other useful commodities, we do not see that this particular tax bears harder than most others. The taxes connected with building, needing most repeal, are those upon glass, which interferes injuriously with its manufacture, and destroys our trade; on window-lights which, cut directly against health and comfort; and on fire-insurance, which discourages prudence, and, in most cases, makes it cost thrice as much as in caution, while the great capitalist who is best able to bear state burthens often chooses wholly to escape it.—Ed.]

#### GOTHIC ARCHES, QUATREFOILS, &c.

SIR,—You would greatly oblige me by inserting in your notice to correspondents of Saturday the 2nd November, if there is any Gothic work published which shews the centres for all Gothic arches, quatrefoils, trefoils arches, cinquefoils, &c. If there is, where, and what price may it be obtained for?

I remain, yours very truly,

Gloucester, Oct. 26, 1844. C.B.  
[There is none. A portion of the information may be obtained from various works, among which are those of Billings and Brandon.—Ed.]

#### CAMERA LUCIDA.

SIR,—I have just purchased a camera lucida. Can you or any of your readers give me a hint as to properly using it?

I am, Sir, your obedient servant,  
Brompton, Oct. 27, 1844. F. PAGE.

#### Miscellaneous.

NEW DOCKS AT HULL.—The arrangements with the railway company, for removing the soil from the excavation at Dock-green, are completed, and the work of the railway dock will be commenced as soon as the necessary contracts are entered into, tenders for which are advertised to be sent in on or before the 11th inst. The site of the Victoria Dock is also marked out, and excavation for the purpose of procuring clay to make bricks for the new erections is already commenced there. The ground being now defined, affords a good opportunity of judging of the noble dimensions of this spacious dock. Its area will be 17 acres, with 3,390 lineal feet of quays, to be connected by basins with the river Humber on one side, and the Old Harbour on the other. It will abut closely upon the moat of the citadel, from which it will be separated by the present footway, to be protected by a substantial counterscarp wall. The new works are already creating a stir in that neighbourhood, and we observe that an inn near the spot has thus early assumed the sign of "The Victoria Dock Tavern."

PUBLIC BATHS IN BIRMINGHAM.—A meeting of highly influential inhabitants of this town and neighbourhood was held in the committee-room of the Town-hall on Tuesday morning last, Mr. W. Beale in the chair, for the purpose of making preliminary arrangements for a town's meeting to consider the best means of providing public walks and baths for the use of the inhabitants. Amongst those present were Messrs. James Taylor, James James, H. Luckcock, W. Chance, G. Barker, and William Scholefield; Aldermen Beale, Phillips, and Cutler; Messrs. W. Phipson, Joseph Sturge, Clement Ingleby, James Turner, J. Tyndall, Abel Peyton, C. Geach, T. E. Lee, B. Chesshire, J. H. Beilby, T. R. T. Hodson, John Beale, Bourne, E. Aldridge, J. Plevins, M. Banks, T. Ragg, D. Barnett, C. Lawden, and H. Simons, and many other gentlemen. Alderman Cutler opened the proceedings by calling attention to the importance of the subject, and detailing the acts of the Select Committee of the House of Commons appointed to consider the best means of providing places of recreation for the inhabitants of populous towns. On the report of this committee being made, the House granted, at two different periods, the sum of 15,000*l.* to aid the inhabitants of large towns in the formation of public walks and places of recreation. Alderman Cutler also stated the correspondence which had taken place between the corporation and the Government on the subject. Resolutions in furtherance of the objects in view were passed, and a vote of thanks having been carried to the chairman, the meeting separated.—*Birmingham Gazette*.

THE IRON TRADE IN AYRSHIRE.—We have just learned that Mr. Wilson, of Dundvan, has taken a lease of the extensive iron-works on the estate of Sir James Boswell, Bart., of Auchinleck. The iron-stone consists principally of black-band, and is said, by competent judges who have examined it, to be equal to any existing in Scotland. The supply is most abundant; in some places the stratum is reported to be as thick as 20 inches, exclusive of horn-coal and other refuse. We also learn that the Kilbirnie Iron Company have, within the last few years, taken a lease of the iron-stone on the estate of Colonel Smith Neill, of Swindrigemuir, in the parish of Dalry; and that the Messrs. Baird, of Gartsherrie, have contracted for the minerals on the lands of some of the other proprietors in that neighbourhood; so that, with the works at present at Muirkirk, Blair, Kilbirnie, and Cessnock, we may expect ere long to see this county coping with, if not surpassing, all other mineral districts in Scotland. With so many railways in prospect, it must be allowed that the new works are commencing at a most auspicious period.—*Ayr Observer*.

A NEVER YIELDING GLUE.—Dissolve five or six bits of gum-mastick, each the size of a large pea, in a large quantity of wine as will suffice to render it liquid; and in another vessel dissolve as much isinglass—previously a little softened in water (though none of the water must be used)—in French brandy and good rum, as make a two-ounce phial of very strong glue, adding two bits of gum-galbanum, or ammoniacum, which must be rubbed or ground till they are dissolved. Then mix the whole with a sufficient heat. Keep the glue in a phial closely stoppered, and when it is to be used, set the phial in boiling water. This glue will strongly unite bits of glass, and even polished steel. It is used in Turkey by the Armenian jewellers for the purpose of uniting diamonds and other precious stones to silver or gold. The metal is first warmed gently, and has the glue applied, which is so strong that the parts thus cemented never separate.—*Dr. Ure's Cyclopaedia*.

MEMORIAL TO THROW OPEN ALL THE METROPOLITAN BRIDGES.—Mr. H. Cope, jun., solicitor to the Metropolitan Anti-Bridge Toll Association, presented last Monday to the Lords of the Treasury a memorial from 10,000 merchants, manufacturers, and householders, of the western and central districts of the metropolis, being one of several, containing upwards of 200,000 signatures already presented, for the free passage of Waterloo, Southwark, and Vauxhall bridges, as a paramount measure of metropolitan improvement, by the commutation of the imposts thereon.



**THE WASH LEVEL.**—We are now authorised to state that the capital necessary for the undertaking, vast as it is, has been provided.—*Norfolk Chronicle*.—The plan will be the modified one of Mr. Rendel, suggested by him to the town council in 1840, in his report of the plan of Sir John Rennie, which was considered as too extensive. Sir John Rennie's plan comprehended the inclosure of 150,000 acres of land, but Mr. Rendel's plan will extend to the inclosure of only about 70,000 acres. A new channel will be made crossing the North Lynn estate, and falling into the present channel below, in deep water; and by a similar extension of the rivers Nene from Wisbech, Welland from Spalding, and Witham from Boston, the united width of outfall of all these rivers at a point near the Bell Buoy would be about one mile.—*Cambridge Chronicle*.

**DAMP WALLS.**—The question of "damp walls" is one intimately connected with domestic economy, and in which the invalid is especially interested. When damp walls proceed from *deliquescence* in the case of muriate of soda, &c., an intimate combination with the sand used for the mortar, it is merely necessary to wash the wall with a strong solution of alum. This converts the *deliquescent* salt into an *efflorescent* one, and the cure is complete; or alum may be added to the plaster in the first instance. When dampness arises in the walls by capillary attraction from the foundation, it resolves itself into a question altogether different; but, in the majority of cases, the dampness springs from the employment of sea-sand, or, at any rate, sand impregnated with a deliquescent salt.—*Dr. Murray*.

**NEW HOSPITAL AT BERLIN.**—We learn from Berlin that the municipality of that capital, having entered into a contract with an English company for lighting the city with gas for upwards of 20 years, and finding that, consequently, there will be no expense created by forming the establishments which would have been required for that purpose, has determined, instead, to erect a new hospital, sufficiently spacious to receive 600 patients, and suppress all the present smaller hospitals. The cost of the new edifice is estimated at 275,000 dollars.

**ENORMOUS YEW TREE.**—There is in the churchyard at the village of Gresford, Denbighshire, a yew tree which measures 30 feet in girth at the height of 4 feet from the base. The branches are in themselves large trees, and shade the ground to a great extent. It must be of incalculable antiquity, and it is not yet in a state of much decay, though it has for centuries perhaps attained its maturity. Other yew trees in the same place, which were planted (as the parish-register records) in the year 1727, are, on average, in girth somewhat more than 4 feet.

**WESTMINSTER BRIDGE.**—This bridge was re-opened to the public on Monday last; it was closed on Monday the 14th inst., in order to lower the carriage-way at the approaches, and get rid of the steep inclivities. The former steepest inclination, of 1 in 14, is now reduced to 1 in 25, which will render the ascent easier than that of Blackfriars-bridge. This alteration has been completed during the leisure season, and with a view to relieve the labour of horses in the winter months.

**NEW UNIVERSITY IN IRELAND.**—A rumour, says the *Dublin Statesman*, has been for some time gaining ground, that a sum of 100,000l. will be asked for and (as a matter of course) granted in next Parliament, for the erection of a great university in Ireland, in which cheap education will be afforded in a system of secular instruction, in which also professors of all denominations will be eligible, and where degrees of all kinds will be conferred.

**LORD PALMERSTON, M. DE CORNELIUS, AND FRESCO PAINTINGS.**—The Berlin journals state, that Lord Palmerston, previous to leaving that capital for Dresden, paid a long visit to M. de Cornelius, and conferred with him on the subject of the fresco paintings with which it is intended to adorn the new Parliament House, his lordship being one of the committee for directing the decoration of that edifice.

A superb mausoleum to the memory of M. Aguado has just been erected in the cemetery of Père la Chaise.

**THE NEW COUNTY COURTS, IPSWICH.**—The interior arrangements are now completed, and with the limited space at the disposal of the magistrates, ample accommodation appears to have been provided for all parties having business to transact in these courts. For our own parts, we do no more than justice in tendering our hearty thanks to the magistrates, who, under the sanction of the learned judges at the late assizes, have afforded the best possible accommodation to those whose duty it is to attend as reporters of the newspaper press. By the arrangements the convenience of other parties has been promoted to a great extent; the seats heretofore occupied by reporters at the table, six at least in each court, being now devoted exclusively to attorneys and barristers.—*Ipswich Journal*.

**WOOD PAVING.**—On Saturday last, considerable sensation was created in the Marylebone Vestry, in consequence of a notice of motion having been given, calling upon the vestry to renew their contract for three years with the Metropolitan Wood Paving Company, for keeping in repair and cleansing that portion of wood paving laid down by them between Wells-street and Rathbone-place. Mr. Wilson proposed the resolution, and was supported by Mr. Soder and Mr. Nichols. Mr. Harbut objected to it at great length. After a very stormy discussion a division was demanded, when there appeared for the resolution 21, against it 23, majority refusing to enter into the contract, 2. The vestry then separated.

**NEW BRIDGE AT TARMONBURY, LONGFORD.**—This bridge has been erected by the Commissioners for the Improvement of the River Shannon, and was thrown open to public traffic on Friday the 25th inst. It consists of four flat arches, 33 feet span each, and one swivel arch 30 feet, which is the intended navigable channel. The bridge is 200 feet in length.—*Irish Paper*.

**NEW THEATRE AT TAUNTON.**—It is in contemplation to build a new theatre at Taunton, the amount to be raised by shares. On the first mention of the project, one gentleman instantly offered to advance 200l. We understand that the design will be determined by competition.

**AN OLD STREET NEWLY NAMED.**—The great improvements which have lately been made in Cateaton-street, have induced the city authorities to alter its name, and henceforth it will be known as Gresham-street. The new name is already affixed to the houses at each end of the street.

**RE-BUILDING OF THE NEW PRISON, CLERKENWELL.**—A notice has been issued by order of the Middlesex Magistrates to the effect that they intend forthwith to take such measures, either by contract, or otherwise as shall appear to them to be requisite and proper, for the re-building of the New Prison, Clerkenwell.

**A NEW FIELD OF IRON-STONE IN NORTHUMBERLAND.**—A field of iron-stone, of the richest quality, about 15,000 acres in extent, is said to have been discovered west of Hexham, Northumberland. It is likely to yield great profit to Sir Edward Blaeuel, proprietor of the extensive royalties.

**ENORMOUS FOUNTAIN AT CHATSWORTH.**—The great fountain at Chatsworth is supplied with water from a reservoir which covers eight acres. The fall is 331 feet, and the height which the water is expected to attain from the fountain, when brought into full operation, is 280 feet.

### Tenders.

TENDERS delivered for Building a Dwelling-house and Printing-office in Kennington-lane, for Mr. Kemshead.—Wm. Rogers, Esq., Architect, Palace Chambers, Lambeth.

Macey and Son .....	£973
Nolley .....	880
Travers and Son .....	796
J. and T. Ward .....	795
Dowds .....	793
Gerry .....	793

TENDERS for a School-room to Sutherland Chapel, Walworth.—E. A. Jones, Esq., Architect.

Smith .....	£213 11
Marsland .....	172 0
Harding .....	170 0
Cook .....	169 0

### NOTICES OF CONTRACTS.

For the Construction of 1 Mile and 65½ Chains of the Ashton, Stalybridge, and Liverpool Junction Railway.—The Secretary of the Company, at the Manchester and Leeds Railway Offices, Palatine-buildings, Hunt's Bank, Manchester. November 4.

For the supply of Paving, Flint, Winstone, and Bombay Granite, &c.—Frederick Tritton, Clerk to the Trustees for Lighting, &c. the South District of St. George the Martyr, 11, Three Crown-square, Southwark. November 5.

For supplying her Majesty's Dockyard at Chatham with White Lead, and her Majesty's Dockyards at Deptford, Woolwich, Chatham, Sheerness, Portsmouth, and Devonport, with Red Lead.—The Secretary of the Admiralty, Somerset-place, London. November 5.

For the supply of 2,600 Tons of best Railway Bars, and 175 Tons of Plates and Spikes, for the Zealand Railway.—Address, "To the Directors of the Zealand Railway Company," Copenhagen, under cover to their Agent, Mr. John Lord, Friday-street, Birmingham. November 5.

For the constructing of various Workshops, Engine-houses, and other Buildings connected with the York and North Midland Railway.—Mr. Andrews, Architect, York. November 6.

For the erection of certain Walls, Gates, and Piers in the Land of Promise, Hoxton.—Mr. Tress, Surveyor, Wilson-street, Finsbury-square. November 7.

For the Erection of a new Barrack Establishment at Bristol.—C. J. Selwyn, Major and Commanding Royal Engineer, Exeter. November 7.

For the performance of such Bricklayers', Carpenters', Masons', and other Works to be done in the Cleansing, Building, and Repairing of the several Public Sewers and Drains within the Ranelagh and Counters' Creek Districts.—Lewis C. Hertlet, Sewers' Office for Westminster, No. 1, Greek-street, Soho-square. November 8.

For the Building of Four Almshouses in the city of Ely.—T. and G. Archer, Solicitors, Ely. November 9.

For the Construction of Lots 1 and 2 of the Great Southern and Western Railway (Ireland). Lot 1 comprises a distance of about 9½ miles; Lot 2 comprises a distance of about 10½ miles.—Sir John Macneill, Engineer to the Company, 28, Rutland-square, Dublin. November 11.

For the supply of Memel, Red Pine, and Larch Timber to the Great Southern and Western Railway (Ireland).—Sir John Macneill, Engineer to the Company, 28, Rutland-sq., Dublin. Nov. 11.

For Works in the Construction of a New Dock in Kingston-upon-Hull.—Mr. John B. Hartley, Civil Engineer, Liverpool. November 11.

For Building 600 feet of Sewers in Garden-street, Westminster.—Francis Giffard, Clerk to the Trustees of Tothill-fields, Westminster.—November 13.

For the erection of Gas Apparatus for lighting the Devon County Lunatic Asylum, also for Apparatus for Cooking, Washing, Drying, and Warming.—T. E. Drake, Clerk to the Visiting Justices, Exeter. November 18.

For the different Works to be done in erecting a New Gaol at the Borough of Banbury, under any of the following heads, viz.: 1. Mason, Brickwork, &c.; 2. Carpenter and Joiner; 3. Plumber and Glazier; 4. Slater; 5. Plasterer; 6. Ironfounder, &c.; 7. Painter.—Messrs. Hurst and Moffatt, Architects, Leeds or Doncaster; and James Beesley, Town Clerk, Banbury. November 21.

### COMPETITIONS.

PREMIUM of 25 guineas for the best and another of 15 guineas for the second best design for laying out for building purposes a plot of land, containing about nine acres and a half, situate in the borough of Reading, having a frontage of upwards of 900 feet, and being of the depth of about 450 feet. Further particulars of J. J. Blandy, Esq., Solicitor, Reading; or of Messrs. Gregory, Faulkner, Gregory, and Bourdillon, 1, Bedford-row, London. November 15.

### CHARGE FOR ADVERTISEMENTS.

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One entire Page .....	5 5 0

To workmen advertising for situations, the price will be reduced to

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If more than One Insertion a reduction will be made.



## BOOKS AND ENGRAVINGS RECEIVED DURING THE WEEK.

## BOOKS.

*Wilson's Description of the New Royal Exchange, including an Historical Notice of the Former Edifices, and a Brief Memoir of Sir Thomas Gresham, Knt., with Eighteen Embellishments. Instructions for the Use of the Seyssel Asphaltic Mastic, Claridge's Patent, with Numerous Engravings.*

## ENGRAVINGS.

*A Lithograph of the Chapel erecting at the Nunhead Cemetery, Peckham, By Thomas Little, Esq., Architect.*

## TO CORRESPONDENTS.

**A Brightonian.**—The Porficio though it may in some respects resemble that of the Pantheon has not the same details. The other questions may probably be answered by some of the numerous public prints of the day. We cannot undertake at present to make the requisite admeasurements.

**J. S.** is referred to our charge for advertisements, which he will find above.

**We must decline inserting the paper on the Birmingham Thames Junction and West-London Railway.**

**J. P.**—The article upon sewers came to hand too late even for perusal.

**If the correspondent who writes relative to Fleetwood on Wyre will submit his article and sketches for inspection, they will, if approved, be inserted.**

**ERRATUM.**—In our last Number, at p. 542, the Rev. Mr. Kyrie is called the "jealous" instead of the zealous member of the Antiquarian Society.

## ADVERTISEMENTS.

## SALE BY AUCTION.

Freehold Building Ground, Old Kent-road, about 2½ miles from the city.

**MR. SINGLE will SELL by AUCTION,** at the Auction Mart, on Wednesday, November 6, at Twelve, **FREEHOLD BUILDING GROUND**, land-tax redeemed, comprising together several acres. The whole comprises nearly 100 plots, giving value for the county, and presenting most desirable frontage on good roads. There is famous sewerage nearly all round the estate. Much has been let on building leases at 4s. per foot, and some of the lower parts of the estate were lately sold by auction at a fair price, and have since been resold for double the amount. This rapid and daily increase in the value, and the great demand for freehold ground in the neighbourhood for building, have caused the proprietor, Mr. H. England, to make up all the roads (except one which is not yet completed) to a superior manner, and to spare no expense in planting trees and otherwise improving the estate throughout. The situation is the centre of a healthy, pleasant, and respectable neighbourhood, near to three railway stations, and only about two miles from London-bridge.

Particulars may be obtained (14 days prior to the sale) of **J. GROVES, Esq., Solicitor, 33, Chancery-street, Bedford-square;** or at the Office of **MR. SINGLE, Surveyor and Land Agent, 41, Coleman-street, City.**

## PAINTING BRUSHES.—TO PAINTERS, BUILDERS, &amp;c.

**J. KENT and CO., 11, GREAT MARLBOROUGH-STREET, LONDON,** offer to Painters, Builders, and Dealers in Painting Brushes, goods of a quality far superior to those generally offered for sale, and which they beg to call the attention of those who study quality and durability to cheapness. Lists and prices forwarded on application.

## BUILDERS, PLASTERERS, &amp; others

should consider the Prices.—  
Lined Oil, 2s. 3d. per gall. Yellow Ochre, 8s. per cwt.  
Boiled Oil, 2s. 6d. per do. Lamp Black, 24s. do.  
Turpentine, 2s. 3d. per do. Blue Black, 16s. do.  
Best Ground Lead, 12s. 6d. per cwt. Venetian Red, 17s. do.  
Second do. do. 21s. 3d. Cold Str. 9s. per gall.  
Third do. do. 21s. 3d. Copal Varnish, 12s. & 16s. do.  
Turp. Oil 12s. do. Paper Varnish, 11s. & 14s. do.  
At H. N. J. V. & Co., 11, Great Chancery-street, and Colour Warehouse, 58, J. D. STREET, near Fleet- Road. Brushes, Varnishes, Oil and Ground Colours, at lowest prices.

## COMPOSITION FOR WRITING WITH STEELPENS. STEPHENS'S WRITING FLUIDS

comprise the most splendid and durable colours, and the most indelible compositions, which art can produce; they consist of—

A Blue Fluid, changing into an intense black colour.  
Patent Unchangeable Blue Fluids, retaining a deep blue colour. Two sorts are prepared, a Light and Dark Blue.

A superior Black Ink, of the common character, but more fluid.

A Superior Carmine Red, for contrast writing.

A Liquid Rouge Carmine, for artists and contrast writing, in glass bottles.

A Carbonaceous Record Ink, which writes instantly black, and being proof against any chemical agent, is most valuable in the prevention of frauds.

A Liquid, Mechanical, and Architectural Drawing Ink, superior to Indian Ink.

Marking Inks for linen: Select Steel Pens; Inkholders. Prepared by **HENRY STEPHENS, the Inventor, No. 54, Stamford-street, Blackfriars-road, London,** and Sold by Stationers and Booksellers in Bottles, at 3d., 6d., 1s., and 2s. each.

**CAUTION.**—The Unchangeable Blue Fluids are patent articles; the public are therefore cautioned against imitations, which are infringements; to sell or use which is illegal. Also purchasers should see that they are not served with the Blue Black instead of the Unchangeable Blue, as these articles are often confounded.

**N.B.**—Black Ink, and imitations of the above articles, are constantly being announced as new discoveries, but on examination, they will be found to have some new name only.

## PREPARED FLOORING BOARDS.

**ALWAYS ON SALE, A LARGE ASSORTMENT OF DRY PREPARED FLOORING BOARDS AND MATCHED BOARDING** of all sorts, planned to a parallel width and thickness, from 1 inch to 1½ inch thick. Rough Boarding for Plats.

**TIMBER, DEALS, OAK PLANKS, SCANTLINGS, SASH SILLS, &c.**  
Apply at **W. CLEAVE'S Timber Yard, Smith-street, Westminster.**

## PREPARED FLOORING BOARDS.

**ALWAYS ON SALE AT A. ROSLING'S, SOUTH-WARK-BRIDG-WHARF, BANKSIDE, and Old-Barge-Wharf, Upper Ground-street, Blackfriars,** a very large stock of well-seasoned Floor Boards of every variety.

**A. R.**, in calling the attention of builders and consumers, confidently presumes on his being able to supply them on such advantageous terms, as will ensure and merit their favours and approbation.

## PLANING BY MUIR'S PATENT MACHINERY.

**HENRY SOUTHAM** begs to call the attention of persons engaged in Building, to the great saving in time and labour effected by MUIR'S PATENT MACHINERY for preparing Flooring and matched Battens and Boards.

Orders punctually attended to by addressing to **HENRY SOUTHAM, Mr. Herbert's Saw Mills, Gillingham-street, Finsbury, N.B.** Timber of the largest size sawn at these Mills.

## SASHES AND FRAMES, DOORS, &amp;c.

Manufactured for the Trade  
By **Chas. W. WATERLOW, 121, Bunhill-row, Finsbury.**  
Lowest Prices.—Terms: Cash.

**N. B.** Lists of prices had on application at the counting-house; if by letter, pre-paid, including postage-stamp.

## WINDOW BLINDS. TO ARCHITECTS, BUILDERS, CONTRACTORS, AND OTHERS.

**F. A. DE WILDE, (Late Mills and De Wilde), 73, WELLS STREET, OXFORD STREET, LONDON,**

**MANUFACTURER** of the much-admired **SPANISH BLIND, VENETIAN SHADES,** adapted to either inside or outside, so much in general use. Blinds for Shop-fronts, Spring Roller Blinds, on the most improved Principle. **PATENT ROLLER BLINDS,** Mounted with the newly-improved Scotch Furniture.

**PATENT WOOD-WARE BLINDS, DWARF VENETIAN BLINDS, &c.**

Verandahs to any Design. Transparencies, and every description of Sun Blind, on the most improved principle, and of the very best and most selected Materials.

**F. A. De Wilde** begs to observe he pays particular attention to the manufacture of Blinds for exportation; he also invites all parties to pay his Establishment a visit, where they may be every description of Blinds.

Holland Blinds Cleaned, Calendered, and re-made. Venetian Blinds Painted, Taped, and Lined. Estimates furnished.

**N.B.**—Old Blinds renovated and made equal to new.

## SEYSSAL ASPHALTE COMPANY.

**"CLARIDGE'S PATENT," ESTABLISHED 1838.**

**THIS ASPHALTE** is a Bituminous Limestone, obtained from an inexhaustible Mine at Fyrmont, in the Jura Mountains.

Previously to its introduction into this country, in 1838, the Material had been used for many years in France, and from its great utility was extensively patronized by the Government of that Country.

Among the various uses to which it can be applied, the following may be enumerated:—For Foot-Pavements, public and others; in the Carriage Approach to Mansions, Garden-walks, and Terraces; the flooring of Kitchens and other basement offices; also of Coach Houses and Stables, Dog Kennels, Barn Floors, Cow Houses, Piggeries, Poultry Houses, Tan Rooms, and Maltings. For Roofing, Covering of Railroad and other Arches, the Lining of underground Cellars near Rivers to prevent the ingress of the Tides; also in Covering the ground-line of Walls, to prevent damp rising (this application of the Asphalt of Seyssel is particularly recommended by the Commissioners on the Fine Arts), thereby rendering the basement stores in the worst situations both dry and warm. It is an excellent Cement, as applied to Docks, Breakwaters, or Walls built for resistance to the encroachments of the Sea. For lining of Tanks, Fish-Ponds, and other Hydraulic purposes.

**J. PARRELL, Secretary, Seyssel Asphalt Company's Works, "Claridge's Patent," Stangate Depot, London.**

**COMMISSIONERS OF FINE ARTS' REPORT ON THE MEANS OF PREVENTING DAMP IN WALLS.**

**THE DIRECTORS OF THE SEYSSAL ASPHALTE COMPANY** have much pleasure in recommending to the notice of Architects, Builders, and others, the application of **THE ASPHALTE OF SEYSSAL**, as the only effectual means of preventing **DAMP** rising in **WALLS.**

The following account of its application is extracted from "The Appendix to the Commissioners of Fine Arts' Report," page 18.

"In 1839 I superintended the construction of a house of three stories on the Lac d'Engelien. The foundation of the building is constantly in water, about 10½ inches below the level of the ground-floor. The entire horizontal surface of an external and internal wall was covered, at the level of the internal ground-floor, with a layer of Seyssel Asphalt, less than half an inch thick, over which coarse sand was spread.

"Since the above date no trace of damp has shown itself round the walls of the lower story, which are for the most part painted in oil of a gray stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the prevention of the floor, resting on the soil itself, is only about 24 inches above the external surface of the soil, and only 19½, at the utmost, above that of the sheet of water.

"The layer of Asphalt, having been broken and removed, for the purpose of inserting the sills of two doors, opened, indicating the presence of damp have been since remarked at the base of the door-posts."

## POLONCEAU'S BITUMEN PAVE-

**MENT** for paving Foot walks, Terraces, Garden walks, Stables, Coach Houses, Corn Stairs, and Salt Warehouses. For the exclusion of Damp and Vermin in Basements it is particularly adapted, and for Roofing Dwelling Houses, Porticos, Balconies, and Sheds.

Price 3s. 6d. per square yard.  
**BITUMEN** for covering the Arches of Bridges, Culverts, &c. &c. on Railways and other places (with instructions for laying it down), may be had at the rate of 45s. per ton, by applying to **JOHN FLEKINGTON, 15, Wharf-road, City-road.**

## BASTENNE BITUMEN COMPANY.

Office, 31, Poultry. The Directors of this Company beg leave to call the attention of ARCHITECTS, BUILDERS, and others, to the very beneficial results attendant on the use of **BITUMEN** in the erection of buildings, &c. Its application as a **FLOORING** will be found eminently useful. It is also valuable for numerous other purposes, more particularly where the object sought for is the **EXCLUSION OF DAMP AND VERMIN.** The Directors beg to refer to the works in Trafalgar-square, which have given general satisfaction. Scale of prices per foot square:—1 inch thick, 8d.; 2 inch thick, 7d.; 3 inch thick, 6d. Works not measured 40s. per foot, 1d. Roofing executed at 4d. and 7d. per foot square. Concrete is charged in addition according to the thickness when required. Carriage and men's time are charged extra when works are executed beyond three miles from the General Post-office, a Bitumen 20 per ton, without grit. Bitumen 25 per ton, with grit.  
**CHARLES F. TILSTON, Sec.**

**VARNISH.**—It has long been a desideratum amongst the consumers of Varnish to obtain a good and genuine article; brilliancy, facility of drying, hardness, and durability are the qualifications necessary, but these are seldom if ever found united in the experience of a life-time devoted exclusively to the manufacture of this article, the great and important discoveries of modern chemistry, and the daily improvements in machinery, have enabled Messrs. George and Thomas Wallis to produce Varnishes (both oil and spirit) unrivalled in every respect, and they confidently recommend them to the trade, as deserving of notice both in price and quality.

Builders, Coachmakers, Painters, and others may depend on being supplied with a genuine and unadulterated article. Fine Oil Varnish, from 10s. per gallon; Best White Spirit Varnish, 21s. ditto; Best Spirit French Polish, 18s. ditto; White Lead Oil, 12s. ditto; and Colours of every description at the very lowest prices.—**WALLIS'S Varnish, Japan, and Colour Manufactory, 64, Long-acre, one door from Bow-street.** Established 1750.

## H. BESSEMER'S PATENT GOLD

**PAINT.** Sole Agents, **R. TILLEY & GARROD, 245, Blackfriars-road, London.**

The above **METALLIC PREPARATION** is intended to supersede the use of Gold Leaf, as it gives an equally beautiful effect; is extremely durable; will bear washing equally well with any other description of fine paint; and in comparison, costless, requiring only to be applied with an ordinary brush. It will be found particularly adapted for the following purposes:—

**EXTERIOR PAINTERS AND DECORATORS.** For exterior and interior Decorations, Iron Works, Mouldings, Cornices, Centres, Brackets, Figures and Casts of every description, whether in Plaster or Metal, Writing and all ornamental purposes.

**SHIP-PAINTERS AND DECORATORS.** For such ornamental Work, either within or without, as may require gilding, and from its cheapness, affording an opportunity of embellishment so desirable, but which is frequently neglected from its great expense.

**PLASTURE FIGURE-MAKERS.** For general use upon the Figures, Casts, and Medallions manufactured for ornamental purposes.

And for various other uses here undescribed, but which its low cost may likewise admit it. To be had wholesale only as above, and retail at most Colour Warehouses in the kingdom. Sold in bottles, 5s. each.—A liberal allowance to the trade.

## PLUMBERS, PAINTERS, BUILDERS,

and others supplied with **CROWN and SHEET WINDOW GLASS, SHEET PLATE, &c. &c.** for Pictures, Glazing, &c. &c., in any quantity, at Manufactory Prices.

**TUAPS,** per gallon . . . . . 2s. 4d.

**LINED OIL,** . . . . . 2s. 4d.

**SHEET LEAD,** in sheets, per cwt. . . . . 18s. 6d.

**Ditto,** cut to sizes and PIPE . . . . . 19s. 6d.

**WHITE LEAD** (genuine) per cwt. . . . . 20s. 6d.

**GLASS,** in plates, Castles, &c. &c., equally low, and quality warranted. Complete Lists, priced, may be had on a visiting to **R. COGAN, 5, Princes-street, Leicester-square, London.**

**PRINT PUBLISHERS, PICTURE FRAME AND CANVAS MAKERS,** can be provided with flattened Crown, flattened Sheet, and the patent Sheet Plates, Lists of which, showing the price for any Square, from 14 by 12 to 40 by 30 of Best and Second quality, will be sent (gratis) upon receiving the order. Builders, Glass-cutters, and others having to Contract, sending a copy of their specifications, with a list of dimensions to **R. COGAN**, will receive by return of post the lowest prices for all qualities and sizes of Crown Sheet Glass and Sheet-Plate, &c. Glazing estimated for, if required.

**NURSERYMEN, MARKET GARDENERS, AND OTHERS** requiring Small Glass, will find a greater variety (as in a large Stock of which is constantly on hand) than is kept by any other House in London.

**COMMON SHEET AND CYLINDER.** The advantages of Common Sheet over Crown for Glazing Lights is more brilliant light, it is generally used where strength or superior appearance is required; a light 6 feet 6 in. long, with openings of any width, needs only one lap. This Glass is considerably stouter than Crown, and may be had from 1s. 3d. per foot.

Also may be had, **COGAN'S PATENT CHIMNEY FOR GAS OR OIL,** which effects a great saving in the consumption, produces a more brilliant light, prevents smoke, and is cheaper than any other Patent Chimney sold.

**LAMP SHADES AND GAS GLASSES,** OF EVERY DESCRIPTION.

**GAS CONTROLLERS, PUTTER, GLASS MERCHANTS,** and others supplied with Lists of nearly 100 Patterns, with prices affixed, sent to any part of the Kingdom gratis.

**CLOCK MAKERS, ALABASTER FIGURE MAKERS, ARCHITECTS, MODELLERS, AND OTHERS,** supplied with **FRENCH ORNAMENTAL SHADES,** for covering Models of Public Buildings, Geological Curiosities, &c. &c. of all sizes and shapes. List of Prices may be had on application.

**French Plate Glass, China Vases, Fancy Glass Ware, and other articles, at moderate prices.**

**R. C.** having just completed his Show Rooms for the above articles, begs to invite the inspection of the Public. A liberal discount to Bazaar keepers and others.



## NOTICE.

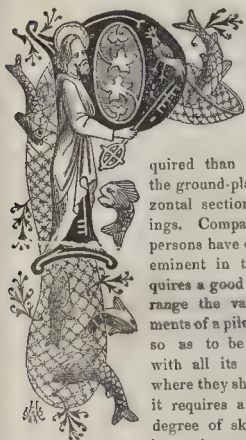
As it is our intention to publish almost immediately a Second Edition of Mr. Bartholomew's Cyclopædia of the Building-Act, accompanied by the whole of the Text of the Act itself, in a small pocket form, only  $5\frac{1}{2}$  ins. by 3 ins., we should be obliged by receiving, in the course of next week, any notices of corrections and suggestions for improvements.

It is also our intention to publish in THE BUILDER Mr. Bartholomew's Notes upon the Act, which will also be given in the pocket edition.

# The Builder.

No. XCII.

SATURDAY, NOVEMBER 9, 1844.



PERHAPS  
in no other  
branch of  
architecture  
is there more  
study re-

quired than in forming the ground-plans or horizontal sections of buildings. Comparatively few persons have ever become eminent in this. It requires a good head to arrange the various apartments of a pile of building, so as to be convenient, with all its details just where they should be; and it requires a still higher degree of skill to do this in such manner that a

structure raised from such a ground-plot shall be sound, scientific, and architectural.

The good planner never forgets that his work has to be **BUILT** and to be **ROOFED OVER**; he, therefore, is never at a loss in his construction, except some incompetent person interfere with his projects, and cause him trouble to overcome the unnatural difficulties which have been created. Direct passages, uniformity of the members composing the apartments, free access and lighting, chimneys placed advantageously for diffusing warmth the most uniformly, and husbanding the consumption of fuel in the best manner,—are some of the elements of good planning. When you see skew passages, slanted door-jambs, all manner of clever expensive contrivances by enrichments, false screen-work, a constant recurrence to blank sashes and doors, you may rest assured the man who planned all this is very inferior as an architectural designer, since he is unskilful in the highest, while at the same time the most necessary branch of architectural knowledge.

When you see domes raised out of flat ceilings, or ill-adapted to irregular apartments, by means of spandril ceiling-pieces at the corners, you may at once know their designer has much to learn, that he is as yet destitute of that integrity of feeling which can alone make him an architect; for he needs to have infused in him his profession's life and soul. He does not think masonically, for if he did, he would design and build nothing which could not be executed with stone: the bare attempt to rear his domes in masonry upon flat ceilings, would bring down the work over him. Every person who sins in this respect should be banished to a region where masonry alone can be procured; and he should be there nurtured to ar-

chitectural decency by being obliged to build masonically. The stone-roofed abbot's kitchen, at Glastonbury, outliving spoliation several centuries, yet remains. The Rotunda has, with its incombustible cupola, survived the sacking and burning of Rome during the greater part of two thousand years, and may perhaps last as much longer; and a variety of other buildings have been as fortunate from the same caution; but in modern times the example seems almost lost: prudence and science claim rigidly the dictates of legitimate architecture, yet with how little success may be seen by any one who will detail to himself what has been done among us in modern times. As long as the architecture of the empire is in inferior hands, all the deceitful advice which out-wits the public with its eyes open, will by address (which were better employed in planning legitimately) lay the employer under contributions for the priceless stuff, which the skilled conscientious architect will not palm upon the ignorant. As we proceed, what are our own particular views upon the subject will be amply seen.

Good architecture must be planned conveniently, soundly, elegantly, practically, and rationally. It has no petty whims about it; it must be geometrical, it must be regular, or if any thing irregular, then only with certain deviations from uniformity. The ground-plot, the elevation, the perspective effect, the construction, the use, the duration, the dimension, all go forward in the skilful planner's mind at the same time. None, therefore, but a superior mind can plan architecture. Cracks are rarely found in the walls of a good planner, because tie, union, and correct gravitation run throughout his constructions, by reason of the first planning. The passages of a good planner are never dark, irregular, nor tortuous; he places no water-closets in obscure corners, but ever brings them to the light and to open ventilation; the good planner is not in the habit of lighting several separate places, offices, or apartments from the same window; he seldom uses "borrowed lights," but gives to every place its own; you never see in the work of the able planner one apartment made irregular by sweeping out of it the fine shapes of another, for with him, whatever be the complexity, the walls are placed as exactly and as economically of space as are the parities of a honey-comb; you do not see in some parts of his work huge masses of walling or masonry, and in others thin mere cuticle-work, to fill up or to give space, just as maladroitness chances to render such necessary. But where you see great masses, the altitude and bearings of the elevation require them; no part of a good plan is stuffed, nor are the irregularities made up by the extravagance of solid work, nor do you see portions of the space battened off and left vacant for the mere purpose of creating regularity; the good planner never falls into dilemmas which render these costly blotches necessary. The ground-plan of a building is seldom understood by unprofessional persons, and how should it, since so many professional ones are themselves so deficient in this knowledge? and yet before a man builds a house it would be well were he to learn the language of plans; nothing can be more methodical, nothing can convey to the mind more exactly the details of which any person building usually desires to know so much.

In good planning, menial but necessary domestic offices are out of sight, yet nigh at hand. Excesses about buildings are mostly the result of desperately inferior planning; the confusion in inferior staircases comes from the same fault. When good plans are obtained, they should be esteemed as precious. Great genius and attainments made Wren the most illustrious planner of public edifices. The ground-plan of St. Paul's Cathedral, for beauty, geometrical expedients, vista, and harmony, transcends that of all other sacred edifices in the world. The disposition of the columns in avenues to produce the regular peristyle supporting the cupola of St. Stephen's, Walbrook, has in the world no competing rival. The plan of the Royal Exchange dares not exhibit itself with that of the little church of St. Benet-Finck, lately mentioned by us. Of the minor works of Wren little is known by the public at large; the plan of St. Antholins, Watling-street, conformed, like that of St.

Benet-Finck, to the public way, is another master-piece. St. Swithin's, London-stone, where the rectangular plan is cast by diagonal architraves into the form of an octagon, bearing a dome of the same plan, is worthy of remark. Even the church of St. Mildred, Bread-street, the plan of which is a simple rectangle, gives a worthy instance of the manner in which a circular dome may be raised above a square pendentive, and by its rich band of fruit and flowers may throw into the shade our modern mean plastering. The interiors of St. Anne's by Aldersgate, Saint Martin Ludgate, and St. Benet's Paul's Wharf, each containing four interior columns, are worthy of remark. The plans of the steeple of St. Bride's, St. Vedast's, St. Stephen's Walbrook, St. Michael's Pater-noster, St. James's Garlick-hill, St. Mary-le-bow, Christ Church Newgate-street, and of the turrets of St. Paul's Cathedral, are all different, and are all master-pieces of genius, made illustrious by the guidance of geometric art.

Among modern planners, Sir John Soane possessed no mean ability, though he was very inferior to Wren in science and acquirements; he seldom carried his works to any very great degree of high art. Many of the parts of the Bank of England exhibit great skill in planning, and one thing in it is greatly to be admired,—the prolongation of vista. He resorted successfully to many fine expedients for overcoming the difficulties produced by so great an establishment, growing up piecemeal upon an irregular increasing site, and constantly requiring change from the fluctuating and expanding nature of its departments.

The management of the turned passage from the Old Court into the Rotunda, which forms an alteration from the original entrance, has no rival. The shaping of the Bullion-court, so as to adapt itself to the lines of the apartments parallel to Thread-needle-street and to those parallel to Loth-bury, is worthy of study. The Lothbury-court, which was built to accommodate itself to the site, before it was enlarged to Princes-street, deserves to be examined attentively, and the vista from the east alcove of this court through the offices into the Rotunda (now from a subsequent alteration not open to general access), is as fine in planning as any thing which has ever been done. The Bank of England is full of ingenious expedients to overcome irregularities of site, though they are not all scientifically worked out in the section and elevation. The Lothbury and Princes-street corner of the Bank, though only ornamental and for the purpose of concealing the acute irregular angle of the building at that part, is formed on a most masterly plan, which shews first-rate genius, and it would be well for Welby Pugin himself to learn how to plan before he utters any more trumpery relative to it. To overcome the difficulties and irregularities of site, requires calibre of mind different from the making of mere irregular masses, where the designer has free scope to work in any way he pleases. But the weak mind, always vain, mistakes for genius that vanity which occasions it to overlook the skill and science of others.

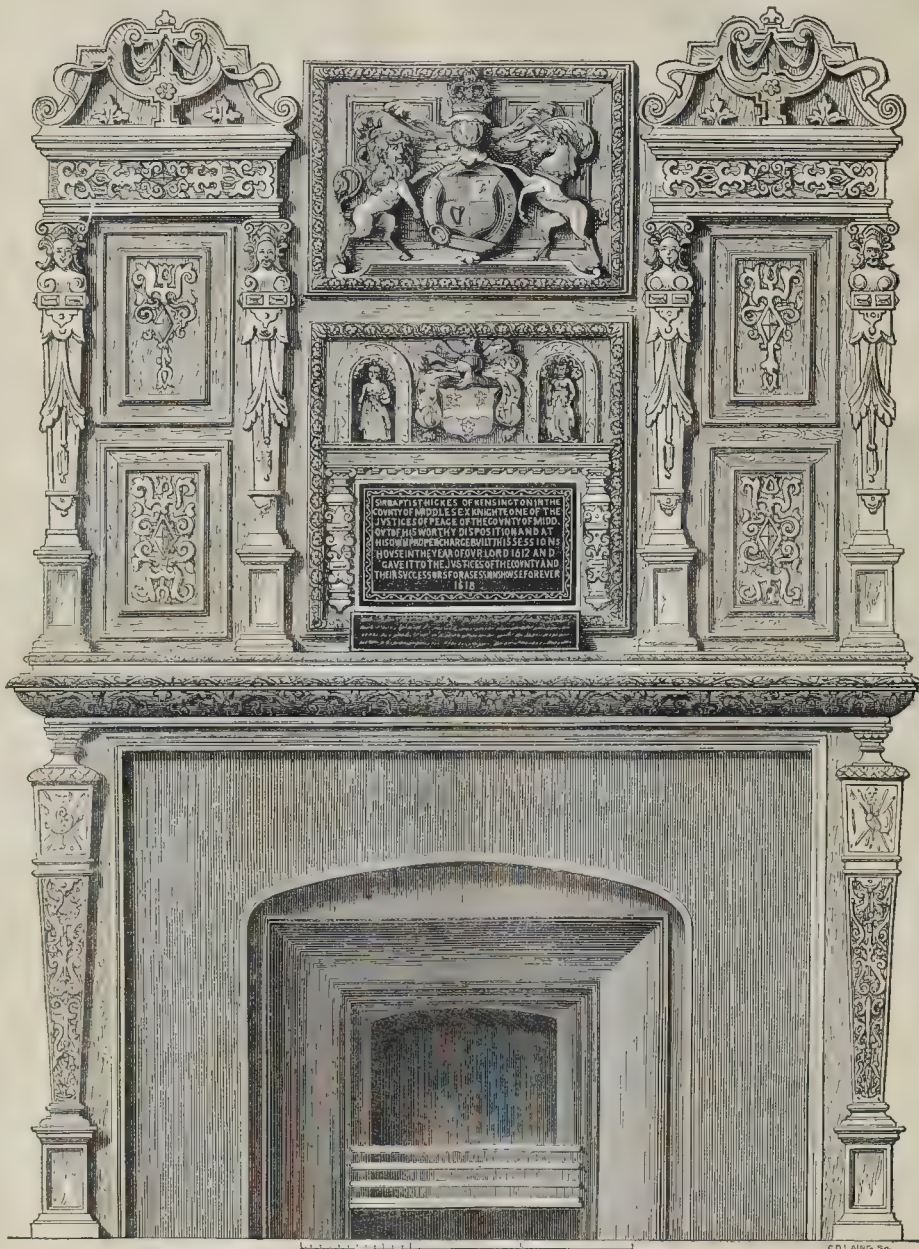
Planning has fallen, because the sciences applied to architecture have of late gone much into desuetude. At some future time we propose to collect the finest examples of planning, and we hope to be able to give in our columns some original designs, which we do not undertake to place in competition with those of the masters we have named, yet affording hints, we trust, for developing this neglected branch of true architectonic art. In small dwellings, the confined space often prevents its full development, yet much more may be done in this respect to beautify moderate habitations than is generally supposed.

1 pp.

THE KING OF PRUSSIA AND MR. HABERSHON, THE ARCHITECT.—The king of Prussia has been graciously pleased to confer on Matthew Habershon, Esq., of London, the great gold medal for science and literature, in token of his Majesty's high approbation of his work on the "Ancient Half-timbered Houses of England." Mr. Habershon, who is the architect of the church and other buildings erecting at Jerusalem, was honoured with a long private interview with the King of Prussia, relative to those extensive works, on his return from the Holy Land last year.



SIR BAPTIST HICKES'S CHIMNEY-PIECE,  
IN THE MIDDLESEX COUNTY SESSIONS' HOUSE.



(From a Drawing by Mr. C. J. Richardson, F.S.A.)

This relique is now in the south-east room on the ground-story of the County Sessions' House, Clerkenwell, having, upon the building of the New County Hall, been brought there from the former hall, built by Sir Baptist Hickes in the broad part of St. John's-street, opposite the Windmill Inn, a site still celebrated by the miles along the north road being measured from "the spot where Hickes's Hall formerly stood."

The chimney-piece itself is a good example of the style of the day which was shortly afterwards superseded by the improved Palladian architecture of Inigo Jones. The filling up of the space between the carved mantel and

the terminal jamb-pilasters is modern, and was most likely originally open.

The arabesques on the mantel, pilasters, friezes, and panels, very closely resemble Spanish-moresco work.

The double pilastered wings of the story above the mantel are not badly designed, though the inner pilasters appear to bear upon void. The termination of the central mass above the arms of King James I. wants connection with the wings, which might easily have been effected by some kind of surmounting pediment or arched cornice. Beneath the royal arms is the following inscription:—

SIR BAPTIST HICKES, OF KENSINGTON  
IN THE  
COUNTY OF MIDDLESEX,  
KNIGHT,  
ONE OF THE  
JUSTICES OF PEACE OF THIS COUNTY OF MIDDLESEX  
BY HIS OWN PROPER CHARGE,  
AND AT  
BUILT THIS SESSION HOUSE, IN THE YEARE OF  
OVR LORD GOD 1612, AND  
GAVE IT TO THE JUSTICES OF PEACE OF THIS  
COUNTY,  
AND THEIR SUCCESSORS  
FOR A SESSION-HOUSE FOR EVER  
1612.



And below this original votive-memento another panel has been somewhat awkwardly introduced across the framework bearing this record:—

ON THE ERECTION OF THE PRESENT SESSION-HOUSE  
ANN. DOM. 1792.  
THIS ANCIENT CHIMNEY-PIECE  
(A PART OF THE OLD HICKES HALL)  
WAS PLACED IN THIS ROOM, TO PREPARE  
THE MEMORY OF SIR  
BTS. HICKES,  
AS SET FORTH IN THE ABOVE INSCRIPTION.

The carved work above the mantel is finished with colours, and is heightened with gold.

Above the general work of the chimney-piece exist some remains of pilasters cut off abruptly, which seem to have formed a portion of the wainscoting of the old Hickes's Hall. This chimney-piece does not accord in any respect with the room in which it is fixed, which is a plain, uncarved, modern one. We think so worthy an act of munificence was worthily seconded by placing it in the present building; and that, to prevent it from seeming to be out of place, the whole room should be fitted up in the same style to agree with it. Few examples like that of Sir Baptist Hickes occur, comparatively few men having the means to accomplish so generous and praiseworthy a public service.

a e l.

#### FALL OF A NEW MILL AT OLDHAM.

ONE of the most extensively fatal catastrophes that has happened in the neighbourhood of Manchester for many years past—one, indeed, more terrific in its nature, and more fatal and disastrous in its consequences, than any thing that has occurred since a similar catastrophe at the fire-proof factory of Mr. Nathan Gough, near Oldfield-road, Salford, on Wednesday, the 13th of October, 1824, by which eighteen or nineteen persons lost their lives,—occurred on Thursday, the 31st ultimo, in a suburb of Oldham, named Lower-house, Greenacres-moor, at the mills of Messrs. Samuel Radcliffe and Sons, called the Lower-house Mills. The firm (now consisting of Messrs. Josiah Radcliffe and Brothers, the four sons of the deceased Mr. Samuel Radcliffe) had recently built a new mill adjoining one end of their old fabric; and about half-past three o'clock on Thursday afternoon the whole of this new mill fell in with a tremendous crash, at a time when there were thirty-two persons in it, of whom there is reason to fear that twenty-one have been killed, five more or less hurt, of whom one is not expected to recover, and six have escaped with little or no injury.

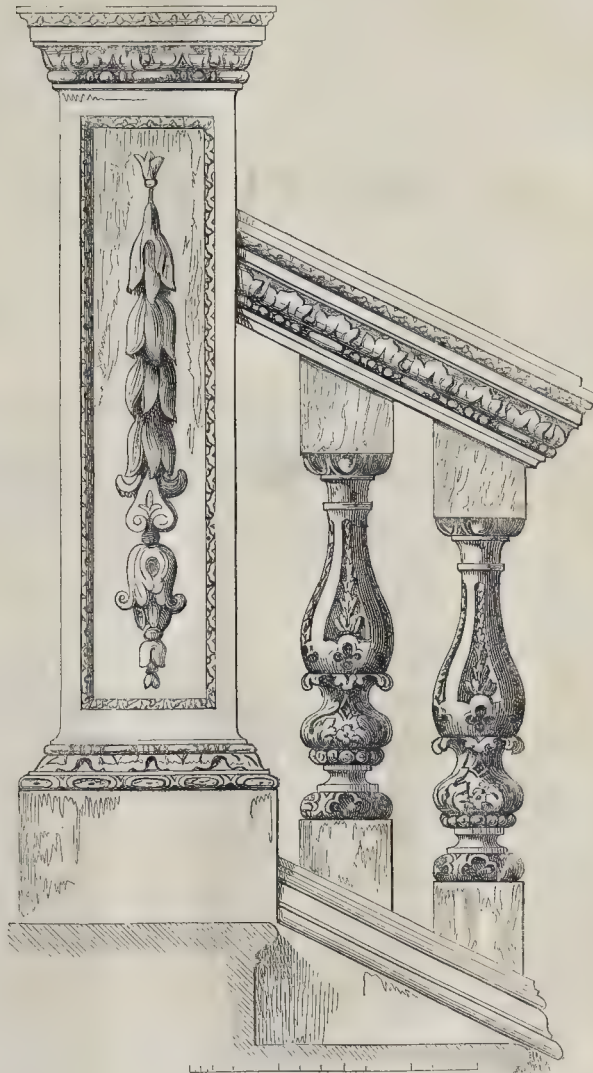
One of the assigned causes of this awful catastrophe is that an iron beam, from some cause, broke in two, in or near the middle, and thus the superincumbent weight brought down the other beams, and, indeed, the entire floor, which, in its fall, carried the others with it. This is the opinion of one of the Messrs. Radcliffe.

During Wednesday the millwrights had been engaged in putting-up and connecting shafting, &c., in order to prepare the rooms for the reception of the machinery which was to arrive in a day or two. The shafting was worked a little on Wednesday night; and the twist-ers in had placed several power-looms in the upper floors on the day of the accident. The only other machinery in the building consisted of twisting and drawing frames, which were all in the lowest room, over the boilers. Had the accident occurred six weeks later, the whole building would have been filled with machinery, and with a full complement of hands, in which case the loss of life might have been much greater. The principal beams, cross or short beams, and iron pillars, were all manufactured expressly for the new building, by Messrs. Savilles and Wolstenhulme, of Lower Moor Iron Works, Oldham. The beams were laid across the building, there being three separate beams or lengths in each range, the ends resting on and clipping the pillars. Each beam measuring about 14 feet in length, and was stated to be "of the form generally used for fire-proof buildings," the ends being clipped together by wrought-iron straps. Messrs. Savilles and Wolstenhulme state that the iron

was partly Scotch, and partly from Staffordshire, and that it was used in the proportion of one-third of cold-blast iron to two-thirds of ordinary pig-iron. These beams average a weight of about three-quarters of a cwt. per foot, and some of their weights, as taken from the makers' books, are 22 cwt. 3 qrs. 20 lb.; 25 cwt. 3 qrs. 2 lb.; 24 cwt. 3 qrs.; 24 cwt. 2 qrs. 6 lb.; and two beams together weighed

49 cwt. 1 qr. 20 lb. Messrs. Radcliffe also stated, that each beam had been tested to bear a weight of eight tons, and Messrs. Savilles and Wolstenhulme shewed where the testing had been conducted, each beam having, according to their statement, borne a weight suspended from its middle, of 12 tons of pig-iron. The pillars are of cast-iron, and hollow, weighing about 6 cwt. each.

#### STAIRCASE-BALUSTRADE BY INIGO JONES, AT AMESBURY, WILTS.



#### TO THE EDITOR OF THE BUILDER.

Sir,—I send you another sketch to illustrate Sir Jones's skill in designing staircases. It is from Amesbury, in Wiltshire, the building of which was designed by Inigo, but executed by his nephew and pupil, Mr. Webb. Two plans and an elevation are to be found in the 3rd volume of Colin Campbell's "Vitruvius Britannicus," wherein, however, the staircase itself is not sufficiently made out.

I should like to have accompanied the sketch with the plan and section of the staircase, which is a celebrated example, as it contains a back or servants' staircase within the principal one. I shall probably send you other sketches of it at a future opportunity.

I am, Sir, yours, &c.,

C. J. RICHARDSON.

22, Brompton-crescent.



# WANT OF AN EFFICIENT SURVEYING ESTABLISHMENT IN CEYLON, AND THE EVILS RESULTING THEREFROM.

No time ought to be lost by the home authorities in sending out a sufficient number of young men who are conversant with land-surveying and tracing of roads through a difficult country, as well as possessing skill to make roads when a trace has been determined on. I am aware that the want of such persons is most severely felt in the island. I know of applicants being unable to have land surveyed for more than two years, entailing almost ruin on them; and the reply of the island authorities to complaints made on the subject was, that they had no surveyors to survey lands or trace roads, although people were ready to pay any sum which the Government might demand for their services; and that their repeated applications to the home authorities for surveyors were not attended to. Thousands of persons can be had in England too glad to be employed by Government, possessing the skill I mention; and their employment at a salary of suppose 200*l.* per annum, as surveyors in Ceylon, to the number of at least twenty, so far from entailing an expense on the Government, would, I am convinced, afford a profit, so highly would the planters pay for their services. In proof of my assertion, I may mention that I know of many who gladly paid to surveyors ten guineas per mile for merely pointing out a trace, which, in many instances, proved to be any thing but the best which could be determined on. The establishment of the Surveyor-General is acknowledged to be one of the most inefficient in the island; Mr. Norris's own exertions unassisted can, of course, do little. Another argument to be used to induce Government to send out an effectual establishment of surveyors is to be found in the fact, that Government has in more than one instance sold the same land to two purchasers; and to guard against the dangers to which similar acts would subject them, the island Parliament has had recourse to legislation to guard themselves against the consequences to which they were liable in having sold the same land to two different parties, and received payment of it from both.—*Extract from a Letter addressed to Lord Stanley, Secretary of State for the Colonies.*

## ON THE RESISTANCE OF RAILWAY TRAINS.

A PAPER, by J. Scott Russell, Esq., on the above important subject, was read at the late scientific meeting at York; the substance of which, very much compressed, will be found in the following experiments made by the author on the Sheffield and Manchester Railway:—

1. Trains of carriages, empty, were put in motion at the summit of an inclined plane, at about 30 miles an hour, and were allowed to descend freely. 2. Trains of carriages, loaded, were tried in the same way. 3. The engine and tender were treated in the same way, being put to a velocity of between 30 and 40 miles per hour, and allowed to descend freely the whole length of the inclined plain without any train attached. 4. The engine and tender, with a train attached, were propelled to the top of the inclined plain, and then allowed to descend freely by gravity.

By these means the following results were obtained:—

1. The resistance to railway carriages at slow velocities does not exceed 8*lb.* per ton. 2. The resistance to a light railway train of six carriages, at 23·6 miles an hour, was 19*lb.* per ton. 3. The resistance to a loaded train of six carriages, at 30 miles an hour, was 19*lb.* per ton. 4. The resistance to a light train of six carriages, at 28 miles an hour, was 22*lb.* per ton. 5. The resistance to a loaded train of six carriages, at 36 miles an hour, was 22*lb.* per ton. 6. The resistance to a six-wheeled engine and tender, at 23·6 miles an hour, was 19*lb.* per ton. 7. The resistance to a six-wheeled engine and tender, at 28·3 miles an hour, was 22*lb.* per ton. 8. The resistance to a train composed of six light carriages, with engine and tender, at 32 miles an hour, was 22*lb.* per ton. 9. The resistance to a train composed of nine loaded carriages, with engine and tender, at 36 miles an hour, was 22*lb.*

Mr. Russell observed, that the subject was of considerable importance, inasmuch as the system adopted for laying down the gradients

of new lines was of necessity regulated chiefly by the opinion of the engineer on the question of resistance. How much mechanical force is required to move a given weight of train, along a given gradient, at a given speed, was a question of which the solution was essential to sound engineering; but the profession had long felt that they were not in possession of sufficient data to determine this question.

## Correspondence.

### BAD SPECULATION BUILDING.

TO THE EDITOR OF THE BUILDER.

SIR,—The construction of the early habitations of mankind required little skill, and as little knowledge, and I think if any person were to attend and see the infamous works now being executed in the road leading from Battle-bridge (called the Chalk-road) they would say that neither one nor the other ever entered the mind of those who are erecting such wretched buildings. What, Sir, can the district-surveyor be about? I would call his attention to some of the party-walls where bond timber is placed side by side in a 9-inch wall. I need hardly say that it is quite contrary to Act of Parliament, and in case of fire dangerous; in fact, Sir, I consider such building to be an imposition upon the public. The walls are built of the veriest rubbish, they are covered over, and the house is beautified, and, to all appearance, one would say well-built. A person purchases, and after being in possession for a few years, he finds the beauty fade, and the carcass rotten, and he has been imposed upon.

I hope the new bill will put a stop to all such work. I am, Sir, yours obediently,

Nov. 7, 1844.

DÆDALUS.

### WINCHESTER NEW CHURCH.

SIR,—Allow me to contradict an assertion made by "A Surveyor and Looker-On," viz.: that the drawings submitted by me for the new church at Winchester are the property of Messrs. Elmslie and Co., a firm with which I have not the honour to be acquainted, such assertion being perfectly erroneous and without foundation.

His remarks are evidently malicious; but this I can readily attribute to the sourness of the grapes.

Yours most obediently,

WILLIAM WEBBE, Architect.

Camden Town, Wednesday,

Nov. 7, 1844.

REMOVAL OF TWO BRICK HOUSES.—A block of two brick houses in Lincoln-street, three stories high, was safely and successfully removed this morning ten feet and six inches from their old foundations to the rear. This novel work was accomplished on a plan furnished to Alderman Preston, a member of the committee for widening streets, by Mr. Moses Parker, who is justly entitled to great credit for the entire success of the new enterprise. The *modus operandi* was thus: concave cast-iron plates are prepared, the foundation of the wall cut away, and two plates facing each other inserted, with cannon balls between them. These plates and balls being placed under all the walls, the whole building rests upon them. Three screws are applied, and the whole building is rolled upon them any desired distance. These plates and balls are moved one by one, and the brick replaced, and the building left in the original state, without any injury to the structure. It is estimated that this block weighs 7,000 tons, and was rolled on 120 balls, and accomplished, after the plates were set, in about two hours' time.—*Boston Paper.*

A part of the tall chimney of Mr. Gill's alkali works at South Down, near Millbrook, was blown down on Wednesday night last. The chimney was 160 feet high, and was warped from the perpendicular, owing, we have been informed, to the unequal contraction of the mortar when drying up; the top, we understand, overhung the base several feet. Fortunately the chimney was situated in the middle of the field, the smoke being conducted to it by subterranean flues, and no injury was therefore done to the works, to life, or property, by the fall.—*West of England Com. servative.*

## Miscellaneous.

YORKSHIRE ARCHITECTURAL SOCIETY.—The general annual meeting of the Yorkshire Architectural Society was held in the Society's Museum, Minster Yard, York, on Thursday, October 24th, the venerable Archdeacon Wilberforce in the chair. The report was read by the Rev. J. Sharp, one of the secretaries from which it appeared that several of the works which had been aided by grants from the society were entirely or nearly completed. Among these may be mentioned the stained-glass in some of the windows of All Saints' Church, in York, and the windows of the noble decorated church of Patrington. The formation of local committees throughout the county was strongly recommended, in order to advance the study of ecclesiastical architecture, and it was stated that of the committees already formed, only two—viz. Wakefield and Beverley—had shewn any fruits of their labours. Twenty new members have been admitted during the past year. The report was adopted and ordered to be printed. Notices were given that at the next quarterly meeting, to be held in January next, grants would be moved for the church of St. Mary, at Bridlington, and St. Sampson's, at York. After the reading of the report, two very interesting papers were read—one by the Rev. W. H. Teale, vicar of Royston, on the church of St. John Baptist, at Sedburgh. This church, which has been lately erected, is one of exceeding beauty, and quite a model for modern church-builders. The other paper, which was communicated by a member of the Cambridge Camden Society, was read by the Rev. Thos. Egerton. The subject of it was Arbury Church, in Cheshire, which, from its very singular form, has given rise to a good deal of discussion on the part of Ecclesiologists. The church has been built at different times, the present north aisle having been the whole of the original church, the tower standing at the north-western corner. A nave and south aisle have been added of somewhat later date, the nave being wider at its western than at its eastern extremity, apparently with the intention of altering the orientation of the church, the patron saint having been altered at the time the addition was made to the church. The meeting went off very satisfactorily, and we are happy to find that the society appears in so flourishing a condition.—*Doncaster Gazette.*

POSSIBILITY OF LARGE STONE ARCHES.—Mr. Rennie is of opinion, that with our strong magnesian limestones and hard granites, arches of larger span than any hitherto built may be safely constructed. There are numerous examples, both in ancient and modern times, of very large arches—the bridge of Narni, in Italy, of Velle Brioude, in France, and of Alcantara, in Spain, by the ancients, and those of Gignac and Castel Vecchio, by the middle ages; but the most remarkable example of cylindrical vaulting (the remains of which still exist) is the bridge of Trezzo, over the Adda, in the Milanese. The span is 251 feet over the chord, and 266 feet over the semicircle. The stone beams in the church of the Jesuits at Nismes, and those between the towers of Lincoln Cathedral—the former equal to the segment of an arch of 565 feet span, and the latter to one of 262 feet span—prove how much can be done with materials of small dimensions. In modern times there are examples of bold vaulting in France, in the bridges of Neuilly, Mantes, St. Maixence, and Jena; in Italy, in the Ponte Sta. Trinita, Turin; in England and Wales, in the bridges of Llanrwst, of Pont-y-tu-Prydd, of Gloucester, of Chester, and those of London and Waterloo over the Thames; independently of numerous arches and viaducts, more recently erected for the use of railways. The radii of curvature of the centre arch of new London bridge, taken near the vertex, would equal in boldness an arch of 333 feet; and the length of the key-stone, at 4 feet 2 inches, would make the depth only  $\frac{1}{10}$ th of the whole span.

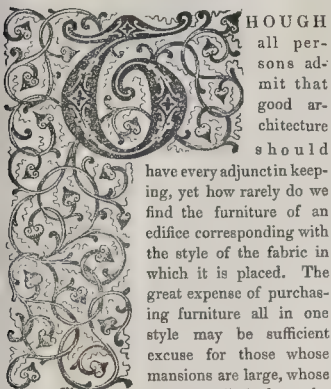
DATE OF THE ARCH.—Mr. Hoskins is of opinion that arches were constructed long anterior to the time of the Ptolemies; for in the pyramids of Ghebel Birkel and Dunkalie, which are of more ancient date, both round and pointed stone arches were discovered.



# The Builder.

No. XCIII.

SATURDAY, NOVEMBER 16, 1844.



THOUGH all persons admit that good architecture should have every adjunct in keeping, yet how rarely do we find the furniture of an edifice corresponding with the style of the fabric in which it is placed. The great expense of purchasing furniture all in one style may be sufficient excuse for those whose mansions are large, whose means are limited, or who

possess heir-looms, which dutiful respect, if not absolute conditions of inheritance, occasion to be kept. But even where means are abundant, the whole purchased at once, and no conditions or shackles are attached to the purchase, the choice, or the keeping, we constantly see the effects of evil taste.

We lately went into a mansion furnished under such circumstances, wherein all the ordinary faults had been fallen into, with the addition of some peculiar to the occasion. The style of decoration throughout the architecture partook of that of Grinling Gibbons, but evidently subdued in quantity and richness, so as to suit the restrictions of a limited expenditure. In the dining-room we found placed a chimney-glass in a plain frame, partaking of a Grecian character, over the windows were curtain-cornices, exhibiting an open outbreak into that branch of dry, hard Elizabethan or Jacobine carving, which consists of a curious interlacing of strap-work; the other furniture of the room betrayed as many changeful anomalies. In the drawing-room, which was more fully enriched in Gibbons's style, there was more of harmony among the furniture itself, which, however, being in the worst and most fallen state of decoration in the French style of the age of Louis XV., contrasted with the room most unfavourably, with its mean, broken, and tattered scroll-work, in which was not to be found one particle of ornament suited to any other purpose than a mere taudy shewing-off of gilding. In the principal chamber we found the chief piece of furniture absolutely a cabinet-maker's French-polished example of Gothic. The only room in the house not offensively furnished was the library, which, containing every thing plain and good, without any finery, was, without any pretensions to taste, really the most tasteful. Now, if in this house five hundred pounds' expenditure in finery had been saved, more honour and credit would have been justly due to the master, and half that sum would have carved every door and shutter throughout the whole, and have given an air of princely finish to which the upholsterer, with all his vagaries, cannot produce, however costly they may be.

We need an entire new school of upholsteryware. We do not mean to say that much good furniture is not made; but we insist

upon it, that for one really good article, at least a hundred of frippery are manufactured; and this very frippery, because it is costly, finds its way into the houses of the rich, and not unfrequently into those of the noble. The design of furniture is a matter of genius; not every architect can design it, for not every one has sufficient invention; and cabinet-makers and their designers almost invariably hash up with it in a most ludicrous manner the tatters of different styles of architecture, which anomalies are rarely found in old furniture. Now we are not going to fall off into a high-mettled race after every article of household stuff, merely because it is old. We have no objection whatever to modern comfort; but we desire to have that, and taste conjoined: old furniture is often freely and elegantly designed, yet as often very rudely executed. What we desire is to see come into general use good, well-formed, substantial furniture, so well designed and executed, that a man having it left him by his ancestors may not desire to turn it adrift, but to value and keep it from the united motives of respect to the donors and value of its intrinsic merit. If the inundation of inferior old furniture which has during the last five-and-twenty years found its way to Britain from the Continent obtain so much praise, what should be the rank and appreciation of modern furniture of the character which we desire to be introduced and generally adopted?

What is now more common than the placing at the altar of a church a couple of polluted, worm-eaten Dutch chairs, of the age of William III., which, after having been applied to all manner of profane uses and having played flotsam and jetsam in old garrets and brokers' shops, at length come unpurged in their rottenness to the sanctuary?

What is now more common than the finding placed on the communion-table itself old dishes and vessels which, after having been treated worse than Belshazzar treated the sacred vessels of Solomon's Temple, after many a carousal, come in their filthiness from a Jew's store-house of curiosities, and are used for receiving the consecrated elements themselves, although they as little accord with the remainder of the vessels of the communion as the Dutch chairs do with the building or its other furniture?

Again, in the matter of stained glass there is a most lamentable barbarism going forward. Men who because they obtain their bread by painting, glazing, paper-hanging, composition application, and general knick-knack work, fancy themselves capable of touching higher things, are ruining, at as great an expense as they are allowed, the effect of some of our best churches. No matter is it to them whatever be the style of the field of their operations, they set up with their imagined improvements whatever comes to hand.

Thus we see in the church of Saint John the Evangelist, at Westminster, an old altar-window, not good of its kind and out of taste for the fabric, usurping the place of a good and suitable subject. Again, in St. George's Church, Hanover-square, which is a fine church of the second class, lately an immense altar-window, and two accompanying side-windows have been glazed with fragments of gaudy frippery taken from a still larger window of wretched character, and which even any novice ought to know, with its corrupt ornaments, is not even decently applied to such a place; and yet, no doubt, the self-satisfied parties who profaned the

church with this trash, admiring their own tasteless, perverted ignorance, would pull down the portico, and perform various other vagaries to the edifice, which we trust, however, will outlive them and their corruption, though perhaps the Protestant bishop catching sight of the Virgin Mary as the Queen of Heaven in this very glass will order its removal. We give this instance as one of a class whereby money is squandered, sacred architecture injured, and wreckers are let loose upon the temple, that if possible the plague may be arrested. Church furniture, church glazing, and church decoration require regeneration, but, as in the case of household upholstery, a particular education as well as genius are needed for the work.

Through man's perverseness, the history and practice of architecture are strange things: the Elizabethan practitioner spoiled Pointed architecture; the revived classical architect supplanted it; in return, the zealot, ignorant of all architecture, as though fulfilling the terms of a lease, paints, glazes, purges, cleanses, and amends according to his imagination the classical architect's labour; and then in a few years will come another race, who, continuing the see-saw work, will undo more than all the mischief which the zealot has perpetrated; thus we have a constant succession of broken subjects of architecture, while we should have, from the same outlay and industry, purity, completeness, and twice as much in quantity. The taste of few zealots is pure, few zealots build well or soundly, few zealots do any thing which can last,—for the zealot is not steady enough to weigh in his mind matters of purity of taste, or of construction, or of fitness; calmer men at calmer times have to undo the zealot's work. The designing architecture, furniture, and decorations requires zeal, but not the zealot's zeal; the zealot's zeal despises all but his own fancy and opinions; the right zeal examines industriously the works of all men and all times, but despises none but the bad, the profane, the mean, and the impure.

b.

## ELECTION OF SURVEYORS TO THE NEW DISTRICTS IN THE COUNTY OF MIDDLESEX.

The election of surveyors to the nine new districts, viz. Fulham, Hammersmith, South Kensington, North Kensington, Hampstead, Hornsey, Tottenham, Stoke Newington, and Bromley, will take place at the Middlesex County Sessions' House, Clerkenwell-green, on Thursday, the 28th instant.

On future occasions, ten days before the day appointed for the election of any district surveyor, each person proposing to become a candidate must personally attend before the committee for general purposes, and produce satisfactory evidence that he is of the full age of thirty years; and also a certificate from the Board of Examiners, appointed under the Act, of their approval; and such other evidence of qualification as the committee may require, before authorizing him to be admitted as a candidate.

## THE CAMBRIDGE CAMDEN SOCIETY AND "THE ECCLESIOLOGIST."

It seems this society, alarmed at the disrepute which the disgusting writings published under the above false title have brought upon it in the religious, the scientific, and the architectural world, has given the "right about" to the offensive issue, and disclaims all further connection with it.

IMPROVEMENTS IN GALWAY.—The drainage of Lough Corrib, Galway, will be commenced early in the spring of 1845, and there is to be a canal communication to the sea.



## THE NEW ROYAL EXCHANGE.

TO THE EDITOR OF THE BUILDER.

SIR,—The fact of a building being new seems with many critics a strong argument in favour of its excellence in an architectural light; the New Post Office when erected was extolled as a superior specimen of genius, the general feeling now hardly bears out the assertion. The critics of the day seem to have acted the same farce in their comments upon the Exchange; with but very few exceptions, every one seems to vie with others in the amount of praise and effusion of admiration. I am the more inclined to make a few observations on the Exchange in consequence of seeing a wholesale commendation of it in a late number of the *Morning Herald*; the writer, however, offers but little argument in support of his praise, generally giving one-sided reasons, and following the well-beaten track of noticing only the excellence of the portico and windows; he also, in condemning the severity of a critic in the *Athenæum*, and attributing it to private pique, seems to forget that the same reasoning holds good in his case, his remarks being calculated to raise doubts in the mind of the reader whether he is not in an equal degree prejudiced in favour of Mr. Tite, with this one difference, that in the first case the criticism produced some good effect, whereas in the latter it is only calculated to mislead the public taste. In regard to the choice of the design, in the first instance: it would now seem to be of but little consequence, except that it admirably exposes the present partial and incompetent system of employing non-professional judges; to shew the rejected design was the best, it would hardly be necessary to enter into so very minute an examination of the designs; the fact that the profession generally were in favour of the other one, is not a small argument for such a supposition; as in most other competitions, interest awarded the prize.

Before noticing the building, it may not be irrelevant to inquire how far the style is suited for such an edifice: my opinion is that the many great faults and solecisms of the Italian style render it unfitted for the purpose. A large building in the Italian style may be pompous, but can never appear dignified, in consequence of extraneous embellishment taking place of the more legitimate methods of architectural richness; for instance, columns are seldom fluted,\* friezes never ornamented, though the cornices are in most cases ornamented to the utmost extent; on the one hand, when it affects simplicity it approaches baldness, on the other fritter and heterogeneity are mistaken for richness and novelty; and at all times there is a triviality attending it which detracts from the breadth and repose which are necessary for a large building.

But to proceed to the principal view from the Mansion House: the general effect is displeasing; the portico has a clumsy and heavy appearance (which, by the bye, is lessened by the effect of the sculpture in the tympanum, though some hypercritics have objected to its use on the score of style); the effect of the pediment is injured by the chimney-shafts, which want repose and pure outline; at the same time they would have been better omitted, for an Exchange is not likely to associate ideas in the mind relative to fires;† these, together

\* [We do not subscribe to the opinion, that external columns should always be fluted, but think on many occasions those of the Corinthian order are best with their shafts plain, thereby giving an effect of repose, contrasting effectively and artistically with the richness of their capitals, reflecting clear light, avoiding the heaviness and seeming increase of bulk which columns assume when fluted, escaping the sooted appearance which external columns almost invariably acquire in London, and withstanding too the rough use of time and accident, which soon mutilate the fillets between their flutings. In the Tivoli example of the Corinthian order, the simplicity of the capital renders necessary fluting to the shafts of the columns, but in the Lothbury and Princes-street corner of the Bank, where the Tivoli order is used, the two interior columns, which are unfluted, contrasting with the others, have a wonderfully fine and artistic effect.—Ed.]

† [We think Exchanges, considering two in succession have been destroyed by fire, and the present one is well-prepared to share the fate of its predecessors, do bring such ideas; also we

with the lank appearance of the tower behind, entirely destroy repose, while at the same time they are not pleasing objects themselves. The whole view presents a ponderous mass, unrelieved by ornament, and produces an effect entirely different from that solid richness which unites strength and lightness, and which is a characteristic of this style. On a nearer approach, the effect is not better, the bareness and poverty of the soffit, the rough sculpture of the capitals, the overloaded cornice and general grossness of detail, do not tend to remove previous impressions. In fact, ordinary critics seem never to notice detail, contenting themselves with pointing out the beauty of the shade produced by the recessed proanaes in the centre, and the magnitude of the portico compared with others in London.

Much has been written about the extreme beauty of the portico, and the writer in the *Herald* goes so far as to say that it is without an equal in London; now a portico happens to be a very marketable commodity, never costing the architect much thought, being very easily copied from originals, and which can never fail in producing a certain amount of effect. Admitting, therefore, that the portico has a fine appearance, the admirers of Mr. Tite can only claim the merit of a successful copyist; it is for them to point out where the effect lies, and in what particular points the portico possesses originality and genius. We might as well attempt to draw conclusions from the portico of St. Martin's of the delicate taste of Gibbs, as to argue the superior genius of Mr. Tite from the portico of the Exchange. When, however, the before-mentioned writer goes so far as to say that it is without an equal in the metropolis, he must have allowed his prejudice sadly to have blinded his judgment for overlooking the portico to the London University; in this the columns are most artistically arranged, which, together with the correctness of the style, the classical arrangement, and the beautiful and effective distribution of simplicity and richness most admirably combined, form an ensemble at once striking, on account of the pure original taste displayed, and, I think, in artistic effect unequalled.

But to make a few remarks on the south façade:—here the poverty in design of the shops is at once manifest, more especially when compared with the overburthening ornament above; this is more apparent in the two central shops, where the mass of sculpture above seems without support, and in the north front, where the two niches produce a most disagreeable effect of solid above void. Much as I deplore the frequent use of miscalled Greek dressings to windows, which are Greek in every thing but spirit, being generally of most meagre and poor design, I certainly cannot go to the other extreme of the Italian school, and countenance windows which have a striking likeness to picture-frames. The massiveness of the dressings to the windows of the Exchange, the immense cornices overburthened with ornament, together with the size of the frames, fall of producing a happy result, however praiseworthy the attempt of the architect at originality may have been. The pedestals to the pilasters have a dwarfish appearance, and want the addition of a connecting line at bottom, such as two or three steps leading to the shops, which would have formed a horizontal line for the eye, and have given to the pilasters an appearance of connection, which they now want. The tower, I think, has received universal disapprobation: it cannot be said to be composed of harmonious lines; it groups badly in every point of view with the building, and looks like most after-thoughts,—not a part of the original design. Every view of the Exchange presents the same heavy appearance; misplaced solidity and overburthened ornament in one part, the extreme of poverty in another. The building has the faults of the Italian style without that picturesque appear-

cannot imagine any just taste in forming in England a habitable building as though no firing were to be used, since we know firing must and will be used therein: thus we consider one of the items of false taste which sets critics at sea, and lowers the value of their labours, because they cannot be followed, for if in such buildings chimney-shafts are in the first instance omitted, a few years will be sure to bring them in some deforming shape.—Ed.]

ance which sometimes proves a strong apology for its grossness of detail; the bad outline and unmeaning ornament, produce an effect massive but not grand, ornamented but not rich,—a number of parts fail by contrast to produce a harmonious whole.

These remarks must be considered rather as crude impressions than a studied criticism; the numberless praises lavished on the Exchange seemed to me so unfounded, that could not resist the opportunity of endeavouring to expose their fallacy. At some future time may endeavour to give a more minute and enlarged criticism, together with some remarks on the interior; I have purposely omitted any mention of the east and north fronts on account of the numerous obstructions preventing a complete view of them.

One thing amuses me very much; in nearly every engraving of the Exchange that I have seen, the building is shewn as viewed from a position inaccessible without the removal of the Globe Insurance Office and several other buildings; this seems to me to be little less than a fraud, and one which has no excuse, for the draughtsman might as well have given us the Exchange in a natural position as in any other; or might it not suggest the hint that the building has so little æsthetic merit as to require a little help from the artist to be made bearable when served up upon paper?

I remain, yours, &amp;c.,

SCRUTATOR.

## COLLECTIONS TOWARDS A GLOSSARY OF ARCHITECTURE.—No. X.

## COLUMN—IONIC ORDER.

In the second of the Greek orders, the Ionic, the column is rendered more slender than the Doric, the proportion being from about 8½ to nearly 9½ diameters high. This order has been called the Asiatic Greek, in opposition to the Doric, to which the name of European Greek has been assigned; and Mr. Hosking inclines to call the latter the "Greek sacred or triglyphed style;" and the Ionic, "the voluted style."

"The invention of the Ionic order of architecture appears to have been coeval with that which prevailed in European Greece; and, although chiefly confined at first to the Asiatic states, it became in the progress of time more generally attractive than the severe beauties of the rival style. The earliest specimen of which any remains are to be found is the celebrated Temple of Juno, at Samos, which, in the time of Herodotus, was considered as the largest and most stupendous edifice ever raised by Grecian art." (Lord Aberdeen's *Inq.* p. 159.) Its architects were Rhæcus and Theodoros, Samians by birth, and it was built about 540 B.C.

"The octostyle Temple of Bacchus, at Teos, is a heap of ruins, but enough remains to attest the exquisite beauty of the ancient edifice, and fully to justify the praises lavished by Vitruvius on the architect, Hermogenes of Alabanda. This artist seems to have effected a considerable change in the taste of his age by maintaining, with some others of equal merit, that the Doric order was unfit for temples. He was so deeply impressed with the truth of this notion, that he is said to have exchanged the materials which had been prepared for the construction of the Teian temple, in order that he might be enabled to complete the work in the Ionic style." (Lord Aberdeen's *Inq.* p. 168.) The date of this building is about 440 B.C.

The temple of Apollo-Didymæus, near Miletus, was built about 376 B.C.; the architects were Peonius, of Ephesus (who finished the famous temple there of Diana), and Daphnis, of Miletus. "Three columns entire and a profusion of marble fragments scattered around, are all that remain of this once magnificent edifice; but these are of a description amply sufficient to indicate its former beauty and grandeur, even if they had not been so highly extolled by the uniform voice of antiquity." (*Ibid.* p. 169.)

"No doubt is left of the origin of the temple at Priene, as the dedication of the building to Minerva-Polias by Alexander of Macedon remains inscribed on a fragment of the walls. The architect was Pytheus, or, as he is sometimes called, Phileos; he joined with Hermogenes in his proscription of the Doric order." (*Ibid.* p. 169.)



A magnificent temple must have existed at Sardis, of which five entire columns remained in Dr. Chandler's time, but of which two only now exist, not less than six feet in diameter, and Lord Aberdeen thinks the building may be referred to the age of Tiberius.

As in Athens the best examples of the Doric style are to be found, so also we there discover in the Temple of Minerva-Polias, one of the best patterns (as it is one of the most commonly applied in modern times) of the Ionic order, erected too, probably about the time of the Parthenon. But one example, earlier in date, is highly interesting from the simplicity of its character, viz., the little temple on the Ilissus, to which writers have ascribed various names, some calling it a temple of Diana-the-Huntress (as Le Roy), some that it was consecrated to Panops (as Plato), whilst the greater part incline to the belief that it was connected with the Eleusinian mysteries, and dedicated either to the goddess Ceres, or to Triptolemus.

The Ionic is the first of the Greek orders in which we see introduced the base, thus distinguishing it from the Doric. But the most important feature of difference is in the capital, in which the volute is the conspicuous characteristic. The flutings, divided from each other by fillets, are better suited to the greater richness of the Ionic than would be the simple channels of the Doric.

The examples which are chiefly followed by modern architects are those of the temple on the Ilissus, and the Erechtheum; the former, from its simplicity of detail and freedom from enrichment, is well adapted for situations where economy is studied; but many of the buildings executed in this country are imitated in their details from the triple Temple of Minerva-Polias, of which examples may be seen in the church of St. Pancras and the University Club-house, in Suffolk-street, which the General Post-office, in St. Martin's-le-grand, is designed after the style of the Temple of Minerva, at Priene. G. R. F.

#### CAUSE OF THE LATE ACCIDENT AT OLDHAM.

REPORT OF MESSRS. FAIRBURN AND BELLHOUSE.

##### REPORT:—

IN consequence of an unanimous expression of feeling on the part of the coronor's jury, that a full and satisfactory inquiry should be made into the causes which led to the death of Joseph Tweedale and others, at Messrs. Radcliffe's cotton mill, Oldham, on Thursday last;—we, the undersigned, have carefully examined the building, and, having noted every particular relative to the walls, foundations, iron beams, columns, and their fractures, are of opinion that the accident has arisen from one of two causes; namely, from the falling of one of the arches in the first instance, or, what is more probable, from the breaking of one of the large beams supporting the transverse and longitudinal arches at the extreme gable of the mill.

From the evidence already adduced, it appears that one of the arches in the top room (the fourth from the old mill) was observed to sink, some days previous to the accident which subsequently occurred; this arch, which had sunk about 4 inches, was considered unsafe, and the necessary preparations for refixing the centres were immediately taken for its renewal. During the rebuilding of the arch (of which about one-third was completed, the middle being removed, and the other remaining), the building at this critical period gave way; and, as stated by one of the witnesses, the beam broke short by the column, and the whole came down with a crash. Now in this view of the case (and assuming the evidence to be correct), it is obvious the beam must have broken from the lateral strain of the arches, and not from the weight acting vertically (as assumed) upon the beams which remained. In confirmation of this opinion, it will be observed that the middle beams were unprotected from the lateral thrust, unless we except an imperfect wooden stay, which, from its soft and fibrous nature, would easily split or crush by the force of the edge of a flange of only one inch thick pressing upon it.

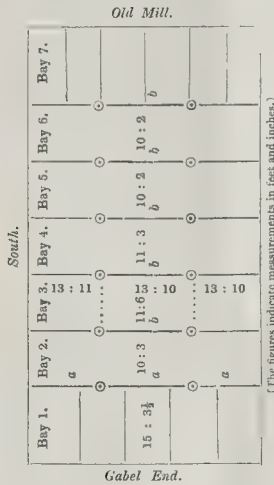
Hence it follows that the thrust of two wide and flat arches would be quite sufficient to fracture the beam, and thus loosen or destroy the abutments on each side. The beam being

ruptured, it is easy to conceive the result which must inevitably follow such an event. From the breakage of this beam, we may infer a serious and extensive accident; but to our minds, it does not sufficiently clear up the full amount of injury sustained; nor does it account for the immense crash and total destruction of the building which ultimately took place.

One of the middle beams, or any one single beam of the building giving way, could not, in our opinion, have made the ruins so complete; and having reason to suspect some other cause, we were induced to institute a still more minute and searching inquiry into the strengths and proportions of other parts of the structure.

On a careful examination of the fractured beams, and more particularly of those which stretch transversely across the building, at a distance of 15 feet from the extreme gable of the mill, we found a more convincing proof of the cause which led to this unfortunate occurrence.

These beams carry the ends of four other beams, which extend longitudinally from the gable on which they rest, as shewn in the following sketch:—



From the above, it will appear evident that the beams *a a a* had to support a much greater weight than the beams *b b b*, &c., and consequently they required to be made of proportionately greater strength. They were made stronger; but unfortunately, from inadvertency, or rather from want of knowledge, they were strengthened in the wrong place; and instead of adding the additional strength to the bottom flange, which is always subjected to the greatest strain, it was given to the middle of the beam, where it was not required.

It is well known, or it ought to be known, to every person giving instructions for the form and construction of iron beams, that the strength is nearly a proportional of the section of the bottom rib or flange; and, according to Mr. Hodgkinson's experiments, a bottom flange of double the size will give nearly double the strength.

These facts having been proved by direct experiment, it is important to all those concerned in the construction of fire-proof buildings, in which the lives of the public and the property of individuals are at stake, that the form of beams and the section of greatest strength should be perfectly and thoroughly understood; and to those unacquainted with the subject, we would beg to refer them to Mr. Hodgkinson's paper on the strength of iron beams, in the fifth vol. second series, of the "Memoirs of the Literary and Philosophical Society of Manchester." In ordinary cases, we should not have troubled the jury with these remarks; but, in a case of such importance as the present, where the lives of so many persons have been sacrificed to defective knowledge and skill in the construction of buildings, wherein considerations of such importance are involved, we have considered it our duty thus publicly to direct attention to the subject, not only as regards the present but in all future cases, and respectfully to urge upon the proprietors of

mills, and of other buildings containing work-people, the necessity which exists for a more secure and perfect system of building, and for a further development of the principles upon which fire-proof edifices are founded. If this suggestion is properly received and acted upon, we have reason to believe, that we shall not again have occasion to investigate occurrences of so lamentable and so distressing a nature. We have already observed, that the beams *a a a*, in the preceding sketch were strengthened; not, however, in the bottom flange, but in the middle part of the beam, where they are thickened, and where it was absolutely of no use. Had the same quantity of metal been given to the lower flange, these beams (the weakest in the building\*) would have carried nearly double the weight; and thus by a proper and judicious distribution of the metals, the building, as well as the lives of the people, would have been saved. These observations apply to all the other beams of the mill, which are also defective as respects their strength.

In computing the weights upon each beam, it was found that those supporting the arches of ten feet six inches, and those of eleven feet six inches span, had to support a load (without machinery) respectively of ten and eleven tons.

And those sustaining the ends of the longitudinal beams were acted upon with a load of 13 1/2 tons.

Now, if we take the sections of these beams, and calculate the weights necessary, to break them, when laid upon the middle, it will be found that the breaking weights for the beams, *a a a*, and *b b b*, &c. will be nearly the same, or about 9 1/2 tons. This is the breaking weight of an average quality of iron; and, allowing for the difference of metals, it could not be raised much above 10 or 10 1/2 tons.

The breaking weight would therefore be about 10 tons when the beam is loaded in the middle, and 20 tons when equally distributed over the whole surface of the projecting flange of the beam.

Having ascertained the bearing powers of the beams, we shall next compare their strength with the actual loads they were called upon to sustain; and, in making that comparison, it must be borne in mind that the two beams, *a a*, next the side wall, had their loads unequally distributed, which reduced their bearing powers to 15 tons.

Now, the load which these had to support was 13 1/2 tons, 8 1/2 tons being supported on a single point on one side, and 5 1/2 tons distributed over the surface of the opposite flange on the other. From this it will be seen that the actual load was the breaking weight as the numbers 13 1/2 to 15, or as 1 to 1 1/3, being within a mere fraction, or one-tenth of absolute destruction.

Viewing the subject in this light, and taking the above calculations as data, we are no longer at a loss as to the cause of the accident. Even supposing the arches to have stood, it will appear obvious that so close an approximation of the breaking weight to the actual load was extremely unsafe; and that, under such circumstances, no precautions could have prevented the rupture of the transverse beams, *a a a*, whenever they happened to be subjected to the slightest impact, or any vibrating motion tending to disturb the parts under strain, and eventually, still further to lessen their already too much diminished powers of resistance.

Irrespective of the weakness of the iron beams, which we consider as the primary cause of the accident, we would beg to advert to the tie-rods, which, although sufficient in number and strength, were not judiciously placed as respects their position for resisting the strain of the arch, their maximum point of tension at the bottom flange of the beam; but, that being inconvenient, they should on no account be placed higher than the soffit of the arch; and in this position they would perforate the neutral axis, and give sufficient security to the arch without injuring the strength of the beam. Instead, however, of approaching this point, they were on the top of the beam, and 18 inches from the bottom flange.

As respects the arches, we found the versed

\* Mr. Fairbairn added, that these beams were rather weaker in original construction than the transverse beams; and that the whole of them were certainly not such as would be considered safe.



sine, or rise of the arch, too low: on most occasions they are  $1\frac{1}{2}$  inches to the foot. But, in order to insure perfect security, we should advise, in all future buildings of this description, that the rise be  $1\frac{1}{2}$  in. to every foot of span. In the arch which first gave way, the rise was only a small fraction above an inch, having a rise of only 12 inches in a span of 11 feet 6 inches.

On viewing the columns, several imperfections were observed in the variable thickness of the metal; but, in other respects, the pillars were satisfactory, and presented no features of weakness indicating danger from those parts: one inch more in diameter, with the same weight of metal would, however, have given greater security and greater strength.

We cannot close this report without advertising to the anxious solicitude of Messrs. Radcliffe, and the strong desire evinced by those gentlemen to have every part of the structure upon the first and strongest principle; and we should immediately discharge our duty if we neglected on this occasion to bear testimony to the superior strength of all parts of the building, except those we have just described, and on which it could not be expected they could form an opinion.

In conclusion, we have great pleasure in stating that it appears to us that no peculiar considerations whatever were present to the minds of Messrs. Radcliffe in the due and perfect construction of these mills.

WM. FAIRBAIRN,  
DAVID BELLHOUSE.

Manchester, Nov. 6th, 1844.

#### ERECTION OF SCHOOLS AT WINDSOR BY COMMAND OF HER MAJESTY.

HER Majesty and Prince Albert have long contemplated the erection of schools in a convenient situation on the Royal domains, for the education of the park and gamekeepers' children. A spot well adapted for such a purpose having been selected at the west end of the gardens, at Cumberland Lodge, about a mile from the statue of George IV., the necessary plans of the intended building, executed by the Office of Woods and Works, were submitted to and have been approved of by her Majesty. The building, which will be erected at the cost of about 1,500*l.*, will have a frontage of 110 feet. It will be composed of red bricks, with a slated roof. In its centre will be two dwelling-houses for the use of the master and mistress, who will be appointed by the Queen, with salaries paid out of the privy purse. Each house will contain two bed-rooms and a sitting-room about 15 feet square, with necessary conveniences. Two school-rooms, 21 feet long and 16 feet wide (one for boys and the other for girls, the children of those employed in the Royal parks), will be erected at the sides of the residences of the master and mistress. The flooring will be laid with Hertfordshire tiles, black and white alternately. The ends of the gables of the two school-rooms will have ornamental barge-boarding, as will also the three principal entrances. The school-rooms, which will be 13 feet in height, will each contain eight large casements.

By the terms of the contract, which has been taken by Messrs. Bedborough and Jenner, of Windsor, the building is to be completed within three months. The expense of keeping up this praiseworthy establishment will be defrayed by her Majesty and his Royal Highness Prince Albert.

**NEWARK CASTLE.**—The ruins of this once renowned edifice are now undergoing a thorough renovation at the expense of government. Workmen are now employed in strengthening the foundation, in throwing open the grand northern entrance so as to expose to view from the road the interior of the castle, and in knocking out the composition of bricks and mortar with which the ruthless hand of modern innovation has blocked up some of the beautiful windows. These improvements, when completed, will no doubt render these ruins worthy the attention of the archaeologists. It has long been said that the castle crypt is connected with the priory, a building nearly half a mile distant, by a subterranean passage. The grounds for this rumour, we understand, are to be investigated.—*Lincolnshire Chronicle.*

#### TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLSON.

(Continued from p. 553.)

127. **WILLOW.**—Of this genus there are many varieties; indeed thirty are enumerated; amongst the best known are the following:—the White, or Huntingdon willow; the Weeping, or Babylonian willow; the Crack, sometimes called the red-wood, willow; the Russell, or Duke of Bedford's, willow; the Goat willow; and the Osier. All the species are commonly propagated by cuttings, or by offsets in the spring: they grow freely, generally delighting in a moist soil, of almost any description.

128. The *White Willow* is esteemed the finest of its species: it grows naturally to a large size, frequently with much graceful and picturesque beauty; its common haunts are the margins of rivers and minor streams, defining their course in the distant landscape; also the woods and hedge-rows in low, sheltered, and rural districts, where the soil happens to be of a moist description: its foliage has a whitish grey hue; the leaves lance-shaped and serrated, having both sides clothed with silky hairs, which impart the whitish tone to the tree—especially when its leaves are shaken by the passing wind, and glistening in the sunbeam. It is propagated with great facility by cuttings, branches as much as 8 feet long and 3 inches diameter taking root readily; but shoots of one or two years' growth, and about 2 feet long, are preferred, as producing the finest trees. The timber is of a good description, very white, not very durable; its peculiarly clean appearance recommends it for forming milk-pails, and for similar purposes, where that quality is desirable; young, or coppice-wood, is formed into hoops, the light handles of hay-rakes, hoes, &c.; the bark contains a large proportion of tannin, and is sometimes used as a substitute for Peruvian bark.

129. The *Weeping Willow* is of all the willow kind the most beautiful and arresting, forming an admirable accompaniment to any piece of smooth water, whether lake or winding brook; the reflection of its long, slender, and elegant tresses, which overhang, bend down to, and dip their ends in, the water, discovering additional beauty within its glassy surface; to a cascade, fountain, or rustic seat, it lends an essential charm; it is also frequently found in churchyards and cemeteries, scenes with whose chastened character it appears in peculiar harmony, whether drooping over the simple turf-clad grave, or forming an accessory to the urn, or more aspiring obelisk. It is of comparatively recent introduction, the one which Pope with his own hands planted in his garden at Twickenham, from twigs forming a Levantine fig-basket (now some years since cut down), being said to be the first planted in this country: it attains a large size, and lives to a considerable age: its leaves are narrow, spear-shaped, serrated, and smooth; its boughs long and pendulous, discharging from their points, in misty weather, drops of water, literally justifying the appellation by which the tree is distinguished. Of the wood, hurdles are made, which are found to be durable, and to resist long the alternations of wet and dry; also handles for hatchets and other tools, rake-teeth, &c.

130. The *Crack Willow*, like the rest of its tribe, is of quick growth, and becomes a tolerably tall tree, resembling, in many respects, the white willow: its foliage is graceful, and appearance altogether pleasing; its leaves very long, oval, lanceolate, serrated, smooth, and of a shining green on both sides, wider than those of the white willow, and with toothed glandular foot-stalks. Its wood is light, pliant, and tough, and of a pink or salmon colour: some are of opinion that it is almost valueless; whilst others assert that it has long been used in Scotland for marine carpentry, and aver that for small fast-sailing war-vessels, its characteristic properties render it unexceptionable. The tree is stated to make excellent pollards, furnishing every five or six years a large crop of poles, indispensable to the farmer. It derives its distinctive appellation from the brittle nature of the small shoots, which, if struck sharply, will break off at their springing.

131. The *Russell Willow* attains a great size, is in appearance and nature similar to those above described, resembling much the

crack willow in its foliage: its wood is fully equal to that of any of the others in toughness, strength, durability, and to possess in its fibres a strong lateral cohesion, peculiarly exempt from splitting; forming good joists, and, for manufactories and similar places where toughness is desirable, very excellent flooring; the same property rendering it also a capital lining for stone-carts and barrows; it is also of slow combustion, having the good property of being little liable to take fire.

132. The *Goat Willow*, or large-leaved willow, will attain, under favourable circumstances, a height of 30 or 40 feet, growing in almost any soil, but preferring a dry loam, in which it flourishes to its greatest perfection; it is readily distinguished from all others of its species by its large ovate or orbicular leaves, which are waved on the margin, indented towards the upper end, pointed, wrinkled, and dark green above, but downy and of a pale glaucous colour beneath. It has numerous sessile catkins, which, expanding much earlier than the foliage, still recommend the tree to the notice of the lower classes, and to young people, who carry branches of it on the Sunday preceding Easter, under the honorary denomination of *palm*; the early walk undertaken for procuring it being denominated "*to go palm-ing*." It ripens its seed readily, and propagates itself extensively. In some parts it bears the name of *Saugh*, which, indeed, is in Scotland the common name for all the willow kind. Its wood is elastic and tough, fine and smooth in grain, and of a pinkish white colour.

133. The *Osier*, or wicker variety, although we may simply mention it, does not reach the rank of a tree, but consists of slender and pliant twigs, cultivated in large crops in marshy places for the purposes of the basket-maker, for which they are properly adapted; they are raised from established *stools*, and pay the owner as well as any other crop upon his farm. The wood of willows is, from its extreme pliability, rendered subservient in the milliner's art, being cut into thin strips, which are woven and formed into bonnet-shapes; they are also dyed and curled, and put to various ornamental uses, as filling fire-grates in summer.

134. **OLIVE.**—Of this tree as many as eighteen kinds are enumerated; but it appears that the chief distinction lies between the wild and the cultivated, the former of which is dwarfish, useless, and neglected, while the latter is eagerly propagated, valuable, and highly-esteemed. It abounds in the countries of the East, appearing to have been originally found in Asia, and thence transplanted into southern Europe. In the latter, and in Africa, it does not rise spontaneously as in Asia, but requires diligent attention in its cultivation: it is especially abundant in Syria and Palestine, springing up with its ancient freshness in the valleys of the Holy Land, cresting the mountains of Judea, and vindicating its paternal soil on the same spot at this day which bore the name of Mount Olivet and Mount of Olives eleven centuries before the Christian era; uninterrupted by the succession of Hebrews, Assyrians, Romans, Moslems, and Christians. During the siege of Jerusalem, all the trees growing near were cut down, but of course the roots were left undisturbed. It flourishes well on the shores of the Mediterranean; in several of the islands of that sea it is cultivated with much advantage, the wealth of their inhabitants depending in a great measure on its prosperity. In Greece it flourishes, contributing not a little to the riches of the infant state. In Great Britain it grows readily, especially in the south, bringing forth fruit on the wall if protected from frost. In Egypt the great endeavours of Ibrahim Pacha to promote its cultivation, with a view of increasing the revenue, have all but failed, owing to the indolent and sluggish habits of the people.

135. The tree is an evergreen, and runs up to a height of 20 or 30 feet; its trunk is knotty, its bark smooth and of an ash-colour; its leaves oblong, not unlike those of the willow, dark green above, and whitish beneath. In June its blossoms come forth in bunches, small, white, delicate, and beautiful, slenderly attached to the tree, and falling off in showers by the gentle breeze; the fruit which succeeds is of an oval form, at first green, then pale, and ultimately black. The disparity between the produce of the wild and the cultivated olive has been compared to that between the crab



and the choice apple, or the sloe and the plum. The tree, although one of great poetic fame, is nevertheless far from beautiful, its dusky hue giving it the appearance of being covered with dust. It will grow on the driest and most stony soil; and, if not liable to be pruned, live to an astonishing age, in almost any country, although almost confined to those of warm, or at least temperate climate. It is frequently propagated by truncheons, that is, short pieces of the trunk, or of substantial branches, which, being planted, soon take root, and send forth goodly stems; it is also multiplied by grafting. In scripture times it was grown in gardens set apart for it.

136. The olive was formerly in Palestine contemplated as an emblem of prosperity and excellence; its tender boughs have by numerous tribes been viewed as sacred; by the ancient Greeks they were highly estimated, being on great occasions selected for ornament, brought forward in great profusion at the nuptial feast, adorning the apartments of the bridegroom on the marriage-day, and forming wreaths to crown the successful competitors at the Olympic games; the modern Greeks too, in emulation of the old times, have instituted similar pastimes, at which King Otho confers the chaplet of honour with his own hands. It is a symbol of peace and reconciliation, and was, amongst others, sacred to Apollo.

137. The olive was one of the principal fruits cultivated by the Jews, who used it for their daily food, and highly valued it for its nutritive qualities; in Canaan it constituted a very considerable proportion of the wealth. It is chiefly valuable on account of the plentiful supply of oil which is obtained from its fruit when ripe, and which, in all the oleaginous class of plants, excepting the olive, is obtained from the seed, but in this is yielded by the fleshy part of the fruit. It is very useful in a variety of ways in a hot country; in the Levant and in Greece it is much esteemed as an ingredient in cookery, entering into almost every dish. In the small island of Corfu, in the Gulf of Venice, the produce in 1835 amounted to nearly 100,000 barrels, in value about 2,000,000 of dollars. Of old it was obtained by treading the berries under foot, also by pounding them in mortars; now, however, mills are employed for the purpose, some of which are erected in the vicinity of Athens. Besides its use by the Jew as an article of food, it was highly prized in the way of ornament, to "make his face to shine." Under the ceremonial law, it was an ingredient in a costly perfume, wherewith the sacred orders of the priesthood were anointed. A failure in the olive crop was regarded amongst the Hebrews as a severe calamity, its success materially affecting their temporal condition. It possesses a soothing influence in mitigating pain, and is said to cure the poisonous bite of the viper. Competent judges have asserted that it may be used with benefit to the constitution, especially with vegetables, in preference to artificial sauces, which, while palatable, are pernicious. The use of the fruit with us, during or after drinking much wine, is well known; there are three kinds used—the French, Spanish, and Italian, all differing in appearance and flavour, and which are chosen according to taste. To obtain the juice in greatest perfection, the fruit should be carefully gathered, and never shaken off, as the bruises occasioned by the latter mode injure the oil; the oil should also be expressed immediately the fruit is gathered. An admixture of beech-oil, which is procured on purpose, is found to preserve it from becoming rancid, to which in its unmixt state it is liable when sent on long voyages. For polishing metals olive-oil is the best, there being water in all other oils.

138. Of the application of the wood in modern times, there appear few records; but in sacred writ there is ample testimony to its usefulness, in doors, lintels, side-posts, and carvings. Its texture, however, is solid, its colour is yellowish, and there appears reason to suppose, being a tree of a hardy nature, and which lives to a great age, that it is adapted to superior uses.

(To be continued.)

The Gresham Committee propose removing the mosaic pavement at the Royal Exchange, and replacing it with Seyssel Asphalt.

## ANCIENT ROME AND MODERN LONDON CONTRASTED.

BY H. G. MONTAGUE, ESQ.

TIME, while it brings with it a continuous increase of wisdom, derived from the experience of observation and experiment, tends to give us a more just and rational conception of events and natural phenomena than could possibly be entertained by men of learning in the darker ages. The history of nations existing in the earlier period of the world, and of events seen through the dense cloud of ignorance and superstition, is rather an appeal to our wondering credulity than to our reasoning powers; and the few facts handed down to us, if there be any facts, are so veiled in metaphor and fable, so surrounded with the tinsel drapery of egotists, courtly parasites, poets, and philosophers, that reasonable doubts are thrown upon the whole, and in these enlightened days we are driven to the necessity of either rejecting many historical accounts, or of involving ourselves in an endless controversy of dates and names and incidents contradictory to each other, contradicted by contemporary writers, or so disfigured by successive interpolations as, like the existing state barge of Venice, to have lost all claims of early origin. The recorded events of our own times, when they administer to or wound the vanity of a nation, and become subservient to the uses and abuses of superstitions, are not to be depended on, and the passages of victory or defeat, of successful intrigue or disappointed rebellion, are as variously stated at the time these events happen as occurrences were 4,000 years ago.

We are a strange contradictory people; with the pride naturally resulting from our wealth, numbers, and intelligence, we combine thorough distaste for every thing national connected with arts and literature. Our scholars are infatuated with pagan literature, and in their admiration for poets, orators, and philosophers of times past, overlook the fact, that most of the works handed down to us are of a nature wholly unfit for the perusal of a Christian people, and would not be tolerated in an English dress: in their idolatry of the ancients, of sculpture, of architecture, and other branches of art, they are led to magnify the objects contemplated, forgetting that what has been done, may again be done; that excellence of design or execution ought to awaken emulation; and that the immense sums lavishly bestowed in collecting antiquated rubbish might be better and much more appropriately bestowed in encouraging native talent, and in ornamenting a capital most assuredly the largest and wealthiest that ever existed. Dazzled by the oratorical and poetical language of the Greek and Roman writers, they have greedily swallowed their absurdities and contradictions, and exalted their greatness at the expense of the moderns.

Who doubted the exaggerated splendour of the court of the Great Mogul before British conquests disclosed the tinsel reality? Read the histories of these Orientals; the hyperbolic language in which they are conveyed is such as was common to all nations of the earth in former times, and much of the reputed greatness of Rome is undoubtedly due to the servility and vanity of her poets and historians, whose exaggerated and conflicting statements have hitherto imposed upon the world. In the beginning of the eighteenth century a comparison between ancient Rome and London was instituted by a foreigner, and by no means to the disadvantage of the latter, and without depreciating the extent or population below its proper standard. Let us now institute a comparison of London in 1844, with Rome in its highest glory.

The Romans, says M. de Beaumont, were an obscure people, confined to a little corner of Italy; and the continued exercise of arms and husbandry, the only sciences they professed, hindered them from having the thought of transmitting the memory of events to posterity. They were, in fact, profoundly ignorant, and the knowledge possessed must have been exclusively confined to a certain few of the priesthood; the facts handed down by Livy and others all confirm the idea that they were a very illiterate people, resembling the Bohemian peasantry of the present day, their nobles alternately following the plough and taking up the sword. That they had some few existing

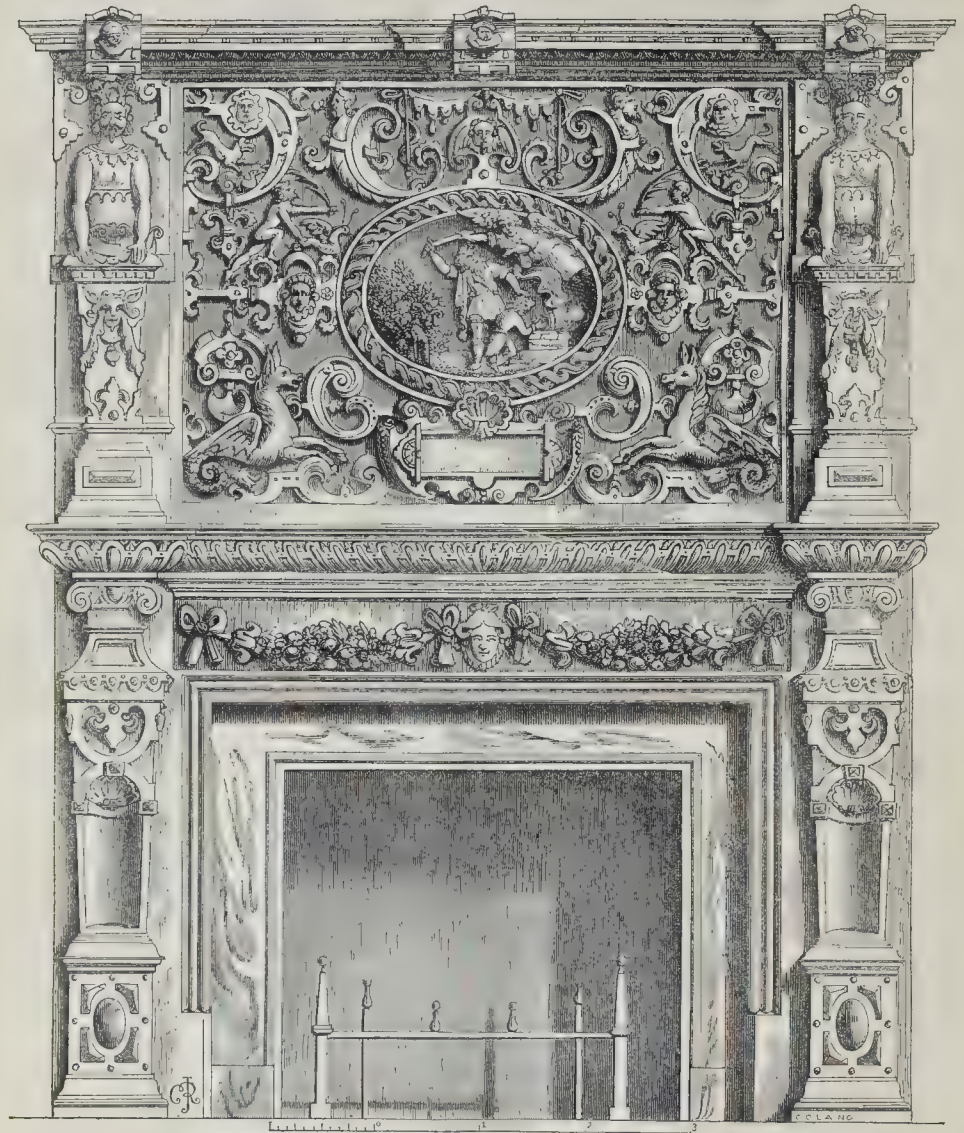
annals which escaped the devastation by fire of the Gauls we do not dispute; but those annals, when we consider the corrupted and ignorant source from whence they sprang, cannot be received by enlightened men of the present day without great distrust and suspicion. Well-grounded doubts are thrown on Livy and Dionysius Halicarnassus by learned commentators of the present day; and these writers in turn frequently complain of the disagreeing and fabulous statements of writers who preceded them, and on whom they were compelled to rely for all that they possessed in the shape of early history. Fabius, the principal writer of those earlier periods, and whom all the following historians copied, could have had little before him but priestly and family tradition; from both much truth might have been derived, but from the priesthood little could be expected beyond information connected with the order; and the great feature of family pride must have led to many strange and hyperbolic statements. "The foregoing part of my history," says Livy, "is full of obscurity and uncertainty, because the matters there treated of are of too ancient date to have been transmitted with faithfulness and exactness by oral tradition, and because the contemporary writers were few, and the greater part of their writings perished in the fire that consumed the city." Again, he says, "all the memorials kept in the archives that were in private hands, or that made part of the books of the pontiffs, were involved in the ruin of the city." Again, Clodius, in a work entitled "*Δεξις χρόνου*," complains that literary parasites had taken advantage of the destruction of the genealogical tables to frame descents in order to gratify the vanity of some private families, who would needs be thought of noble origin.

(To be continued.)

THE SMOKE NUISANCE.—In a course of lectures on architecture recently delivered by Mr. G. Godwin, F.R.S., at Manchester, he remarked, relative to the injurious effect produced on the public buildings by the deposition of soot, that he could not help wondering how it happened that in a town like Manchester, where the inhabitants had shewn taste and spirit in the erection of numerous public buildings, the vast chimneys of steam engines should still be allowed to vomit forth enormous volumes of smoke, to deface all that was ornamental, and injure much that was useful. The men of Manchester (continued Mr. Godwin) were rarely backward in that wise liberality, the true economy, which shirks from no amount of immediate outlay if followed by a proportionate advantage, and he was certainly much surprised, therefore, to find this abominable nuisance permitted there, when it had been unequivocally proved that manufacturers who consumed their smoke considerably lessened the expense of fuel, and that if this were universally effected many serious evils would be prevented, not the least of which was the destruction of all architectural beauty. This remark will apply to other places than Manchester.

VICTORIA PARK.—The contract for three miles of park paling has been retaken by a Mr. Marshall, its execution having been thrown up by Mr. Hull, of Godalming, who had previously taken it on terms of 1,500*l.* below the highest tender. Workmen are engaged in forming Old Ford-lane into a straight line of road, and a row of houses, called Kings' Arms-row, has been levelled. Within the last three weeks upwards of 700 loads of rubbish have been brought from the works in progress in the formation of the new road at Whitechapel to fill up the excavations, and for other purposes. A circle has been staked out in the Grove-road, which is to form one of the principal entrances into the park, and some progress has already been made in the drainage of many of the fields. The chief part of the tenants inhabiting the houses forming the remaining wing of Bonner's Hall have vacated their occupancy, prior to the demolition of this interesting structure, which will commence at once. This is one of the most picturesque parts of the locality, the venerable trees which still remain shewing it to be have been the remnants of a formerly well-cultivated park. The active arrangements for its formation are under the directions of Mr. Pennethorne.



CHIMNEY-PIECE IN THE GREAT CHAMBER OF BOSTON MANOR-HOUSE,  
BRENTFORD.

TO THE EDITOR OF THE BUILDER.

SIR,—I need not inform you that in the olden time richly-decorative fire-places, composed of marble, stone, or wood, or of all these materials combined, were for centuries universal throughout Europe; they formed the principal feature in the apartments of the wealthy, were generally in two stories, ornamented with the arms of the sovereign, as well as those appertaining to their haughty possessors; scriptural and profane subjects, devices, monograms in endless variety, served to adorn these favourite centres of domestic intercourse. The appearance of chimney-glasses, and the introduction of coal as fuel, caused the disuse of these fire-places in England, while the iron chimneys banished them from Germany. We have still remaining fine examples of the Gothic style, and of the transition period, and the fourteenth, fifteenth, and sixteenth centuries, we have immense numbers. Of the fire-places of the latter class, those that

approach nearest their Italian original, are wholly without that barbarous taste and rude execution, which are seen in the greatest number; but in the whole of them no admixture whatever of the Gothic style is to be found.

The ancient fire-place at Boston House, which the accompanying sketches illustrate, is a good example of the picturesque grandeur belonging to this class; but it is not without some of that grotesqueness which has caused the style to be so much censured. As the engraving is to a large scale, it will not be necessary to describe it, except to remark that the scroll ornaments surrounding the oval compartment in the centre appear to be copied from a small book of German designs of a similar character, by P. HINEVS, some plates of which are in my possession.

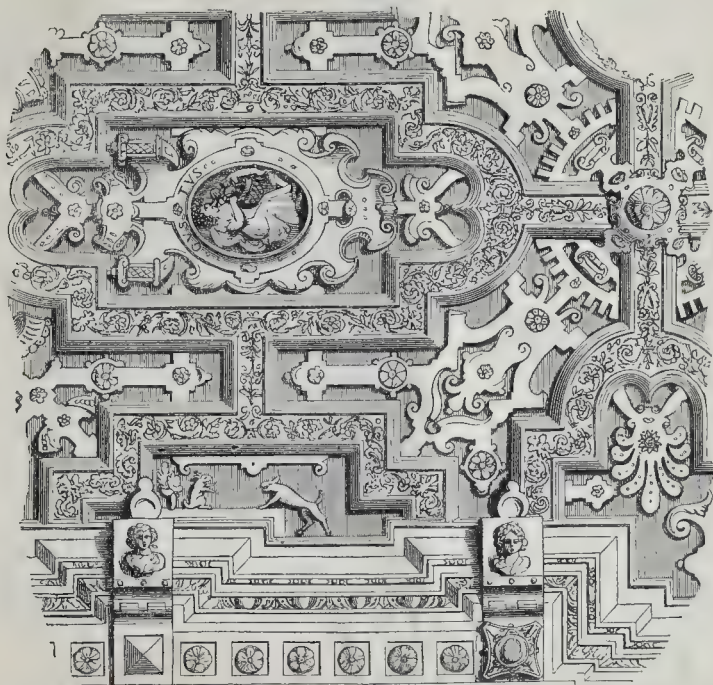
Boston House is a plain brick structure with three gables in its principal front; it is chiefly remarkable for the richly-ornamented

ceilings within. The great chamber on the first floor, or, in the language of the New Metropolitan Building-Act, the third floor, is 40 feet in length by 20 in breadth; the ceiling of it is composed of thirty-seven richly-decorated panels containing personifications of the five senses, the four elements, the three Christian Graces—Faith, Hope, and Charity, War and Peace, Plenty and Plenty, the whole in the boldest relief, and not three parts of the decoration alike; small pendants drop at the intersection of the ribs. Leading out of this room is the state bed-chamber containing a superb bed of the reign of Queen Anne. The ceiling of this room is as rich as that of the great chamber, but of different design; plates of both these ceilings have been published.

The building was erected by Lady Reade who then held the manor, in the year 1622; her initials M. R., and the date 1623, are on the ceiling. The house was altered and repaired in 1671 by James Clitherow, Esq.,



PORTIONS OF THE CEILING AND CORNICE OF THE GREAT CHAMBER,  
IN BOSTON MANOR-HOUSE.



then lord of the manor, the ancestor of the late Colonel Clitherow, in whose family the property still remains.

I must here observe that very little is known of the very beautiful and interesting specimens of old architecture still remaining in the neighbourhood of London, and in the city itself. Topographical writers generally notice only the exterior of old buildings. Lyson, speaking of Boston-house, after stating when it was erected, merely remarks that it is "pleasantly situated on a rising ground, about three-quarters of a mile to the north of the town" of Brentford. Again, artists generally follow each others footsteps, to make views of Haddon-hall, Hardwicke, &c. &c., while in the neighbourhood of Kensington, Edmonton, Greenwich, and other suburban places, are to be found remains of old garden-terraces, balustrades, rich interiors and carved oak staircases equalling any of the country specimens.

Now I am on this subject, I will call your attention to an old house in Seven-step-alley, Gravel-lane, Houndsditch, which is expected almost immediately to be demolished. This house is described by Stow (Strype's edition), as being very pleasantly situated amidst hedge-rows and elm trees, with pleasant fields about to walk in. It is stated by him to have been the habitation of the stately Count Gondomer, ambassador from Spain (who was the cause of Sir Walter Raleigh's death) in the reign of James I. It was built, however, by Robert Shaw, of Southwark, a member of the Vintner's Company. The interior of this old building is of the richest description, the fire-places and ceilings are similar, though on a smaller scale, to those at Boston-house, and the sides of the rooms are lined with oak paneling, ornamented with carved pilasters, cornice, &c.\* The house is the freehold of Andrew Hutchison, Esq., and is well worth a visit; it is now in the hands of Mr. Arthur Ashpitel, the architect, whose building operations will very much improve that densely-populated neighbourhood; this

DETAILS OF THE TERMINAL PILASTERS OF THE  
CHIMNEY-PIECE.



Side elevation, shewing the section of the cornice.

A portion (to a larger scale) of the front of the terminal part of the pilasters.

gentleman kindly permits the old house to be seen. Plates of the three principal ceilings have been published, and representations of the remainder of the edifice are well worth being so.

To return to the prints of the fire-place at Boston-house—the second shews a portion of

the cornice of the fire-place, with a part of the fine ceiling of the room; the third print are details which will serve to explain the two former.

I am, Sir, yours, &c.,

C. J. RICHARDSON.

22, Brompton-crescent, Brompton.

\* These fittings would be invaluable to any one re-building or enlarging an Elizabethan house.



## Correspondence.

## ARCHITECTURAL COMPETITION.

TO THE EDITOR OF THE BUILDER.

"When knaves and fools combined o'er all prevail,  
When justice halts, and right begins to fail,  
E'en then the boldest start from public sneers,  
Afraid of shame, unknown to other fears,  
More darkly sin, by satire kept in awe,  
And shrink from ridicule, though not from law." BYRON.

SIR,—Architectural competition is, generally speaking, another term for robbing architects, in which the victims are not only fleeced of their brains and their money, but of that which is infinitely of more value, "their time," and I am convinced the period has now arrived for this corrupt practice to be put down; the newspapers teem almost daily with fresh instances, and persons of a respectable station in life do not scruple to lend their names and services to further these disgraceful practices; the clergy, too, are in many instances not a whit more careful to preserve "the unsullied sanctity of their laws," and principles and precepts that daily emanate from them in their pulpits are sacrificed and set at naught to gratify the wishes of a friend, or to further the worldly prospects of a relative. Churches, schools, town-halls, and public buildings of every description are in the present day subjected to the "competition ordeal," and in nine cases out of every ten it is a known fact (to a favoured few) who is the architect whose design will be selected, and he himself is quite aware of the circumstance; an architect must be devoid of all that is necessary to constitute a true follower of his art, one who looks upon honour and integrity but as a fiction, a man, in fact, a thorough disgrace to the profession, and withal an enemy to himself. No man who is possessed of any practice, however limited, will mix himself up in matters of this description, well knowing the character and "pursuits" of the men who constitute themselves his judges, and the fearful chance of his drawings, however meritorious, ever having a glance, much less a thought (unless he has friends who can in any way influence the decision) bestowed upon them.

But architects themselves are not to be entirely exonerated; they practise deception upon those who practise fraud upon them. The subject that I allude to is the cost of a building, and I have known designs submitted that would in reality cost three or four times the amount of the limit allowed by the committee, and if one of these designs happen to be selected, which generally is the case, the architect is sure of having abuse heaped upon his head, for either his design when executed costs considerably more than the committee had funds to meet, or else it is altogether unlike and inferior to the "chosen design." Competitions, in fact, are an admirable refuge for the destitute.

I would propose that in future all competitions when advertised should be accompanied with a list of the committee, so that all architects who compete should know the class of men before whom they are to exhibit their talents, and perhaps exposure would in a few cases influence an honest decision. But considerably more than this ought to be done; let the profession coalesce, and form some wholesome rules by which to guide themselves in transactions of this nature; the welfare of the profession is at stake, let those who are enthusiastic in the pursuit of their art turn their attention to this vital point, else architecture will dwindle into paltry insignificance, and architects themselves be made the tools and slaves of men vacant in honour and right mindedness, but vested with the rod of power, before whose nod unprincipled men will bend their knee.

Trusting that these lines will not be deemed an intrusion upon your columns,

I remain, Sir, your obedient servant,  
AN ARCHITECT AND SUBSCRIBER, AND  
A VICTIM TO INIQUITOUS COMPETITIONS.  
London, Nov. 5, 1844.

## COMPETITION, READING.

SIR,—In pursuance of an advertisement inserted in your valuable periodical, I applied for particulars relative to the 9½ acres of land in Reading, and per return of post received a lithographic plan and instructions. Having been successfully engaged in designing and carrying out an extensive plan in a fashionable

watering-place, my past experience prompted me to request an answer to sundry queries. To my surprise it was stated that the party referred to did not "consider himself at liberty to answer these questions," although they referred to locality, drainage, value of land in the immediate vicinity, &c. It was further added that the proprietor did not feel that justice could be done for him without personal inspection; and the spot being at a distance from my residence, he did not conceive it worth my risking the expense especially as upwards of fifty applications for particulars had been received. Now mark the liberality evinced towards the competitors. A journey is to be made to Reading to inspect the land, and a second to pronounce judgment on the designs which are to be submitted to the several candidates. If uniformity of elevation, or a certain scale of house, is considered desirable, a general plan and elevation with an estimate of cost are to accompany the design. The price to be required for each lot of land is to be stated, also the ground-rent to be reserved for ninety-nine or seventy-five years, if building-leases should be adopted. Any restrictions are to be suggested which it would be advisable to insert in the conveyances, and an opinion is to be given as to the mode of drainage, &c. For the mass of valuable information obtained by the proprietor, the two successful candidates are to be rewarded by the munificent premiums of twenty-five and fifteen guineas (inclusive of their travelling expenses), and the unlucky forty-eight are to rest satisfied with the honour of having assisted the proprietor in his selection of a plan by which he may probably realize a large sum of money. I have not the slightest intention of reflecting on the parties concerned, my wish being merely to shew the inconsiderate manner in which premiums are offered. I leave the matter in your hands, and remain, Sir,

Your obedient servant,

NO COMPETITOR.

Leamington, Nov. 12, 1844.

## ST. THOMAS'S NEW CHURCH, WINCHESTER.

SIR,—From the circumstance of a Mr. Elmslie having met the committee, to receive their opinions and suggestions concerning the plans signed William Webbe, Camden Town, for the new church of St. Thomas, Winchester, I inferred (although it appears incorrectly) that the drawings belonged to Messrs. Elmslie and Co., whose names I have observed in the profession.

It still, however, remains to me (as also, I believe, to many gentlemen on the building committee) a perfect mystery why Mr. Elmslie should be connected with Mr. Webbe's design; and it does not appear that upon this point we are to be enlightened.

I am, Sir, your obedient servant,  
A SURVEYOR AND LOOKER-ON, BUT NO  
COMPETITOR.

Winchester, Nov. 12, 1844.

## WESTMINSTER IMPROVEMENTS.

SIR,—Preliminary surveys are now in course of progress for the purpose of ascertaining the best route for a new street direct from Westminster to Piccadilly and near to the great western road, as the new line proposed by the Government surveyors does not appear so satisfactory to the inhabitants as they could wish, being in fact only a slight modification of the line known some years since as Rigby Wason's. This line starts from Abingdon-street, and takes a southerly course up to the Vauxhall-bridge-road, so that, in fact, it really leaves all the notorious "slums" of Westminster quite unscathed. It is true to a certain extent that a pretty good clearance of worthless houses will be made in the neighbourhood of Palmer's Village, through which it is proposed that the new Government line should pass; so far, perhaps, it may be well, as it will enable the commissioners to effect their so-called "improvements" at a trifling expense, when compared to the amount of capital required to perfect the new competing line, as now being surveyed. Messrs. Chawner and Pennelthorne, the surveyors to the Woods and Forests, have been for some time past occupied very busily on this matter, principally in ascertaining the value of the property through which the line is to pass; we say *their* line because as the Woods and

Forests surveyors, they have a very prominent part to play in it,—but why, I ask, have they or the commissioners thrown the inhabitants of Westminster overboard, as if their convenience were of no consequence, or as if the real improvement of Westminster were not seriously intended by the Government at all? Is the line intended merely as an accommodation-road for members of Parliament who happen to live south of Vauxhall-bridge-road, for the especial accommodation of the fashionables of Eaton and Belgrave squares, or for the particular gratification of the Marquis of Westminster, whose property in that direction, already so enormously increased in value, will be rendered still more valuable? I repeat the question, why are not the interests and wishes of the inhabitants of Westminster taken into account? Are the "slums" of Westminster too redolent of filth and dust to receive the visits of the surveyors employed under the Woods and Forests, or are these gentlemen unaware of the mass of poverty, crime, and wretchedness accumulated and still accumulating on the property of the Dean and Chapter?

For some time past there has been much talk and splatter about improving St. Margaret's Church, but I cannot help thinking that it would be a better application of the money if it were used in sweeping away some of the wretched apologies for houses in Maidenhead-court, Jeffries' Buildings, St. Allow's-hill, and Blue Anchor-yard,—why are not these places properly looked after, and improved as they ought to be, or why not, indeed, pulled down altogether, and better places erected in their stead, more suitable for the residence of the labouring classes? If a new road be made in a westerly direction instead of the proposed southerly one, much of the nuisance, now so bitterly annoying to the inhabitants, would be materially abated, and the morals as well as the neighbourhood improved.

Yours most obediently,

J. D.

[We hope soon to see both improvements in progress.—ED.]

## CHURCH BELLS.

SIR,—Having seen in No. 90 of THE BUILDER an article, quoted from the *Limerick Chronicle*, stating that cast-steel bars may be obtained which will produce a sound superior to that of small church bells, at about one-fourth the expense, I should feel obliged if you or any one of your numerous correspondents can inform me, through the medium of your valuable journal, first, in what shape they are to be made; secondly, how they are to be fixed, or suspended; and, thirdly, how and with what they are to be struck to produce the sound.

I think a little information on this head might be useful, not only to myself, but to many more of your numerous readers, and if you can furnish it, you will, by doing so, greatly oblige your humble servant and constant reader,

CAMPANOLOGIE.

Titchmarsh, Nov. 6th, 1844.

## TINNED LEAD PIPES.

SIR,—I should feel gratified if any of your correspondents will inform me, through the medium of your increasingly valuable paper, whether there is such an article manufactured as a tinned lead pipe for the use of pumps and other domestic purposes; having been informed that water when remaining long in a lead pipe becomes impregnated with its pernicious qualities and unwholesome. I have also understood that some waters are more capable of receiving these poisonous qualities than others. Can you inform me by what method I can ascertain their peculiar tendency?

I seem inclined to think that the cast-iron flange pipe is far preferable where its use is practicable. A reply to the above inquiries would greatly oblige

A SUBSCRIBER.

RESTORATION OF YORK MINSTER.—The committee for superintending the restoration of York Minster have, after more than five years' labour, executed their task, and have in hand a balance, which they recommend the subscribers to permit them to use for the remedying of some defects not attributable to fire, but endangering the security of the building.



## MR. VALENTINE'S SUBSTITUTE FOR THE IRON RAIL.

At a recent meeting of the projectors of the Waterford and Kilkenny Railway, Mr. Valentine stated it to be his intention to substitute for the iron rail the wooden rail lately introduced; and this wood to be prepared by a process for chemically transmuting the timber by the injection of two salts, alkaline and metallic, which, by decomposition, produced insolubility, destroyed the vegetable quality, and, acting on the petrifying principle of nature, prevented the decay of the wood; but though it would seem thus petrified, still its elasticity was not destroyed. He would state an experiment which he made a short time since with hydraulic pressure upon a piece of beech  $3\frac{1}{2}$  inches square; he placed on it the segment of a wheel of iron, and then laid upon it the weight of 140 tons, which, had not the wood undergone the process before described, would have had the effect of completely crushing it: it was indented three-eighths of an inch, but when the weight was removed, the deflexion was lessened one-eighth of an inch, and in a fortnight it completely recovered its original figure. He considered that the result of the experiment fully justified him in saying that any weight to which it might be subjected, when laid down, would not crush the wood, because a rail would never be subjected to more than six or seven tons at a time. He further stated that it was allowed on all hands that not only the rails but the engines and the carriages could be constructed with the greatest economy, and it might be calculated that in the first formation of the line the expense would be reduced thirty per cent., with the same or even a greater degree of efficiency. There were also other advantages in this system; ground could be passed over which would render the formation of lines on other principles impracticable, and it also admitted of the use of curves of a small radius to allow of passing round the demesnes and houses of gentlemen; extensive excavations of embankments were avoided, and it was next to an impossibility that the carriages would run off the rails, as might be observed by examining the model. The wooden rail which he now produced had been subjected to the Kyanising process, and had absolutely for a length of time formed a portion of a line over which an engine had passed 28,000 times. It was a piece of Scotch fir, which in its natural state was well known to be one of the softest woods, and yet it might be seen that not the slightest friction or abrasion had taken place, and even the saw marks had not been obliterated. The rails should be formed square, and as soon as one side was worn the rail could be turned, till the whole sides had performed their duty.

## THE LIGHTNING CONDUCTOR OF THE ROYAL EXCHANGE.

THE citizens of London must feel a satisfaction in knowing that their new Exchange is protected against one form of the element by which the former edifice was razed to the ground; it is to be hoped that the example set in this instance will be followed out as a general rule, and not be the exception; and that our temples and our national edifices may not stand, as they constantly do, boldly thrust up into the region of storms, as if daring the fury of the tempest, and invoking down its vengeance.

Mr. Walker, the gentleman under whose superintendence the conductor in question has been erected, thus describes its construction, and the method adopted in fixing it:—

The lightning conductor of the Royal Exchange has been erected essentially as a conductor of lightning; it is not placed there under the idea that it will avert a lightning-flash by draining the cloud of its electrical contents; nor will it invite a lightning-flash by any attractive power inherent in itself; but it is there, ready to receive any flash that may strike it, and to conduct it in safety to the earth. It is presumed that the time may come when a cloud shall pass over the tower at the precise moment when its electrical contents are in such a state of "tottering equilibrium," that its inductive action on the conductive bodies there present will be sufficient to over-

throw this equilibrium and cause the discharge. The apex of the conductor is, therefore, so presented to the cloud, as to be more accessible to the flash than any other conductive body; and with the broad fact before us, that the flash is journeying onward to the earth, and will arrive there by the course opposing least resistance, every precaution is taken not merely that the conductor shall be the path presenting least resistance, but that it shall be a path large enough to convey away any lightning flash whatever. In other words, we presume that the conductor may one day be struck with lightning; and, knowing that the object of the lightning is to reach the earth with the least possible opposition, we provide for it a path, not only efficient in itself, but likewise more efficient than any other vicinal path or paths.

The conductor is a copper rod three-quarters of an inch in diameter—a size more than sufficient to conduct safely the largest lightning flash; for experience has not furnished us with any cases wherein a mass of copper of only half an inch in diameter has been melted by lightning; while many instances are extant of heavy discharges being safely conducted by smaller rods. It commences with a rod of copper, tipped and pointed with platinum, erected on the back of the grasshopper vane, immediately over the spindle, and terminated in a furcated form within a pit sunk near the base of the tower. As a lightning conductor is a most dangerous appendage unless its base is very effectually connected with the subsoil, the greatest attention has been paid to this point. The pit was sunk through the concrete until the native gravel was fairly entered; the furcated terminating portion was then attached, so as to reach to the bottom of the pit; a ton or two of the graphite, obtained from gas retorts, was broken small, and thrown into the pit, so as completely to bury the furcations. The hole was then filled up. I may mention that this material, besides being indestructible, is an excellent conductor of electricity; and that it is employed in order to present as large a conducting surface to the soil as possible, and so to facilitate the escape of the charge, and thus make the conductor in every respect the path opposing least resistance.

FALL OF A STALK AT ST. ROLLOX.—On Friday week a stalk 240 feet in height, situated at the corner of the works at St. Rollox, immediately adjoining the Glasgow and Garnkirk Railway, gave way at the foundation, and in an instant not one brick was left above another. This stalk, we understand, was only finished a few weeks ago, and about the same time it was discovered that its base was not secure. Means were accordingly taken to insure its stability by propping and otherwise, and little fear was entertained but that it would stand awhile. Its descent was almost perpendicular, and it therefore occasioned little additional damage, for although a portion of the bricks fell within the railway depot, and upon the rails, no further accident was the result. Several men who were working close by the stalk heard it cracking a few seconds before it fell, and, fortunately, having quickly left its vicinity, escaped.—*Caledonian Mercury*.

NEW POWDER MILLS ON DARTMOOR.—Last week an application was made to the magistrates at Quarter Sessions for permission to erect powder mills on Dartmoor. The court granted a license for this purpose to Messrs. George Frenn and Co., of Plymouth. These mills will be erected on the Cherry Brook estate. The site is ten miles from Two Bridges. The nearest point of the mills to the turnpike road is 728 yards. The nearest point of the magazine to the road is 520 yards. The distance between the mills and the magazine will be 1,200 yards.

PUBLIC WALKS, &c., IN BIRMINGHAM.—The mayor, in compliance with a requisition most numerously and influentially signed, has called a public meeting at the Town Hall for Tuesday, the 19th inst., "to consider the propriety of taking efficient measures for promoting the establishment of public baths, and the formation of public walks, or other open spaces, for exercise and active sports, for the use of the people of this borough."—*Birmingham Herald*.

## LIST OF NEW PATENTS RELATING TO ARCHITECTURE, ENGINEERING, &amp;c., GRANTED FOR ENGLAND.

Furnished by Mr. A. Prince, of the Office for Patents of Inventions, Lincoln's-Inn Fields.

[SIX MONTHS FOR ENROLMENT.]

Thomas, William, of Cheapside, merchant, for improvement in looms. (Being a communication.) October 3.

Newton, William, of Chancery-lane, civil engineer, for improvements in machinery for letter-press printing. (Being a communication.) October 3.

Ritchie, William Henry, of Lincoln's-inn, gentleman, for improvements in obtaining copper from ores. (Being a communication.) October 10.

Brown, John Bowyer, of Sheffield, merchant, for improvements in combining cast-steel with iron, and in the construction of carriage springs. October 10.

Chabert, Joseph Eugene, of Chancery-lane, gentleman, for improvements in preparing materials to be used in making picture and other frames, and for architectural and other purposes. October 10.

Robinson, Henry Oliver, of Old Jewry, engineer, for certain improvements in steam machinery, and apparatus for the manufacture and refining of sugar. October 10.

Hurwood, George, of Ipswich, engineer, for improvements in apparatus for moving and fastening windows. October 14.

Hamond, Sir Graham Eden, baronet, K.C.B., of Norton Lodge, Yarmouth, for improvements in the mode of fastening on and reefing paddle-wheel, float-boards, or paddles. (Being a communication.) October 14.

Borrie, Peter, of Princes-square, St. George's in the East, civil engineer, for certain improvements in the machinery for the manufacture of sugar. October 27.

Parsey, Arthur, of Spur-street, Leicester-square, artist, for improvements in obtaining motive power. October 17.

Wright, Alexander, of Hale's-place, South Lambeth, engineer, for certain improved apparatus for measuring gas, water, and other fluids, and in the means of manufacturing the same. October 17.

Maberly, Frederick Herbert, of Stowmarket, clerk, Gears, Stephen, of Hamilton-place, New-road, architect, and Croucher, Joseph, of James-street, Buckingham-gate, gentleman, for certain improvements in the construction and arrangement of machinery or apparatus for clearing, cleansing, watering, breaking up, and raking of streets, roads, lands, and other ways. October 17.

Grieve, John, of Portobello, Scotland, engineer, for certain improvements in the production and use of steam applicable to steam-engines. October 17.

Nasmyth, James, of Patricroft, Lancaster, engineer, and May, Charles, of Ipswich, engineer, for improvements in working atmospheric railways, and in machinery for constructing the apparatus employed therein. October 22.

Ransome, Frederick, of Ipswich, caster, for improvements in the manufacture of artificial stone for grinding and other purposes. October 22.

Osmond, George, of London-street, Tottenham-court-road, cabinet-maker, for improvements in fastenings for doors, drawers, window-sashes, and dining-tables, and in apparatus for suspending looking-glasses and other articles. October 22.

Poole, Moses, of London, gentleman, for improvements in machinery for emptying privies and cesspools. (Being a communication.) October 22.

Parke, Alexander, of Birmingham, artist, for improvements in the manufacture of alloys, or combination of metals, and in depositing certain metals. October 29.

D'Harcourt, George Robert, of Old Jewry, gentleman, for improvements in ascertaining and checking the number of checks or tickets which have been used and marked, applicable for railway offices, and other places. October 29.

Fuller, Thomas (of the firm of Williams, Collier, and Co.), of Manchester, engineer, for certain improvements in machinery, tools, or apparatus for turning, boring, and cutting metals and other substances.



## LORIMER'S PATENT DRAWING APPARATUS.

MEN upon whom we might in some things rest our faith, often repeat the old proverbial saying, there is no royal road to learning, no short cut to science; daily experience, however, tends to lessen the force of this adage. Our attention is constantly being directed to systems, the object of which is to facilitate particular studies, and schemes for smoothing the rugged path of knowledge. Dr. Parris a few years since wrote a delightful little work, entitled "Philosophy in Sport made Science in Earnest," and in which he taught astronomy by means of toys. Goldsworthy Gurney, whose famous Bude light has lately been so much admired, attempted not long since to explain the phenomena of crystallization by means of beads and marbles, and Dr. Butler still more recently has removed from geometry some of its difficulties. Similar examples relating to other sciences might easily be adduced, all of them proving that as the subject of education is better understood, and new methods of imparting instruction devised, our schools will again become what they were in ancient time, and as the very word implies, places of ease and pleasure.

In accordance with the spirit of the times, Mr. Lorimer has invented a very neat, portable, and economical machine, to enable persons of moderate skill in drawing, to trace correct representations, in true perspective, of landscapes, models, &c. The instrument will be found useful by architects, artists, amateur designers, schools, teachers of drawing, and travellers, and to all others to whom a correct outline in true perspective is an object of importance. The operation is performed by tracing upon a medium of perforated paper the lines of objects.

**INSTRUCTIONS FOR THE USE OF THE SEYSSSEL ASPHALTE MASTIC—CLARIDGE'S PATENT.**—The general use of the asphaltic mastic has rendered a little work like the present indispensable, particularly to country builders and persons desirous of learning how to apply it. The causes of failure, where failure has occurred, are clearly explained, and their remedies pointed out. The instructions are short, plainly written, and illustrated by numerous woodcuts.

## CHURCH-BUILDING INTELLIGENCE, &amp;c.

**New Churches.**—In the charge of the Lord Bishop of Gloucester and Bristol recently delivered to his clergy, his lordship recommends a special fund to be raised for the purpose of erecting new churches in such poor districts as shall be constituted and endowed by the Ecclesiastical Commissioners for England within the present year. It is expected that the appointment of no less than ten such districts will take place, in all of which pecuniary assistance must be afforded to enable the inhabitants to build churches. His lordship has followed up his recommendation by paying into the hands of the commissioners the sum of 2,000*l.* for the furtherance of this object.

**New Chapel of Ease.**—We have been favoured with an inspection of a design, by T. D. Barry, Esq., of this town, architect, for the chapel of ease proposed to be built in the neighbourhood of Tangier, in the parish of Bishop's Hull. The plan, which is in the Decorative style, is worthy the well-known good taste of the designer, and we shall be glad to hear that it has been adopted. The nave of the chapel is proposed to be 40 feet by 31, and the chancel 20 by 19; the windows two-light, pointed and filled in with flowing tracery. The estimated cost of the building, complete, according to this plan, is only 900*l.*—*Taunton Gazette.*

**Burton Bradstock Church.**—The Rev. R. W. James, the rector, has, with his usual liberality, almost entirely rebuilt the chancel of the parish church; and has also put in a beautiful new window to correspond with the style of architecture of the sacred edifice. The work was ably done by Mr. Marshall, of Blandford.

**Rebuilding of Fisherton Anger Church.**—The Bishop of Salisbury has offered to contribute liberally himself, and to obtain liberal assistance from other quarters, in aid of the rebuilding, on a larger scale, the parish church of Fisherton Anger, near Salisbury.

## RAILWAY INTELLIGENCE.

**Kilkenny Junction Railway.**—The object of this undertaking is to facilitate the communication between the towns in the county of Kilkenny and the adjacent towns and districts in the counties of Wexford and Waterford with the cities and harbours of Dublin, Limerick, and Cork, by forming a railway from the commercial and manufacturing city of Kilkenny to the Dublin and Cashel Railway, near Abbeyleix. The towns thus convenience in their communication with Kilkenny and the cities and harbours of Dublin, Limerick, and Cork, are New Ross, Innistigue, Thomastown, Knocktopher, Kells, Callan, Ballyraggett, Castlecomer, Freshford, Johnstown, Urlingford, Durrrow, Ballinakill, Clough, Abbeyleix, Ballyroan, &c. &c., which, with the extensive and populous districts in their respective vicinities, contain a population of upwards of 300,000. The length of line is 26½ miles, and the engineers are Charles Vignoles, Esq., and Messrs. Leamy and Carter.

**Proposed junction of Railways.**—The surveyors appointed to inspect and survey the proposed line of railway between the Bricklayers' Arms station of the Dover, Brighton, and Croydon Railway and Nine Elms, with a view of forming a junction with the South-Eastern and South-Western Railways (and which it is proposed shall include approaches from Hungerford, Waterloo, and Westminster bridges, with a view to the general convenience of the public), have been very active for several days past in the neighbourhood of the Surrey side of those bridges, and particularly the New-cut, York-road, and its immediate vicinity, in laying out and inspecting the property through which the proposed line passes, preparatory to the intended application to Parliament for an Act to carry out the intentions of the company.

**Lynn and Dereham Railway.**—It is proposed to commence this railway at the terminus of the Lynn and Ely railway at King's Lynn, and proceed thence, by way of Swaffham, to East Dereham, forming there a junction with such of the lines now in contemplation for connecting that town with the city of Norwich, as shall receive the sanction of Parliament. The line will connect the western division of the county of Norfolk with the city of Norwich and the ports of Lynn and Yarmouth, and, by means of the railways at each extremity, with all other parts of the kingdom. The length of line is twenty-six miles, and the engineer John Urpeth Raistrick, Esq.

**Cornwall Railway from Plymouth to Falmouth.**—The object of this undertaking is to connect the port of Falmouth with the naval station at Plymouth, and by the South Devon and Bristol and Exeter Railways, with Bristol, where the great lines of railway communication with the metropolis and the north of England now meet, and thus to bring Falmouth, the most westerly port in the Channel, within eleven hours of London, and fourteen hours of Liverpool and Manchester. The engineer is Captain W. S. Moorsom.

**Tottenham and Farringdon-street Railway.**—This railway is proposed to commence from the Eastern Counties (Cambridge line), near the Seven Sisters at Tottenham, and passing near the City-road-basin of the Regent's canal, proceed to a terminus at Farringdon-street, thus affording by means of the improvements now in progress or projected a central station easily accessible from all parts of the metropolis, and contiguous to Smithfield and other markets.

**City of London Railway.**—A notice has been issued by the provisional committee of the above project that surveys have been made for connecting the Great Western and the London and Birmingham Railway, and the proposed London and York, with the city, by a line of railway passing by Battle-bridge, and having its terminus in New Farringdon-street, immediately at the foot of Holborn-hill.

**Belgian Methods of preserving Wood and Iron used in the construction of Railways.**—All the sleepers now laid down on the Belgian railways are charred, the engineers having no faith in any of the pickling processes. Stands are fixed at convenient intervals for rails in reserve, which are preserved from rust by an anti-corrosive liquid.

## Miscellaneous.

**PARTIAL DESTRUCTION OF BIRKENHEAD MARKET.**—The new town of Birkenhead, so recently the scene of high festival on the occasion of laying the foundation-stone of the new dock, was visited by a tremendous storm on Saturday, the 2nd inst. At 11 o'clock in the morning, the storm then being at its greatest height, between fifty and sixty yards of the south-eastern wall of the new market, now in course of erection in that town, gave way before the fury of the blast to which it was opposed, and fell inwards with a crash so terrible, that the shock startled many persons who were at the time upwards of two miles from the spot. The Market Committee have presented the following report to the Birkenhead Commissioners relative to the construction of the new market. "The committee have to report, that in consequence of the storm of Saturday last, a portion of the wall of the new market was thrown down. The committee express their conviction that the walls are quite adequate, both as to materials and thickness, for this description of building, there being pillars of two bricks in thickness, 4 feet in breadth, and 11 feet apart. And independent of the pillars there are cross walls to be built for the shops at distances of 10 feet, which, had they been erected, would effectually have prevented the accident." The surveyor's report was as follows:—"On examining the walls of Gill-street Market, I find that the walls are 22 inches thick throughout, built plain, without any projections or supports. The cross walls to shops are 9 inches thick at St. John's. There are pilasters every 10 feet of 22 inches. Then an intermediate panel of 18 inches and a centre panel of 9 inches. The cross walls to shops are 9 inches thick, and at every alternate pilaster in the inside there is a chimney carried up from the shops, which gives considerable support to the walls. The walls at Birkenhead Market are 22½ in the pilaster, 18 in the intermediate panel, and 9 in the filling-in panel. Arches are sprung from pilaster to pilaster, so that the whole weight of roof is carried by the strong pilasters, and not partly by the panel, as is the case in St. John's." Messrs. Tors and Henders, it is said, are the parties with whom the contract for the erection of the edifice was made; another account states that Messrs. Fox, Henderson, and Co. were the contractors.

**A WALL OF HORNS.**—In a dark, narrow lane, leading from the ancient town of St. Alban's, in Hertfordshire, to the back meads, which are watered by the River Veron, the way to Shefford Mill, is to be observed, although almost concealed by the obtrusion of ivy and other parasitical plants, a curious old wall, which, upon a close examination, proves to be composed wholly of horns of cattle. This singular structure has the appearance of being of very great antiquity; but no person living in the neighbourhood can give any correct account of its origin. Rumour asserts that some centuries ago, a tanner resided near the spot, who purchased a plot of meadow land contiguous to his factory to build upon, and that, either in spirit of eccentricity, or from penurious motives, with a view to avoid going to the expense of bricks, &c., he caused the wall in question to be erected from the accumulation of horns which he had had lying by him in his tanning yard for many years. Whether such was the case or not, the wall under consideration (such portion of it as is visible) presents a very curious and unique appearance to the eye of the spectator, and as a mural barrier appears to vie in strength and solidity with its neighbouring walls of ancient Verulam.—*Morning Post.*

**VALUABLE AND INGENUOUS INVENTION.**—We have been favoured by Mr. East, watchmaker, of this town, with the sight of a plan, similar in appearance to an ordinary map, which is so constructed as to enable him from an observation with a circumferenter, to ascertain in five minutes after the appearance of a fire in the surrounding district, the precise route and distance of the same. This must be of the utmost importance in facilitating the advance of fire-engines, and other assistance, to the spot, and have a tendency, by causing their prompt attendance, to check the ravages of the devouring element.—*Bury Farmer's Journal.*



**SUPPOSED OLDEST HOUSE IN THE METROPOLIS.**—Till within the last few days a very ancient house stood in Hoxton Old Town, which was believed to have been nearly five hundred years old, but which is now pulled down. The Parliamentary Survey, No. 78, as reported in Sir H. Ellis's "History of Shoreditch," of which Hoxton is one of the divisions, states that about this spot, during the interregnum, a house was in the possession of Charles Stuart, sometime King of England, in 1653, which was valued at 4*l.* per annum. It was of a very novel construction, and of large dimensions. The outward door, which was formed of wood, was beautifully carved and figured, with oak leaves, grape foliage, &c. In the course of the demolition of the mansion a brick was found dated above one hundred and fifty years back, but the greater portion of the bricks were of a much earlier period, being of a deep red colour and highly polished. Some artist, previous to its destruction, took designs from it. There was such a large quantity of bricks, that there were sufficient to build fourteen houses, and a sufficient quantity of wood to erect many more. The lead alone weighed above two tons. The report in the parish is that the house was formerly in the possession of Oliver Cromwell. This locality, from the 14th to the 17th century, was the resort of the nobility of that period.—[Such is the current report, but the style of this house did not exhibit such antiquity; it will be seen from the above description that a date more probable is that of the latter part of the reign of James I.—Ed.]

**CAPTAIN BULLOCK'S BEACON FOR GOODWIN SANDS.**—This beacon is now nearly ready in Deal Dockyard.—It consists of a stout mast, cleted on each side, with man-ropes to assist in ascending to the top, and measures in circumference 25 feet 6 inches. The heel fixes into a cast-iron socket of 15 cwt., which is 12 feet long, and is intended to pierce the sand with a kind of screw-end. The mast, from the iron socket to the top, is 27 feet, and from the top to the mast-head 7 feet more, with a cap on its head. Above this is a stump topmast 6 feet high, with a truck on its head to hoist a flag, and the iron stays to support the mast are getting ready at the forges in the yard. The enterprising Captain Bullock is in the Downs on board the Porcupine surveying vessel, anxiously expecting the report of the chief engineer, who superintends the work in the yard, and who has promised to have every thing ready for placing during the present week.

**THE LONG AND DISGRACEFULLY NEGLECTED MONUMENT AT CARMARTHEN.**—We are glad to find that a subscription is on foot for the purpose of repairing, renovating, and conserving the monument or cairn erected in memory of General Picton at Carmarthen. It is intended that the ornamental entablatures, &c., designed by Bailey, and which, on the first occasion, were formed of Roman cement, shall now be erected in stone; and, if the funds prove adequate, to replace the present figure of the gallant Picton by one of bronze. The Right Hon. Lord Dynevor heads the list with a subscription of £50*l.*, and the Hon. Colonel Trevor subscribes the same amount. Captain Gwynne, the chairman of the old Welsh committee, and to whose activity on former occasions is due in a great measure the erection of the monument, has consented to take upon himself again the labour of the office.—*Carmarthen Journal.*

**DUNMOW BRITISH SCHOOLS.**—The new building, recently erected on a piece of ground near the Dunmow Downs, the gift of Beldam Johns, Esq., and calculated to hold about 100 children of each sex, was opened on Friday week, when a public meeting was held, Mr. W. I. Clayton in the chair; and there was, notwithstanding the unfavourable weather, a respectable attendance of between 200 and 300, including most of the subscribers and promoters of the institution. The school-rooms, which we understand cost 600*l.* in the erection, are now open for the admission of children.

**NEW LUNATIC ASYLUM FOR WARWICKSHIRE.**—It has been officially announced that the important subject of a county lunatic asylum for Warwickshire will be taken into consideration by the magistrates at the next Quarter Sessions, which are fixed to be held at Warwick, on Monday, the 30th of December next.

**COMPLETION OF THE SCOTT MONUMENT.**—On Saturday last this monument was completed by the placing of the topmost stone on the structure. On its being fairly placed in its position, by the W.G.M. of the Celtic Lodge of Freemasons, Mr. W. Donaldson, the workmen greeted it with three hearty cheers. The altitude of the building was taken at the time by Mr. Nicol, the master of the works, and proved to be 200 feet 6 inches above the level of Princes'-street, and about 5 feet above the spire of St. Andrew's Church, being 20 feet 6 inches above the originally contemplated level. There is still much to be done before the monument is out of the hands of the builders, and exposed, without the interruption of the scaffolding to the view of the public.—*Scotsman.*

**NEW SUSPENSION BRIDGE FROM CHELSEA HOSPITAL TO THE RED-HOUSE, BATTERSKA.**—The requisite surveys and estimates for this bridge were made last year by Mr. Bird, the engineer, and arrangements were conditionally made with several of the proprietors of land on the south side of the Thames for the purpose of approaches. The protected bridge, which has a communication in a direct line from Belgrave-square and the adjacent neighbourhood, having been approved of by the Lords Commissioners of Chelsea Hospital, and other parties whose land would be taken on the north side of the Thames, application will be made to Parliament in the ensuing session for an act authorizing the construction of the bridge.

**PREVENTION OF COLLIERY EXPLOSION.**—A committee will be appointed immediately on the assembling of Parliament for the purpose of investigating the causes of the numerous explosions that have lately taken place in the coal districts, and to ascertain whether means can be devised to protect the working collier and miner from the dreadful accidents he is at present liable to. A correspondent suggests the employment of the light obtained from electricity to illuminate mines, instead of lamps and candles, electrical light being produced without burning, that is independently of air, and confined in tubes hermetically sealed.

**IMMENSE OAK.**—The following are the particulars of the great Risca Oak, near Newport, Monmouthshire, purchased by Thomas Harrison, in 1814, at 100 guineas, converted and sold by him for more than 400*l.*—The body or bole of the tree was only 10 feet long, and measured 450 feet; there were in the limbs twelve navy pieces, one of which made a rudder for a 98-gun ship, and the whole of the sound timber in the tree was 48 loads and 11 feet, of 50 feet to the load. The bark was only about 4 tons.—*Gardeners' Chronicle.*

**SUBSTITUTION FOR WOOD AT CAPE TOWN.**—The bones of the whale seem almost entirely to supply the place of wood (which latter they are obliged to bring from a considerable distance), being used for rafters of houses and sheds, palings of gardens, for mile-stones, and in one instance I observed for the construction of a bridge. I was also told they occasionally use them for fuel.—*Captain Conynghame's Recollections.*

**ARCHITECTURAL AND MECHANICAL PREMIUMS.**—The Liverpool Polytechnic Society proposes to give prizes for communications of adequate merit on the following subjects:—A medal for the best mechanical or architectural drawing. A medal for the best model of a ship, showing the latest improvements. A medal for the best model of a ship, showing the latest improvements. All models and drawings will be returned.

**NEW BARRACKS AND STOREHOUSE IN THE TOWER.**—The Board of Ordnance has directed the foundations to be completely cleared by the 14th instant. The barracks are to be built somewhat after the style of the Wellington Barracks, in St. James's Park; and when finished, the garrison will afford ample accommodation for a whole regiment.

**FORTIFICATIONS OF RASTADT, IN GERMANY.**—The *Swabian Mercury* states that the works of the fortifications of Rastadt are on so extensive a scale, that although 6,000 men have been employed upon them for three years, six years more will be required for their completion.

**SURVEYOR TO THE HABERDASHERS' COMPANY.**—This office is at the present time vacant. Persons applying for the same must put themselves in communication with Mr. W. Nelson Beechey, Haberdashers' Hall, Maiden-lane, on or before the 23rd instant.

### Tenders.

**TENDERS delivered for rebuilding Coach-house and Workshops in Bridle-lane, Golden-square.—W. Cadogan, Esq., Architect.**

Hall .....	£704 18
Johnson .....	698 0
Chesterman .....	695 0

**TENDERS delivered for erecting two Houses and Workshops at Hoxton for Mr. Marlborough.—Mr. John Parkinson, Surveyor.**

Little, Hackney-road .....	£1926
Hayworth, Kingsland .....	1750
Hort and Perry .....	1750
Norris, Hackney .....	1567
Little, Kingsland .....	1552
Elston, Wormwood-street .....	1400

Quantities supplied.

**TENDERS delivered for building Trinity District Schools, Mile End.—Messrs. Ford and Gagan, Architects.**

Furnival .....	£1608 0
Livermore .....	1557 0
Brown .....	1548 0
Hedges .....	1535 0
Darke .....	1525 0
Edwards .....	1520 0
Norris .....	1497 0
Cooper and Davis .....	1485 0
McLean .....	1482 0
Turner .....	1471 10
Gerry .....	1374 0

**TENDERS delivered for the Erection of Eight Houses at Wapping.—Mr. H. Flower, Architect.**

Jay .....	£2575
Curtis .....	2425
Wilson .....	2358
Haines and Co. ....	2375
Outhwaite .....	2439
Trego .....	2560
West .....	2510

The tenders were opened in the presence of the Builders, November 14.

### NOTICES OF CONTRACTS.

For the erection of Gas Apparatus for lighting the Devon County Lunatic Asylum, also for Apparatus for Cooking, Washing, Drying, and Warming.—T. E. Drake, Clerk to the Visiting Justices, Exeter. November 18.

For making a Cylindrical Sewer in the Town of Cambridge, to be 2 feet in diameter, 34 yards in length, and the average depth about feet.—Frederick Randall, Cambridge. November 19.

For Paving the Streets within the Manor of Southwark, or Clink Liberty.—Mr. Edmonds, Surveyor, Bridge-street, Southwark.—November 20.

For the different Works to be done in erecting a New Gaol at the Borough of Banbury, under any of the following heads, viz.: 1. Mason, Brickwork, &c.; 2. Carpenter and Joiner; 3. Plumber and Glazier; 4. Slater; 5. Plasterer; 6. Ironfounder, &c.; 7. Painter.—Messrs. Hurst and Moffatt, Architects, Leeds or Doncaster; and James Beasley, Town Clerk, Banbury. November 21.

For the supply of Four Pleasure Carriages and Six Second-class ditto, for the Manchester and Birmingham Railway. November 21.

For the supply of 800 yards of Angular Train Plates for a Railroad.—John Latham, 28, Princess-street, Manchester.

For building a Sewer in Ellison-street, Petticoat-lane.—Joseph Daw, Sewers' Office, Guildhall. November 26.

For supplying Iron Railing and Gates round the Birkenhead Park, about 34 miles.—The Chairman of the Improvement Committee, Town Hall, Birkenhead. November 26.

For the supply of First, Second, and Third-class Carriages to the Manchester, Bury, and Rossendale Railway.—James Smithells, Secretary, Railway Office, Bury. November 30.

For the construction of Locomotive Engines and Tenders for the Manchester, Bury, and Rossendale Railway.—Mr. C. E. Cawley, Engineer, Railway Office, Bury. November 30.

For the supply of 600 Coal Waggon to the York and North Midland Railway Company.—George Baker, Secretary, York, December 4.

For the building of a Tunnel on the Edinburgh, Leith, and Granton Railway.—December 4.



**SOCIETY OF ARTS.**—On Wednesday evening last, the second meeting this season was held at the society's rooms in John-street, Adelphi. Mr. R. Twining, one of the vice-presidents, filled the chair according to rotation, and a paper, written by Mr. Milton, "On British and Foreign Honey," was read by the secretary. The second paper, by Thomas Birmingham, was "On the Grenier Mobile," or revolving granary, the invention of M. Vallery, a French engineer. The first meeting of the present season took place on the 6th instant; but the business then transacted was confined to the confirmation of previous minutes, and the election of five new members.

## TO CORRESPONDENTS.

A Neighbour.—If he will take the trouble to look over a complete file of our Paper, he will see that we have throughout been influenced by considerations precisely similar to those he favours us with.

G. Clinton.—We shall be happy to receive a specimen.

J. J. Morse.—We refer him to Nos. 86 and 88 of "The Builder," where the same questions have been already answered.

Communications have been received from N. H. Kennawhere—W. J. Watson—and Spectator.

## MEETINGS OF SCIENTIFIC BODIES

During the ensuing week.

MONDAY, NOVEMBER 18.—Statistical, 11, Regent's-street, 8 P.M.; Chemical, Society of Arts, Adelphi, 8 P.M.; Medical, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 19.—Linnean, Soho-square, 8 P.M.

WEDNESDAY, 20.—Society of Arts, Adelphi, 8 P.M.; Geological, Somerset-house, 8½ P.M.

THURSDAY, 21.—Royal, Somerset-house, 8½ P.M.; Antiquarian, Somerset-house, 8 P.M.

FRIDAY, 22.—Philological, 49, Pall Mall, 8 P.M.

SATURDAY, JUNE 23.—Royal Botanic, Regent's park, 4 P.M.

**BRITISH MUSEUM.**—Open to the public every Monday, Wednesday, and Friday, from 10 till 7 during May, June, July, and August, and from 10 till 4 the rest of the year; except the first week in January, May, and September, and Wednesday, Good Friday, and Christmas Day, and Fast or Thanksgiving Days. The Natural History Collections are open for study and comparison of specimens, to persons having permission, on Tuesday and Thursday from 10 till 4. The Reading Room is open to persons having tickets of admission every day (except Sundays, and when the Museum is closed, as above mentioned), from 9 till 7 in May, June, July, and August, and from 9 till 4 during the rest of the year. The Gallery of Antiquities is open to students having tickets every day in the week, except Saturdays and Sundays (and those times when the Museum is closed), at the same hours as the Reading-room.

**ROYAL COLLEGE OF SURGEONS.**—The Museum is open to visitors on Monday, Tuesday, Wednesday, and Thursday, from 12 till 4, except during the month of September; on Friday to gentlemen for studying in it; and on Saturday from 10 till 1 to gentlemen desirous of comparing specimens with those in the Museum. The Library is open to members and students of the college, and visitors having tickets of admission, daily (Sundays excepted), from the 1st of October to the 1st of April, from 10 till 4; and from the 1st of April to the 1st of September, from 10 till half-past 5.

**LINNEAN SOCIETY.**—Library open on Monday, Tuesday, and Thursday, and the Museum on Wednesday and Friday, from 12 o'clock to 4 in the afternoon.

**GEOLOGICAL SOCIETY.**—Library and Museums are open every day from 11 till 5.

**ROYAL ASIATIC SOCIETY.**—Museum is open every Tuesday, Wednesday, and Thursday, from 11 till 4.

**UNITED SERVICE INSTITUTION.**—Museum open all the year from 11 till 5 in summer, and from 11 till 4 in winter. Admission by members' tickets.

**BOTANICAL SOCIETY.**—Herbarium may be inspected every Friday evening, from 7 till 10.

**LONDON INSTITUTION.**—Lectures every Monday and Thursday Evening at 7 o'clock, from November 11 to May 19, both inclusive, except December 26, and January 2; the Lectures on Mondays, April 14 to May 19, at 2.

**ROYAL BOTANIC SOCIETY.**—Exhibition of Plants and Flowers for Prices, on May 7, June 4, July 2.

**CIVIL ENGINEERS.**—Library open from 9 A.M. to 9 P.M.

**ENTOMOLOGICAL SOCIETY.**—Museum open every Tuesday from 12 till 6.

**SOCIETY OF ARTS.**—Open every week-day except Wednesday, between 10 and 2. Admission by members' tickets.

The Meetings of the following Societies are continued throughout the year, on the regular days:—Horticultural, Zoological, Entomological, Botanical, Royal Botanic, and Pharmaceutical.

## Current Prices of Wood and Metals.

November 11, 1844.

	£.	s.	d.	£.	s.	d.
Box, Turkey, bd. per ton..	2	0	0	6	0	0
Cedar, Pencil, per foot ..	0	0	3	0	0	4
Cuba .....	0	0	3	0	0	4
N. S. Wales .....	0	0	3	0	0	4½
Green, per ton .....	5	5	0	9	0	0
EBONY, Ceylon, large .....	6	0	0	7	0	0
small .....	4	10	0	5	15	0
Madagascar, small .....	5	0	0	6	0	0
LIGNUM VITE, Jamaica .....	3	0	0	5	0	0
St. Domingo .....	8	0	0	12	0	0
MAHOGANY, Cuba, per foot ..	0	7	0	1	4	0
St. Domingo .....	0	7	0	1	6	0
Honduras .....	0	0	4½	0	0	10

## TIMBER:—

Teake, African, per load ..	9	0	0	0	0	0
Oak, Quebec .....	3	15	0	4	10	0
Fir, Riga .....	4	2	0	5	0	0
Dantzic and Memel .....	3	17	6	4	10	0
Swedish .....	3	15	0	3	17	6
Pine, Quebec, red, per load ..	4	0	0	4	2	6
yellow .....	3	10	0	0	0	0
Miramichi & St. Johns .....	4	10	0	0	0	0
Wainscot Logs, 18 ft. each ..	5	5	0	0	0	0
Lathwood, Memel, &c. fm. ..	9	0	0	0	0	0
Deals, Gefle, 14ft. 3in. by 9 ..	31	0	0	32	0	0
Stockholm .....	27	0	0	28	0	0
Gottenburg, 12ft. 3in. by 9 ..	26	0	0	27	0	0
Christiana, 1st & 2nd .....	28	0	0	30	0	0
St. Petersburg, Memel, .....	18	0	0	20	0	0
Dantzic, 12ft. 1½ in. .....	17	0	0	18	0	0
Quebec yellow Pine, .....	17	0	0	18	0	0
first quality .....	10	0	0	12	0	0
second ditto .....	16	10	0	19	0	0
White Spruce, 120 .....	0	18	0	1	6	0
Dantzic Deck, each .....	9	0	0	10	0	0
Plank, Dantzic Oak, load .....	130	0	0	140	0	0
STAVES, Baltic, per 1200 .....	1200	0	0	0	0	0
Quebec Pine, 1200 fms .....	17	0	0	0	0	0
Puncheon .....	17	0	0	0	0	0

COPPER—Brit. Cake, p. ton ..	84	0	0	0	0	0
Tile .....	82	0	0	83	0	0
Sheet, p. lb. .....	0	0	9½	0	0	0
Old .....	0	0	8½	0	0	0
South Amer., ton .....	72	0	0	0	0	0
IRON, British Bars .....	5	15	0	0	0	0
Rods .....	6	10	0	0	0	0
Hoops .....	8	0	0	0	0	0
Sheets .....	8	10	0	9	0	0

Cargo in Wales, Bars .....	5	0	0	0	0	0
Pigs No. 1, Wales .....	3	10	0	0	0	0
No. 1, Clyde .....	2	15	0	0	0	0
Russian, C.C.N.D. .....	16	10	0	0	0	0
Swedish .....	9	10	0	9	15	0

LEAD—British, Pig, p. ton ..	16	10	0	0	0	0
Sheet, milled .....	17	10	0	0	0	0
Shot, patent .....	19	15	0	0	0	0
Red or Minium .....	21	10	0	0	0	0
White .....	23	10	0	0	0	0
Litharge .....	20	0	0	0	0	0
Pig, Spanish .....	16	0	0	16	10	0

STEEL—Swedish Keg .....	15	15	0	0	0	0
Eggot .....	16	10	0	0	0	0

TIN—In blocks, p. cwt. .....	3	12	0	0	0	0
Ingots .....	3	12	0	0	0	0
In Bars .....	3	13	0	3	14	0
Bacon .....	3	5	0	3	6	0
Straits .....	3	3	0	3	3	6

Plates, p. box, 22½ sh.—						
No. 1 C. 13½ by 10 in. ..	1	5	0	1	11	0
I. X. .....	1	11	0	1	10	0
SPELTER—On the spot, ton ..	22	5	0	22	10	0
Delivery .....	22	5	0	0	0	0
ZINC, English Sheet .....	32	0	0	0	0	0
ORSEID .....	0	3	0	0	0	0
QUICKSILVER .....	0	4	6	0	0	0

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**ALWAYS ON SALE, a LARGE ASSORTMENT OF DRY PREPARED FLOORING BOARDS AND MATCHED BOARDING** of all sorts, planned to a parallel width and thickness, from ½ inch to 1½ inch thick. Rough Boarding for Floors. TIMBER, DEALS, OAK PLANKS, SCANTLINGS, SASH SILLS, &c.

Apply at W. CLEAVE'S Timber Yard, Smith-street, Westminster.

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**ALWAYS ON SALE at A. ROSLING'S, SOUTH-WARK-BRIDGE-WHAIR, BANKSIDE, and Old-Barge-Waith Upper Ground-street, Blackfriars,** a very large stock of well-seasoned Floor Boards of every variety.

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WATER.—J. WEEKS and DAY, King's-road, Chelsea, having had a most extensive practice for 20 years in the erecting of HOT WATER APPARATUS for the heating of churches, mansions, warehouses, halls, baths, horticultural buildings, &c., will be happy to give estimates for warming buildings of every description to which heat is applicable. The hot water apparatus is to be seen in action on their premises.

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amongst the consumers of Varnish to obtain a good and genuine article; brilliancy, facility of drying, hardness, and the daily improvements in machinery, have enabled Messrs. George and Thomas Wallis to produce Varnishes (both oil and spirit) unrivalled in every respect, and they confidently recommend them to the trade, as deserving of notice both in price and quality.

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oooooooo—7 in. ditto, extra.  
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Duster ditto. Ground and Unground.  
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Tar Brushes and Masons' Brushes, and all other Brushes used by Painters and Artists.

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TURPS, per gallon .. 2s. 4d.  
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WHITE LEAD (Genuine) per cwt. .. 45s. 6d.

Colours, Pipe, Brushes, &c., &c., equally low, and quality warranted. Complete Lists, priced, may be had on applying to R. COGAN, 1, Leicester-square, Leicester-square, London.

**PRINT PUBLISHERS, PICTURE FRAME AND CABINET MAKERS,** can be provided with flatted Crown, flatted Sheet, and the patent Sheet Plate, Lists of which, shewing the price for any Square, from 14 by 12 to 40 by 30 of Best and Second quality, will be sent (gratis) upon receiving the address. Builders, Glaziers, and others having to Contract, sending a copy of their specifications, with a list of dimensions to R. COGAN, will receive by return of post the lowest prices for all qualities and sizes of Crown Sheet-Glass and Sheet-Plate, &c. Glazing estimated for, if required.

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**COMMON SHEET AND CYLINDER.** The advantages Common Sheet over Crown for Glazing Sky-lights is decidedly great, and is generally used where strength or superior appearance is required; a light 6 feet 6 in. long, with openings of any width, needs only one lap. This Glass is considerably stouter than Crown, and may be had from 1s. 3d. per foot.

Also may be had, COGAN'S PATENT CHIMNEY FOR GAS OR OIL, which effects a great saving in the consumption, produces a more brilliant light, prevents smoke, and is cheaper than any other Patent Chimney.

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French Table Flowers, China Vases, Fancy Glass Ware, and Alabaster Figures in every variety.

R. C. having just completed his Show Rooms for the above article, begs to invite the inspection of the Public. A liberal Discount to Bazaar keepers and others.



## NOTICE.

IN answer to several inquiries by letter, we beg to state that a few copies of Mr. Bartholomew's Cyclopædia of the New Metropolitan Building-Act can still be had of our publisher, No. 2, York-street, Covent-garden, at the usual price of a double number.

# The Builder.

No. XCIV.

SATURDAY, NOVEMBER 23, 1844.



REAT improvement has been made in the law with regard to the safety of buildings within the range of the

New Metropolitan Building-Act: the power to condemn edifices as ruinous is taken from court-leets and substitute—constables, and is now placed in the hands of the district-surveyors and official-referees; but without that range, no power competent for the purpose exists, except under any local Acts which may not be generally known. If the provisions of the New

Metropolitan Building-Act be extended in some modified form, so as to become general, no doubt much good may result.

It is not merely in the matter of the condemnation of ruinous buildings that amendment is needed, but in the construction of new works, more particularly in that lofty and thence often dangerous class of erections, which the carrying on of certain manufactures usually requires. Of late the public journals have teemed in a most extraordinary degree with accounts of the fall of buildings. One instance of which appears in the following account:—

"FALL OF TWO HOUSES IN THE LONDON-ROAD.—Yesterday morning, about eight o'clock, the inhabitants of the London-road, Southwark, were thrown into considerable confusion and alarm by the falling of two houses, Nos. 32 and 33, on the west side of the street. It was at one time supposed that Mrs. Sears and her infant were buried in the ruins; but fortunately they slept in the attic, and the roof of the house falling inwards saved them, and they were extricated by the police. The houses that have fallen are tenanted by Mr. Sears and Mrs. Cohen, both dealing in china-ware. The accident occurred by Mr. Sears having undermined his premises, for the purpose of extending them. The foundations were disturbed on Monday for the purpose of erecting a wall at the rear; and the heavy rain that has fallen since has been the principal cause of the falling in of the houses."

Near the same time appeared the following:—

"FALL OF HOUSES.—During the night of Tuesday last four houses which were in the course of erection in Gallow's Acre-lane, Clifton, fell to the ground, leaving but a small portion standing. It is providential that the event happened during the night, as had it taken place at a time when the workmen were engaged upon them, it is fearful to contemplate the serious consequences which must have ensued. It is supposed that as the erection of the houses was carried on during the wet

weather, the mortar was not properly tempered, which, added to the heavy rains, caused their downfall. It is somewhat remarkable that these houses were situated upon the same piece of ground as that upon which the house was erected, the wall of which a short time since fell, causing the death of a mason. Two other houses in the course of erection, one situated at Baptist Mills, and the other at Bedminster, have also fallen during the week."

Not only does frightful accident occur by the fall of buildings, but their temporary operative apparatus itself becomes as mischievous to life as the total ruin of edifices, as is evinced by the annexed quotation of a

"FRIGHTFUL SCAFFOLD ACCIDENT.—On Saturday, about noon, several men were employed upon some scaffolding erected in front of a house in Sellington-street, Vauxhall-road. It appears that a cornice which had just been fixed near the summit of the building, suddenly gave way and fell upon the scaffolding and workmen. The former was in consequence broken away, and the unfortunate men with it were precipitated to the ground. Several persons who witnessed the occurrence ran to the assistance of those beneath the fallen mass, and five individuals were, in a short time, removed therefrom, to all appearance dead or dying. The first was a female, whose name was ascertained to be Clack, and on her being conveyed to a surgeon's, it was discovered that she had escaped with only present deprivation of consciousness, and a few slight bruises by some of the materials falling upon her as she was passing underneath. She was in a short time enabled to proceed to her own residence; but the unfortunate men, named George Goodman, aged 40; George Goodman, jun. (son of the former), aged 17; Thomas Goble, aged 34; and William Baker, aged 40, were so much injured, that no time was lost in conveying the three former to St. George's Hospital, and the latter to Westminster Hospital, where they remain with at present but slight hopes of their recovery. The cause of the catastrophe is stated to have its origin in the dense humidity of the weather, which did not permit the work to set sufficiently to bear its own weight."

So it seems the dense humidity of the weather is to cause such ruin! A pretty kind of building truly! How much of such humidity, how much rain, how much storm have passed over the buildings of ancient Rome, or those of our own country, leaving many of them untouched?

Next comes "The late dreadful accident at Derby," the particulars of which may be gathered from the inquest held on Wednesday morning at the Town-hall, before Mr. B. T. Balfay, coroner, on the bodies of the six unfortunate labourers who were killed by the falling of an arch at the Slitting Mill Brook, to the following purport:—

"After the jury had been sworn, and viewed the bodies, the coroner addressed a few observations to them upon the duty they would have to discharge. The question they would have to inquire into was, by what means the unfortunate men came by their death, and whether any blame attached to any party—whether, in fact, it was a case of accidental death, or of manslaughter; and he (the coroner) was quite sure they would give the case a calm consideration, and arrive at such a verdict as would satisfy their own consciences.

"Mr. Alderman Johnson here stepped forward, and stated that he, as chairman of the committee appointed to see the works satisfactorily carried out, together with Dr. Baker and Mr. Jessopp, were deputed at a meeting of the committee, held the previous evening, to attend the inquest, and give every information in their power. They were prepared to lay the whole case before the jury.

"The Foreman of the Jury objected to Mr. Johnson being heard; and the coroner proceeded to call the first witness.

"Mr. Flewker took his seat at the table, stating that he appeared on behalf of the relatives of the deceased, and commenced taking down the evidence.

"Samuel Dawson sworn—I am a labourer, and reside in Queen-street. On Wednesday last I was employed by Mr. Harpur, the town

surveyor, to superintend the works going on at the Mill Fleam in the Morledge, and to see that the materials to be used were composed and properly mixed up. I was at the works yesterday morning; I went at six o'clock, left for my breakfast at eight, and returned to the works at half-past eight. I had been at the works after breakfast perhaps about twenty minutes, and was standing at the new arch on the side near to Sutton's wharf when the accident happened. I had control over the mixing of the materials for mortar, and was directed by Mr. Harpur to see that they were properly beat—the proportions were three of lime and one of sand. I have been used to mixing mortar before; that has been my principal employment. I was with Mr. Thompson four years. I had no reason to complain that proper quantities of sand and lime were not mixed. Yesterday morning was fixed for striking the centres of the arch, which has been completed since my superintendence. The persons employed on the occasion were the deceased Thomas Brown and others of Mr. Sims's workmen, namely, Thomas Walker, George Walker, George Bancroft, Joseph Wardle, and Charles Bagguley. My attention was drawn to the works, and I observed a settling just over the springers at the backing up of the arch; the settling was, however, not more than a quarter of an inch; I was watching to see if it got any wider, and my attention was taken off by hearing a crash. I cast my eye along the top of the arch, and saw the arch fall in. I was too near the arch to observe who were under it when it fell in. I saw Samuel Henchley and John Harlow come from underneath the arch not more than five minutes before the accident; and also saw deceased, Charles Bagguley, and Joseph Wardle, go under. I also saw Mr. Sims, the contractor, come from under the arch, probably two or three minutes after Henchley and Harlow. It could not be more than two minutes after Sims had left the arch that I heard the crash. Mr. Sims came and stood by me, and then returned to the bed of the river to watch the men at work. Besides Bagguley and Wardle, I knew that others were under the arch at work, but who they were, of what number they consisted, I did not know at the time. I had not been under the arch myself; that was no part of my duty, which simply was to see if the materials were properly mixed. I no sooner turned my eye to the spot where I heard the crash I have spoken of than the arch fell in. Before it fell I saw the arch sway a little on the opposite side to where I was standing—that is, on the side near Mr. Evans's warehouse. All who were under at the time of the accident were buried in the ruins. At the time it fell there were two persons upon the arch, on the opposite side to where I stood; their names were Berresford and Whittingham. I assisted in extricating the bodies from the ruins, and saw the deceased Brown, the two Walkers, Bancroft, Bagguley, and Wardle got out; they were all dead. I do not consider any person to blame.

"Jacob Berresford—I am a labourer, and for the last two months have worked for Mr. Sims. I was working with him yesterday morning. I went at six o'clock, and remained on until eight, at which time I went to my breakfast, and returned at half-past eight, when I recommenced work. I had been employed stacking bricks, and having finished, went to look at the men who were working under the arch. Thomas Walker, George Bancroft, Charles Bagguley, George Walker, Thomas Brown, and Joseph Wardle were the persons. I went under the arch about a yard. I saw Thomas Brown with a hammer in his hand, in the act of striking a prop underneath. I also saw Thomas Walker doing the same in another part of the arch. The other four were standing up looking on, as if to give their opinion. I did not exchange words with any of them, but in about two or three minutes withdrew, and returned to the top of the arch, on one side of which, near Sutton's, and the end near to the cast metals, I began levelling; and there was a man (I believe of the name of Whittington) ramming. Whilst so employed I felt something soft under my feet, as if I was going down, and on looking saw that the arch was going. I immediately gave the alarm and jumped off. As far as I can judge, the crown of the arch fell first. When the arch had fallen, I heard the deceased Thomas Walker, who



was underneath the ruins, cry out three times, 'I'm dying fast—I am nearly done for.'

"James Sims—I am a builder, residing in Traffic-street, and engaged to build an arch over the Mill Fleam in the Morledge, and had got one length of arching in, which was completed on Friday night. It remained for the purpose of settling, with the centres under, until yesterday morning. I considered that the centres might then be safely struck. On Monday night I received orders from Mr. Harpur to strike the centres; and yesterday morning my son-in-law, Thomas Walker, and Charles Bagguley were employed for that purpose. I superintended the work, and both Mr. Harpur and myself had been present from the first blow being struck. Mr. Harpur, who is the town surveyor, was appointed to superintend the work, and see that my work was done according to contract. From the commencement of the work he attended daily, sometimes four or five times a day, and at times half a day together. I considered I worked under his direction. We worked by plans and specifications, to which we strictly adhered, unless requested by Mr. Harpur to deviate from them. I meant trying one length of centres first to see what I could do with it, and to ascertain whether I should require any more. I was under the arch not more than half a minute before it fell in, and I did not observe any indication of danger. The first notice of this accident I had was the crash and falling in of the arch.

"After the examination of Mr. Samuel Harpur, surveyor to the Commissioners under the Derby Improvement Act, the jury retired to consider their verdict. In about five minutes they returned, and delivered in a verdict of 'Accidental death,' with a deodand of 1s. upon the centre of the arch, the expression of a regret that two centres were not employed instead of one, in order that the work might have had more time to set, and a recommendation that in future all such works should be carried on with not less than two centres."

So that whether from the building, the scaffold, or the temporary centering, a large sacrifice of human life is doomed to occur, and the same to be again, and again, and again repeated.

Now, such accidents often occur to Norman arches, circular segmental arches, and elliptical arches; but such accidents were hardly ever heard of as occurring to pointed arches of proper construction.

But the fancy for building chimneys which shall rival in altitude the most celebrated cathedral-spires, has of late filled the public journals; and the fall of such "stalks," as the Scotchmen call them, forms almost as frequent an article of information as their building. We began with one of the comparatively moderate altitude of 160 feet, which nevertheless fell, as appears by the following account:—

"MILLBROOK.—On Wednesday night the upper part of one of the chimneys at Mr. Gill's Alkali Works fell, but from its having been erected in the centre of a field, no injury was occasioned beyond the inconvenience sustained at the works in consequence of the accident. The chimney, which, we believe, was 160 feet high, has from the time of its erection gradually sloped in the direction of the south, and for some time past the inclination of the top has been no less than three feet beyond the base, the attraction of cohesion merely enabling it to withstand the "rude winds" with which we have lately been visited. The overtopping height having fallen, the inclination of the other portion is considerably lessened, but it will be necessary to remove much of what still remains before the chimney can be raised to its former elevation."

Then we have an account of the fall of another chimney of about the same altitude described in the following passage:—

FALL OF ANOTHER CHIMNEY.—TWO MEN KILLED.—Tuesday, about noon, a most lamentable accident occurred at the Churchgate factory, Stockport, belonging to Messrs. Elkanah and Samuel Howard Cheetham, by

the falling of a large chimney attached to the works there, and which, in its decent, unfortunately caused the death of two men and seriously injured two or three others. The chimney stood in the yard behind the Churchgate factory, as seen from the public road. It and the surrounding buildings have probably been built between 40 and 50 years. It was originally perhaps about 40 yards high, square built, with a base of unusually large dimensions, which rested, we believe, upon arches and pillars of brickwork. Up each of these pillars ran a flue, and the chimney was divided down the centre by a partitioning of brickwork. We have also been informed that there were two small rooms at the base of the chimney. From what has already been said, it will be seen that this chimney was one of very old construction, and from its great age it had long been in a very dilapidated state. We should state, that on the north it was bounded by a declivity, leading to the Lower Carrs, and the projecting end of a building; on the east of the factory, which joined its base; on the south by another end of the factory; and on the west by two small reservoirs—walled round, and divided by a wall in the centre. Close by the base of the chimney was a boiler-house and boiler, at work at the time.

"On Monday, we believe, near a cart-load of bricks fell from the top on to the roof of a turning shop and factory below, in consequence of which the hands refused to work, and the engine was stopped. Yesterday morning it was determined to take it down, and several men were engaged for this purpose from an early hour. About noon, the time in question, they had probably taken down about five yards of it, and most of the men and factory hands had left for dinner, when the whole mass suddenly fell, in a south-westerly direction, carrying down the boiler-house, and almost entirely filling with bricks, timber, and rubbish, the yard and smaller reservoir. A sweeper, named Joseph Smith, aged about 40 years, was at the top of the chimney at the time, engaged in the work. Finding it going, he leaped off, but was followed by the mass of brickwork, and thrown with tremendous violence into the water at one corner of the reservoir, a great weight of bricks falling upon him. He was extracted from his situation as soon as possible, but remained insensible for a long time afterwards; indeed, it was understood that he was very much injured about his head, chest, and shoulders. The other two men, who were killed, were found under the brickwork quite dead."—*Manchester Guardian*.

Then our sympathies towards tottering chimneys are called forth by the

"FALL OF A HIGH CHIMNEY AT ARDWICK.—The chimney of the chemical works of Messrs. Tennants, Clow, and Co., at Ardwick-bridge, having for some time past shewn a leaning to one side, it had been determined to take it down, when the late high south-easterly winds came, and during the night of Friday last affected it so much, that on the men coming to work on Saturday morning at six o'clock, its fall was dreaded every moment. It was found that at about 3 feet only from the ground it was completely cracked across, so that it was in imminent danger of falling with the next gust of wind. No time was lost; Mr. Statham, one of the partners, was soon on the spot, and was joined shortly afterwards by Mr. Young, the manager of the works; and the inmates of a number of cottages all round the chimney and within its falling range, were promptly awakened and removed, with their furniture and moveables, to places of safety. The horses were also removed from the adjacent stables, and all the workmen were strictly enjoined not to approach that part of the premises. All these precautionary arrangements having been completed with great care and promptitude, about nine o'clock the chimney at length fell with a tremendous crash, breaking through several buildings, all the inmates of which had been removed, and crushing the arches over the river which had been erected for the purposes of the works. On the whole, damage was thus sustained to the extent of 1,000*l.*; but fortunately, though one individual had a very narrow escape, no lives were lost; a result mainly attributable to the excellent precautions taken by Mr. Statham and Mr. Young. This chimney, it is stated, was built about

thirteen years ago, when the works were in the occupation of Mr. E. P. Thompson. Its roof was polygonal, its height between 40 and 50 yards."

And we must not forget that when Birkenhead and its neighbourhood suffered from storm on Friday week last, about 80 feet of a wall 30 feet high, forming a portion of the market now erecting, was blown down, and three workmen were much injured.

The accident at Oldham described in our last number, which arose from a violation of one of the commonest and best-known principles of the strength of materials, and the fall of the 240-ft. chimney at St. Rollox, we must enumerate in our catalogue of disasters—no must we altogether overlook that at Ipswich and after quoting all these instances, so many of them attended with very great loss of property, and some of them with most serious loss of life, we think no one can doubt that a power is required to be created, which shall restrain building within the limits of prudence, for it seems evident the construction of chimneys of two, three, or four hundred feet high, and some of them more, is not upon every occasion in competent hands; and even in the matter of floorings, the case at Oldham is but one of a multitude of such violations of prudence and constructive principles.

It is manifest that a police is required to protect life and property from the effects of the recklessness or the ignorance of those who, unqualified for the task, are rash enough nevertheless to enter upon such works.

At another occasion we shall return to this important subject.

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#### CANDIDATES FOR THE NINE NEW MID-DLESEX DISTRICT - SURVEYORSHIPS, ADMITTED BY THE MAGISTRATES.

(Election to take place on the 28th instant.)

##### FOR FULHAM.

1. Mr. Henry Harrison.
2. — Andrew Horsley.
3. — Augustus Abraham Winterbottom.

##### FOR HAMMERSMITH.

4. Mr. Samuel Beazley.
5. — Samuel Charles Christopher.
6. — Frederick Claudius J. Parkinson.
7. — Martin Joseph Stately.

##### FOR SOUTH KENSINGTON.

8. Mr. Thomas Leverton Donaldson.
9. — John Elore.

##### FOR NORTH KENSINGTON.

10. Mr. Charles Becheroff.
11. — George Godwin, Junr.

##### FOR HAMPSHIRE.

12. Mr. Henry Edward Kendall, Junr.
13. — Thomas Bird.

##### FOR HORNSEY.

14. Mr. Alfred Bartholomew.
15. — James Harrison.

##### FOR TOTTENHAM.

16. Mr. John Henry Taylor.

##### FOR STOKE-NEWINGTON.

17. Mr. William Frederick East.
18. — William Lovell, Junr.

##### FOR BROMLEY.

20. Mr. John Blyth.
21. — Henry John Hammon.
22. — John Morris.
23. — George Henry Simmonds.

LARGE OAK.—The dimensions of the trunk of an oak tree, growing in Yanwath Woods, near Lowther, taken a few days ago by Mr. Walls, principal woodman to Mr. Richardson, of Castle Eden, timber-merchant, were as follows:—Circumference, 20 feet; length of bole 3 feet; giving a content of 75 cubic feet; and as a cubic foot of dry oak weighs something more than four stones, the weight of timber may be computed at about two tons.—*Westmoreland Gazette*.



# THE DANGER OF SINKING ARTESIAN WELLS IN LONDON.

TO THE EDITOR OF THE BUILDER.

SIR,—The danger of sinking artesian wells in London, for the purpose of supplying baths and washhouses with hot water, having been mooted in your columns, and the subject having created considerable interest among engineers and geologists, I take the liberty of forwarding you a few facts of undoubted authority, which go far to prove that your correspondent "M." is perfectly correct in the principle he lays down with respect to the danger of sinking such wells in London as it now exists, covered with heavy masses of buildings, resting indirectly upon a stratum of sand.

In the third volume of the "Transactions of the Institution of Civil Engineers" is an article by Mr. Robert W. Mylne, entitled, "On the Supply of Water from Artesian Wells in the London Basin, with an account of the Sinking of the Well at the Reservoir of the New River Company in the Hampstead-road." This article refers to several failures of attempts to sink such wells in London, all of them attributable to the great quantity of sand pumped up with the water, thereby removing the support of the superincumbent clay, and causing a subsidence of the surface ground. The following are Mr. Mylne's own words:—"A very remarkable instance of the subsidence of the ground occurred at the Hampstead-road Well, where the quantity of sand raised by the engine through the 8-inch pump was such as to cause a very serious settlement in the large adjacent reservoir adjoining, by separating the high banks into two distinct portions, damaging a culvert, and snapping a line of iron pipes in sunder. This no doubt would have affected the adjoining houses, had not the pumping been discontinued. A similar case happened at Messrs. Reid and Co.'s brewery in Liquorpond-street, where the well, after the engine was set to work, during the time of sinking it, was found to have created such a cavity below, that the proprietors were obliged to close it almost immediately, to save their buildings from ruin. At the vinegar works in the City-road, the well, from the same cause, was altogether abandoned for manufacturing purposes, as was also a large well at the brewery of Messrs. Ramsbottom and Co., in Broad-street. At White-chapel there was another well belonging to Major Rhode, where it was found on inspection that the withdrawal of the sand by pumping had formed an immense cavity underneath the plastic clay; this caused a material subsidence of the ground, and 20 feet of the lower part of the brick shaft disengaged itself, and falling to the bottom, the fragments were completely buried in the quicksand."

"Many other instances might be mentioned of wells having been abandoned from the quantity of sand raised, and occasioning great loss of property through the sinking of the surface-ground, but it will be needless to pursue the subject any further."

Mr. Simpson, the engineer to the Chelsea Water Works, in a report which he drew up on the same subject, and which is appended to Mr. Mylne's paper, thus writes:—"It has been stated to me that during the sinking of the lower cylinder at the Hampstead-road Well, the sand was continually forced under it into the well wherever the spring got vent, more especially on the side next the reservoir, and there are sufficient indications on the surface to shew that the subsidence of the earth has been very extensive. There is no doubt that the settlements in the reservoir have been caused by it, and from the appearance of the walls of the cottages, the subsidence has also proceeded in that direction; and although difficult to ascertain its precise limits, it seems to me we may conclude that it ranges from 100 to 200 feet round the well. The quantity of sand dug out from the bottom appears greatly to have exceeded the cube of the well at the depth of the lower sand stratum. From the state of the water I saw pumped out, it contained from  $\frac{1}{4}$  to  $\frac{1}{2}$  sand and clay, the colour of the latter being frequently discernible, and from the occasional gushes of clay, sand, and water through holes which had been bored in the lower cylinder to prevent its flowing over the top on the well-sinker, it is manifest there is great subsidence of the

soil round the curb now going on, and that it proceeds most rapidly when the water is pumped out of the well."

I do not consider it requisite to add another word upon the subject. I have adduced ample proof that danger of the most fearful character must, in our present state of engineering science, necessarily attend the sinking of deep wells in London, and I trust that prudence will induce those in authority to pause ere they adopt a plan which may lead to the destruction both of life and property.

J. H. H.

## MINERALOGY.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(Continued from p. 491.)

GYPSUM, in mineralogy carbonate of lime. *Gypsum* and *alabaster* consist of the same peculiar ingredients, varying in the modes of combination; the general character of the former is a coarse-grained and loose texture, commonly with a saline or crystalline appearance, its fracture uneven, its fragments amorphous and blunt, weight granitose, sometimes only carbonose, lustre glimmering, and opaque. Both are sulphates of lime, the sulphuric acid forming about one-half of their composition, as the carbonic acid does in the other calcareous rocks.

On the borders of the Red Sea, where there are immense saline deposits, uniting more or less with calcareous matter, the sulphurous acid generated by the vast decomposition of animal matter continually going on in those and the contiguous beds, chemically acts upon the crude chaotic masses, expels the muriatic acid from the calx, or earth of lime, and taking its place, gives the result gypsum, and the varieties of sulphate of lime, so common to regions where calcareous formations abound. Alabaster is merely compact gypsum, although readily distinguished from the latter by its crystalline structure. Gypsum, being simply a concrete, and belonging to the class of calcareous earths, stands in the intermediate position of petrology and mineralogy, and may be divided into varieties, as earthy gypsum, gypseous earth, and mealy, farinaceous gypsum. Its colour is yellowish or greyish, and also of various shades between white and red; sometimes, when containing iron, it exhibits a brownish red ochreous appearance; like chalk, it is rough and meagre to the touch.

Compact gypsum is generally found of a yellowish and greyish white, sometimes nearly snow white, sometimes it exhibits shades of greenish, bluish, honey yellow, and brownish red. It occurs massive and disseminated. It is internally dull or faint glimmering, and its fracture is even partly splintery, sometimes passing into fine foliated and granular. The proportions of its constituent parts, according to Gerhard, are—

Lime .....	36.00
Sulphuric acid ....	48.00
Water.....	16.00
	100

It is found in Derbyshire, and other parts of England, in various parts of Europe, Asia, Africa, and America, being particularly abundant in the African and Asiatic deserts; it occurs in considerable strata, generally in company with other sub-species of gypsum, forming together particular fret mountains.

Fibrous gypsum is also variously coloured, the colours being often combined in spots, strikes, and veins, in the same manner as the compact gypsum. It also occurs massive, but generally only in thin layers, sometimes alternating with granular gypsum; it occurs, also, in small veins or strata of coal, &c. It is sometimes used for ornamental purposes, and is manufactured into small boxes; it abounds in both the primary and secondary states, that is to say, in the older and in the newer formations, and is extensively produced in the present day by natural causes in action.

One of the most remarkable gypseous hills in Europe is that of Montmartre, not only from its producing that well-known article of commerce termed Plaster-of-Paris, but from its peculiar construction, and the singular animal remains which have there been

discovered. The quarries may be considered as divided into three successive lower beds of masses. The first *haut-masse* is often more than 82 feet thick, and presents beds placed one on the other without any sensible interruption, although separated; they are seated on a bed of bluish argil spotted, about 12 feet thick, the argil being interrupted with marl. The second, *pierre franche*, is nearly 14 feet thick, and disposed in contiguous layers on marl. The third, *basse carrière*, presents a gypseous mass of about 14 feet, divided into six beds, separated from one another by layers of marl. The whole, as well as the other hills of this part of the Isle of France, being incumbent on quarries of limestone, the gypsous mass only extending to the level of the soil.

These gypsum formations afford an instructive commentary on the changes and vicissitudes to which this planetary body we inhabit has been subjected. The limestone base, formed as it is, now forming within tropical waters, and extending over a long succession of ages, the superstructure rising by the conjoint operations of land and sea waters. Most of the shells found at Grignon, some of which retain their most delicate spines, and even their colours, are known now to belong to the South Sea, a portion of the Pacific, and but few to the Atlantic, or even the Mediterranean. The various beautiful kinds of selenite found at Montmartre, belong to lithology. Brongniart says that some of the marl beds contain cardites, venerites or deontides, tellurites, cerites or screws, and even bones of fish, and trunks of the palm tree. The superficial bed of gypsum is interrupted only by a small number of marly strata, and in some places, as at Dammarin and Montmorency, it is situated almost immediately under the vegetable mould. The lowermost beds of this first mass contain flints that appear to pass over into, and to be penetrated by the gypseous matter; the uppermost beds are penetrated by marl, have but little thickness, and alternate with strata of marl. In this first mass are found skeletons of unknown birds and quadrupeds. To the northward of Paris they occur in the gypseous mass itself; here they have preserved their solidity, and are only coated by a very thin layer of calcareous marle, while in the quarries to the southward they are often found imbedded in the marle that separates the stratum of gypsum; they have there a high degree of friability; also bones of tortoises, skeletons of fishes, &c., have been found in this mass, as likewise the remains of mammiferous animals in the uppermost mass.

On this uppermost mass of gypsum rest strong strata both of calcareous and argillaceous marle. In the lowermost bed is a white, friable, calcareous marle; petrified trunks of palm trees have been found of a considerable size, and in a horizontal position. Sage says, "The trunk of a tree agatised, which I found at Montmartre in 1778, serves to support my theory on the agatisation of vegetable substances. This trunk of a tree was 30 feet long and 9 inches in diameter; it was rather compressed, lying horizontally from north to south, and was at least 100 feet from the summit of the hill, between the two lowest beds of gypsum, of which the interior part was crystallized. The interstices of this agatised wood are ornamental, with little regular rock crystals of various colours; a part of this wood is brown and compact; this colour is owing to iron soil, principally of the woody substance."

In the same series of strata at Romainville have been found shells belonging to the genera *lymnea* and *planorbis*, and these appear not to differ in any respect from the species still existing in the marshes of France. Above these white marles are seen a great number of other strata of argillaceous and calcareous marle; the next is a small stratum of foliated marle, which, towards its lower surface, contains nodules of earthy sulphate of strontia, and a little above a thin layer. This stratum is remarkable on account of its considerable extent, combined with extraordinary thinness, and also because it serves as a limit to the fresh-water formation, and indicates the sudden commencement of a new marine formation, all the beds found beneath this formation being decidedly marine. This is succeeded by a stratum of greenish clayey marle, the four or five beds succeeding do not appear to contain any fossils, but covering these is a stratum



of yellowish clay marle, mixed with the fragments of shells belonging to the genera cerites, trochus, maetra, venus, cardium, &c., and the palate of a ray analogous to the sea eagle. Almost all the succeeding beds exhibit fossil sea shells, and the strata immediately below the clayey sand contains two pretty distinct oyster beds; this is succeeded by a stratum of whitish marle without shells, after which comes a second very thick oyster bed, but subdivided into several distinct beds, brown, smaller, and thinner than the preceding ones. The formation of gypsum is very often terminated by a mass of clayey sand without shells.

Of the animal remains found in the gypsum beds, Cuvier found the remains of three kinds of herbivorous animals approaching the nature of the rhinoceros, the hog, and the tapir.

The chemical character of gypsum is, generally speaking, the same in all the sub-species. It is almost infusible without addition, but the sparry gypsum undergoes partial decomposition under the blow-pipe. In a still more intense heat it appears to lose a great part of its sulphuric acid, fusing into a white glass, which soon falls into a white powder. It requires 500 times its weight of water to render it soluble, does not effervesce with acids, nor is it decomposed by any of them; it is dissolved on being boiled with fixed alkalies or barytes.

When converted into plaster, it is in considerable request for works of art, the coarser sorts are employed, with the admixture of common limestone, for cements. The gypsum which naturally contains carbonate of lime makes a very good cement, but that which contains clay and sands is of inferior quality. Gypsum is extensively used by the modeller, in scagliola, and for a variety of useful and ornamental purposes.

On the river Wolga, in Russia, the burning of gypsum constitutes one of the chief occupations of the peasantry. They calcine it on grates of wood, reduce the plaster to a powder, pass it through a sieve, and form it into small round cakes; in times of scarcity, they have mixed it with flour as an article of food, but its deleterious effects must be equally fatal as the famine itself; even the manufacturers of plaster of Paris suffer much from its pernicious effects.

The common way of burning this stone into marble is said to be too slight to give it all the hardness it is capable of. It is reported that a greater degree of heat renders it much superior in hardness; and, it is said, that the artificial marble, with which the whole palace of Munich is adorned, and which is esteemed more than marble, for which it is mistaken by all that see it, is made of the common gypsum, first burned in the ordinary way, and afterwards put on the fire again in a copper vessel, and suffered to boil as it will, like water, for a long time. When this boiling ceases of itself, the matter is taken out, and common colours such as are used in painting are mixed with it in various proportions, which on the wetting it with water and working it in the common manner of plaster of Paris, diffuse themselves, and imitate the veins of natural marble.

(To be continued.)

#### THE NEW SYSTEM OF LOCOMOTION PROPOSED BY M. ANDRAUD.

(Communicated to the French Academy of Science,  
on the 11th instant, by M. Arago.)

The system consists of a long flexible airtight tube, placed between the two rails on the whole length of the line. At the extremities of this tube are reservoirs filled with compressed air. A kind of flattening-mill is fixed at the head of the first carriage of the train, and the tube is pressed gently between the two rollers. This is the whole of his apparatus. When the train is to be set in motion, one of the reservoirs of compressed air is put into communication with the tube, which swells, and the air, meeting with the obstacle of the rollers, acts upon the mill, which performs the office of a piston, and the train is impelled with more or less rapidity, as the pressure upon the air is more or less violent, and according to the diameter of the tube. In this process there is, of course, no engine, and the carriages are carried with considerable rapidity up any moderate elevation, and can be made to ascend at a lower rate the highest hills.

#### THE NEW CLOCK OF STRASBURG.

WHAT brings the greatest number of strangers to Strasburg Cathedral is the clock. On Sundays and holidays, scores of country people sit on the flagged floor in front of this clock, waiting till the hour of noon shall set all its machinery in motion, and a notice is fixed to the walls, that they who go to see the clock shall depart by one particular door, to prevent confusion in the church. The present clock is new, and much more perfect than the old one, famous for many centuries, which may still be seen in a building near the cathedral.

The great clock of Strasburg consists of a tower, rising to an altitude of more than sixty feet, and flanked by two smaller towers, one of which contains a staircase, by which the different parts of the movement may be approached. The whole erection is inclosed by an iron railing. It is very handsomely decorated, and though the motions of the puppets are what attract the majority of visitors, we will first consider the scientific part of this machine, which is unique. The present astronomical clock was begun June 24, 1838, and was first set in motion on Sunday, October 2, 1842. Immediately in front of the clock is a celestial globe, rectified to the latitude of Strasburg, shewing, by its revolution, sidereal time, and the stars which are above the horizon at any moment. More than 5,000 stars are laid down on this globe. Behind the globe, and on the body of the clock, is a circle containing the calendar. A small statue of Apollo, on the right of this circle, points with an arrow to the actual day. A figure of Diana on the left corresponds to the former. The circle revolves on its axis, bringing a new day to the arrow of Apollo every twenty-four hours, and is so arranged as to shew not only the fixed feasts, but the moveable ones, and the intercalary day of leap-year. In the centre of this circle is a portion of a hemisphere of the terrestrial globe, shewing, by its revolution, apparent time. This division of the machine shews also the time of sunrise and sunset—true time—the true diurnal motion of the moon round the earth, or its true right ascension and time of southing—the phases and eclipses of the moon. As this circle is drawn within a square, triangular spaces are left, which are filled with figures emblematical of the four great monarchies. The clock also shews the year, the solar cycle, the golden number, the Roman indiction, the dominical letter, the epacts, and the feast of Easter. All the above indications are arranged for the period of 25,000 years. Above the circle of the calendar a very elegant contrivance shews the days of the week. Seven chariots, driven by the heathen gods to which the days were dedicated by the Romans, pass round in a circle, one only being visible at a time. The name of the day is written on the wheel of the chariot. Over this is an ordinary clock-dial, the machinery attached to which strikes the quarters, and turns an hour-glass at the end of every hour. Higher still is a planetarium, and still higher a moon, half silvered and half painted black, which, by revolving, shews the actual appearance of the moon at the time. A figure of death, armed with a scythe, stands in a recess above the moon, and at each quarter of an hour one of the personifications of the four ages of man passes before him, and strikes on a bell the requisite number of blows. Thus an infant strikes the first quarter, a youth (a hunter) the second, a man (a warrior) the third, an old man the fourth. These figures, in passing, move their arms and legs as if walking. The quarters are also struck by Death with the bone which he holds in his hand. The highest compartment is occupied by a figure of the Saviour, surrounded by his twelve apostles. Every day at noon, when death has sounded the hour, the apostles march round their master, each as he comes before him turning and making an inclination, as he receives the benediction; during this time a cock, placed on the summit of one of the smaller towers, crows, and claps his wings. There are several other figures, paintings, and decorations, which have not been mentioned here. The machinery of the clock is of a high degree of finish, and many of the contrivances are of beautiful simplicity. The whole is freely shewn and explained by an intelligent young man, who really understands

his subject, and does not parrot a monotonous drawl learned by rote, like the greater number of exhibitors. The name of the maker and contriver of this curious piece of mechanism is J. B. Schwilgue.—*Sketches in Rhineland.*

[The whole, with its admixture of science and trumpery, paganism and Christianity, forms perhaps one of the drollest compounds on earth.—*Ed.*]

#### ON THE CONSTRUCTION OF RIVER PIERS.

THE numerous, and frequently fatal, accidents which have occurred of late years at the different landing-places for steam-boat passengers, on the banks of the Thames, have at last drawn public attention to the necessity of enforcing strong discipline in the management of them, and of exercising some adequate control over their construction. The Navigation Committee have approached this subject with zeal and determination; and have had submitted to their attention many plans well calculated to meet this expanding evil. It will be, however, well to bear in mind that the subject has before now been allowed to repose from year to year; the diminution of traffic being too readily interpreted into a disappearance of the danger.

There are two ways of approaching this most desirable work of reformation: the one, by insisting authoritatively upon a satisfactory revision of the existing piers; by which, whatever tended to danger, or inconvenience, little short of danger, should be removed, and safety and accommodation secured to the passengers;—the other, by vesting the entire control of the piers, as to locality, structure, and repairs, in the hands of those members of the municipal authorities within whose duties it could most aptly be placed. To the latter of these plans it may be objected that limits would be thereby set to the enterprise of the individuals or companies engaged in the steam-boat traffic; that vested interests are involved to a large amount, which must suffer deeply by so restrictive a system. To this we may answer, that the public have no other concern in the matter than that of insuring their own safety and convenience, to which the pier proprietors seem to have been hitherto indifferent. So long as these two prime wants were attended to; so long as one could hope to set his foot upon the planks of the barges, or dummies, without the prospect of perforating them; so long as it was unnecessary for the hands to be called to the pumps every tide; so long as one felt secure that the contending advocates of rival boats would not make a drawn game of their struggle for patronage, by immersing their voyager in the mimic surge created by the impatient paddles; so long, perhaps, the public might be presumed to be contented with the rude attempts at accommodation which the landing-places of the most wealthy city in the world presented. But this inert security has passed away. Time and "certain politic rats" have gnawed away at the dummies—the hammer and nail knows no rest—the arm of the pumper waxes faint—mayors and aldermen rise on the judgment-seat, and pronounce emphatically that "something must be done."

This annual step having been made some months back, we were prepared to find that the customary slumber had come over the civic authorities. We were consequently gratified at perceiving in the papers at the beginning of October, an extract from a report of the Navigation Committee, in which it was stated that Mr. Walker had submitted a plan for erecting a pier at Blackfriars-bridge, available for the public service, at the moderate cost of 2,200l. Now, save that Blackfriars-bridge was recently the scene of a most fatal accident, we know of no ground of preference upon which it can be deemed imperative to expend the sum of 2,200l. upon its landing-place or pier. There are, between London-bridge and Westminster, at least ten piers; each of which, although not so distinguished by casualty, might put in claims to attention, upon some one or more of the grounds which we have just stated. Here then should be an outlay of 22,000l.; for at each landing-place it may be presumed the passengers have an equal right to protection. Is such an expenditure necessary? Has due caution been exercised in the selection of the proposed pier? We are assured by the report,



that other plans ranged in their estimated cost between 4,000*l.* and 10,000*l.* Of this, from our experience in estimates, we have no doubt. But looking to the nature of the traffic, to its fluctuating character, to the parties engaged in it, can we say that an expenditure of such magnitude out of the civic funds would be justified? Let it be borne in mind that the *low charge* is the great temptation to the use of these steam-boats; their functions depend upon it. The rise of one penny per head, would diminish their power of competing with the land conveyances to an enormous extent. And yet, unless some apitipation (the amount of which, if we may draw any inference from other corporation impost, would not be "unassignably small") be laid on, how is the great outlay to be repaid? We are not blind to the extremely inconvenient and dangerous state of many of these piers. We are thankful to the municipal authorities for their interposition; which would, notwithstanding, have been more worthy of our thanks had it been exerted at a much earlier period.

To return to the question of construction, proposed in the plans submitted to the Navigation Committee by Mr. Walker: we find that the least expensive (2,200*l.*), and, as would appear to be implied by the terms of the report, the most eligible on the ground of absence of ornament, is to be erected on "open piles," on the north-west side of "Blackfriars' bridge." We must confess that even the "not more necessary impediment" to the navigation of the river secured, by the promise of "water-way under the pier, in spaces of not less than 30 feet, with a head-way at high water of not less than 8 feet," will not wholly reconcile us to the defects of a structure which does not appear to have needed the sanction of so eminent a name as Walker.

We could have conceived the practicability of many plans, each at a very much less cost; but it is not our place to attempt to interfere with the decision of the Court of Aldermen, by distracting their attention from the plan submitted, by intruding any one of our own upon them. We have some before us which, hereafter, we may give to the public for the sake of contrasting them with the "Specimen of a Method for communicating between Steam-boats and the Shore," adopted by the Navigation Committee. It should be remembered, that whatever may be done under such sanction as that of the above committee or court, not only should be best in point of workmanship, but from their supreme authority should afford all the conveniences which unlimited choice of position can confer upon the plan. When we read, therefore, of "instructions to procure a plan for a pier from one of the piers of the bridge, or by a gallery outside the bridge," we can hardly concede our confidence to the plan, seeing the palpable inconveniences which would attend it, in respect of the precipitous descent of the stairs, or of the great projection into the river which will be inevitably necessary to avoid it. The plan laid before the Navigation Committee consists of two diverging flights of stairs, spreading over the arch, and descending from the level of the foot-way of the bridge upon two barges moored opposite the piers on each side of the staircase:—the barges projecting into the stream of the river, at least 120 feet. The descent by the stairs is broken about half-way by a platform, resting upon large buttresses, from which the descent is continued by a moveable fretted inclined plane, which is made to adapt itself to the rise and fall of the tide. The design is neat; but it is open to both the objections which we have urged above, as well as to others. For instance, the bastions, or buttresses, standing out about 10 or 12 feet from the piers of the bridge, will create an additional eddy, dangerous to the passage of smaller craft; and the whole projecting range of the pier will be liable to constant concussion from the swinging round of the inert and unwieldy vessels engaged in the carrying trade of the river.—*Polytechnic Journal.*

NEW BRIDGE AT BRISTOL.—Application is proposed to be made to Parliament in the ensuing session for the requisite powers to erect a new bridge at Bristol, to run from the parish of St. Mary, Redcliffe, over the Floating Harbour to the parish of St. Nicholas.

#### DESCRIPTION OF MR. BARRY'S IRON ROOFS FOR THE NEW HOUSES OF PARLIAMENT.

THE roofs are now in course of erection, and are as equally interesting to the engineer as to the architect, evincing at once the practical talent and the good judgment exercised in their design by the architect of this great national work. Of the superiority of iron over wood in the construction of roofs for buildings, the architects of the present day are becoming fully convinced, and the splendid example now set before them by Charles Barry, Esq., should at least induce all who have hitherto been indifferent to the advantages of this material in the essential qualifications of lightness, strength, durability, and safety in cases of fire, to examine the subject with all the attention it deserves, and the result may be looked for in the more rapid progress of the substitution of iron for wood in constructing the principals of roofs, especially when of large span. Not to the roofs only, but to the flooring joists of girders, the metal material is happily adapted also, where-ever resistance to fire, and great strength, with small section, are primary objects in their construction. Of those valuable properties the architect of this edifice has wisely and very fully availed himself; and he has, moreover, been, by this selection, enabled to offer facilities for carrying into complete effect the most complicated details of construction in flues, &c., required for the proposed system of ventilation for the extensive pile of building under his care. But beyond the use of iron in forming the principals of his roofs, Mr. Barry has ventured to a further step, of which those unacquainted with the experience that he is cognizant of might not fully understand the wisdom, but which is thoroughly approved by all practical and scientific persons who have examined the subject minutely. We refer to the covering of the roofs with cast-iron plates of a thin section, and galvanized by a process now admitted to present the best yet discovered means of protecting iron-work exposed to the air and weather from their otherwise injurious effects.

Upon the many substantial advantages thus attained, we are induced to state briefly the impressions we have received from an attentive examination, we might say most interesting study, of the roofs in question. The cast-iron plates, being cast of sufficient size to span the distance between each adjoining pair of principals, dispense with the necessity for any kind of boarding whatever, thus saving not only a great expense, but also diminishing the chances of damage by fire, which would, by destroying this boarding, leave the slates without sufficient support, thus making the whole roof liable to be broken in by their derangement, or, in the case of lead covering, the fire from the boarding communicated to the lead, would speedily reduce it to a liquid state, and create the most disastrous or fatal consequences. Again, the cast-iron plates allow the formation of ornamental rolls on the exterior, and parallel with the rafter, at the same time having vertical joints beneath these rolls, which, together with the horizontal joints, are so contrived as to be perfectly impervious to the admission of water—the architect being thus enabled to communicate an architectural character to the very roof, which cannot fail to be highly esteemed when seen in connection with the striking features of the masonry below, when the edifice is completed. And these rolls, it must be remembered, which in slate covering would be impracticable, and in lead liable to considerable distortion and injury, are, when formed in iron, and cast as parts of the plates themselves, not liable to injury by any ordinary means or circumstances, and will always retain their form, position, and imperviousness to wet and weather. To whatever purpose the spaces or rooms within the roofs may be applied—and these spaces must, from the high pitch of the roofs, be very valuable for many purposes—it is evident that uniformity of temperature will be highly desirable; and this will be attained, it is believed, to a much greater degree by an iron covering than by one of lead, slate, or any other material. The corners of each plate being firmly secured by screws and snugs to the rafters on which they lie, a greater degree of lateral strength and stiffness is attained than can be had with any other kind of covering; in fact, the whole

roof, principals, and covering become one piece of framework, well knit and secured together at all points by metal connections, so that the longitudinal tie-rods, which are introduced at the intermediate points, are very much lighter than would otherwise have been advisable, and yet are abundantly sufficient for their purpose. Much greater facilities are likewise offered by this description of covering for the attachment of ornamental dormer windows, which the architect has introduced for the purpose of lighting the rooms within the roofs, and which could not in any other material have been so neatly, durably, or safely constructed and attached to the covering. In point of durability merely, if lead be allowed a comparison with iron thus prepared and adopted, the latter must be pronounced the better material. As to weight, little or no difference can be stated; and regarding their comparative expense, it is believed, allowing fairly for all circumstances, the preference must be awarded to iron. Slate, of course, cannot sustain a comparison of durability, has little advantage in lightness, and not much in point of expense. But the many valuable peculiarities belonging to iron for the purposes required, and at some of which peculiarities we have above glanced, should be held thoroughly decisive as to its employment in the erection of an edifice of which not only the architect in the present age, but the nation for many centuries, should be justified in feeling proud.—*Weale's Quarterly Papers on Engineering. Part 5.*

#### INSTITUTION OF CIVIL ENGINEERS IN IRELAND.

ON Tuesday evening, the 12th instant, there was a meeting of the members of this society in the room of the Geological Society at the Custom House, Dublin. The chair was taken by Bernard Mullins, Esq.

It was understood that there were two papers to be read, one by Mr. Forsyth, "On the Construction and Use of the Diving Bell," and the other by Mr. Mallet, "On the Artificial Preparation of Turf;" but the secretary announced that in consequence of Mr. Forsyth's paper not having arrived, the one upon the preparation of turf would be the exclusive subject of the evening.

Mr. Mallet then read his paper, which first treated of the formation both of coal and turf, and by stating the different natural processes which take place in the formation of each, explained the advantages which the former possesses over the latter, as being a more available fuel and one of superior quality. The paper next referred to the process of carbonizing peat, and enumerated the attempts made to carry it into practical effect. The first was by a French chemist, named Lesage, in 1796, but whose mode of operation had proved to be defective, as the material produced was found to be subject to spontaneous combustion. It stated that from that time no attempt to carry out the object in question had been made upon a scale of any magnitude in this country until the year 1837, when a patent was taken out by a gentleman named Lynning, of Edinburgh, for the preparation of peat fuel. Mr. Mallet next came to the description of a kiln used of late years in Germany for the drying of peat, and which it appeared was subject to disadvantages in point of economy. In conclusion, Mr. Mallet described, with the aid of a model, a kiln of his own invention for the drying of peat, and having shown the advantages it possessed over those constructed by former experimenters, and adverted to the facility with which it might be profitably used in the boggy districts of the country, terminated by explaining the principle upon which a much greater quantity of good fuel could, by his kiln, be produced from a given quantity of peat, than was derived from the same quantity if used in the ordinary form in the working of a steam-engine.

The paper by Mr. Mallet met with the warm approbation of all present, and was ordered to be referred to the council, after which the meeting adjourned.

GLoucestershire ARchaeological ASSOCIATION.—A society in immediate connection with the British Association of London is about to be formed in Cheltenham for the purpose of preserving and illustrating the archaeological remains of the county of Gloucester.



TERRACE-STEPS AND PARAPETS,  
IN THE ANCIENT GARDEN OF GREAT CAMPDEN-HOUSE, KENSINGTON.



PERSPECTIVE VIEW.

TO THE EDITOR OF THE BUILDER.

SIR,—It is rather singular that out of the very few remaining gardens of James the First's reign to be seen in England, one specimen is to be found so near London as Kensington. The above view will prove that what does remain on the spot is well worth inspecting; this view represents the steps leading from a shaded walk by the side of what was formerly the bowling-green, to a raised terrace, which communicates at one end with the curious long gallery of the building, while at the other are the remains of a summer-house. The terrace is of considerable length, about eleven feet wide, and raised five feet six inches above the general level of the ground. It is situate in the old garden of Campden House, Kensington, built about the year 1612, by Sir Baptist Hickes, the eminent mercer.

The interior of the house is extremely curious, many of the rooms being lined with richly-carved woodwork, and nearly all the ceilings are ornamented. The arms of Sir Baptist Hickes with those of his sons-in-

law, Edward Lord Noel and Sir Charles Morrison, are in the large bay-windows in front of the mansion. Numerous celebrated individuals have lived and died in the house, which is one of the most interesting of the period to be found in the neighbourhood of London.

In 1691 it was hired of the Noel family by Queen Anne, then Princess of Denmark, who resided there about five years with her son the Duke of Gloucester. In 1705 the mansion was in the occupation of the Countess Dowager of Burlington, and her son, the earl, who proved afterwards a very accomplished nobleman, and a great patron of the fine arts. Some years afterwards Campden-house was sold to Nicholas Lechmere, an eminent lawyer, who became attorney-general, chancellor of the Duchy of Lancaster, and ultimately, in 1721, a peer of the realm.\*

A few years ago, the front of the building was much altered, the balustrades in the

upper part were removed, and the front covered with stucco. Lysons gives an elevation of it as it appeared in its original state. It is now occupied by Mrs. Teed, and is one of the largest boarding-schools for young ladies in England. I was very kindly permitted to make sketches there about six years since.

The small details I have added will explain better than any description the very ingenious design of the balustrade, and the effect of the whole is, as may be supposed, extremely good.

I am, Sir, &c.,

C. J. RICHARDSON.

22, Brompton Crescent.

Sir John Guise, whereupon Swift wrote his ballad, entitled "Duke upon Duke," from which the following is extracted:—

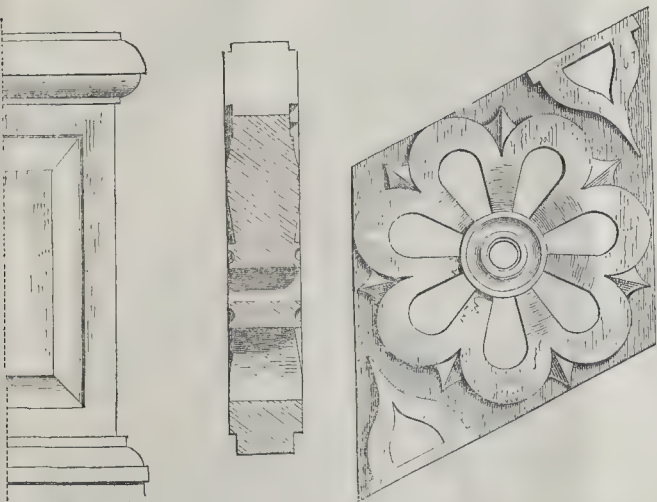
"Back in the dark, by Brompton-park,  
He turned up thro' the Gore,  
So slunk to Campden House so high,  
All in his coach and four,  
The Duke in wrath called for his steeds,  
And fiercely drove them on:  
Lord! Lord! how rattled then thy stones,  
O! kindly Kensington!"

Swift's Works (Edit. 1742), Vol. IV., p. 109.

\* During Lord Lechmere's residence at Campden House, a most serious quarrel took place between his lordship and



DETAILS OF THE PARAPETS.



*Elevation of the pedestal.*

Section of the open  
parapet.

*Elevation of part of the  
open parapet.*

## TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLLSON.

(Continued from p. 569.)

139. **HORNBEAM.**—This tree is indigenous to England, abounding throughout Essex, Kent, and Norfolk, and is also common in the north midland counties, Lancashire and Wales; further southward it becomes scarce, and can hardly be deemed indigenous to Scotland. It is best known as an underwood or hedge-plant, but in favourable situations and a congenial soil, it is known to attain a girth of 6 or 8, and height of 40 or 50 feet. In exposed situations it will thrive where some other forest trees would dwindle away, or be of stunted growth: poor clayey soils, lying on sand or chalky gravel, are the most conducive to its growth. It is considered useful for forming screens or boundaries in gardens. In appearance it much resembles the beech, but with the head still closer and more rounded; it is of a scrubbed and tortuous growth, unless it has some pruning bestowed upon it when young; when of mature growth, it presents a trunk apparently composed of several stems twisted and grown together. Its leaves are pointed and doubly serrated, resembling those of the elm, and wanting that beautiful gloss which appears on beech leaves; before being fully expanded, they are folded delicately together, with a regular, plaited appearance; they continue attached to the boughs, and affording shelter when vegetation has long ceased. The tree is propagated by the keys or seeds which are small nuts, sown in autumn; of these, plenty are produced every year by old trees.

140. The wood is remarkably hard, tough, and durable, though but slightly flexible. It is used in making mill-clogs, and other parts of machinery, the heads of beetles, stocks, yokes, tool-handles, &c.; and is also invaluable to the plough-maker and the cartwright. It is excellent for fuel, burning long with a clear, bright flame, and affording much heat; it also makes good charcoal, and furnishes good potash.

141. Having now concluded our review of those trees which, in an early stage of this essay, we selected as most imperatively demanding our attention, and led perhaps, in some instances, by the attractive nature of our subject to be more diffuse than some readers might deem altogether warrantable, we should, however, not do justice to this division of it did we dismiss it without first making note of some of those illustrious examples which are scattered abroad, in our own island and elsewhere, testifying at once the capabilities of their several species,

and forming, with the venerable remains of  
medieval art, links whereby we may connect  
past ages with the present. The circumstances  
in these patriarchs of the vegetable world  
which we esteem, and to which we propose to  
call attention as remarkable, are longevity, girth,  
stature, spread, and historical associations.

142. *Herne's Oak*, Windsor.

" There is an old tale goes, that Herne the Hunter,  
Sometime a keeper here in Windsor Forest,  
Doth all the winter time, at still midnight,  
Walk round about an oak, with great ragged  
horns.

And there he blasts the tree.

—There want not many that do fear

In deep of night to walk by this Herne's oak."

It stands close to an avenue of elms, in following the foot-path which leads from the Windsor road to Queen Adelaide's Lodge, in the Little Park; notwithstanding a story prevalent about its having been destroyed fifty years ago by George III, this is believed to be the tree: it is now dead. A little further to the left is a fine old pollard, measuring 27 feet round the middle of the trunk.

143. *Damory's Oak* stood not far from Blandford, Dorsetshire, and was probably five or six centuries ago in its maturity. During the civil wars, and till after the Restoration, the cavity of its decayed trunk, which was capable of holding twenty men, was inhabited by an old man, who sold ale in it; at the ground its circumference was 68 feet, and 17 feet above, its diameter was 4 yards. In the violent storm of 1703 it suffered greatly, many of its noblest limbs being torn from it. In 1755 it was cut down and sold for firewood.

144. *The Cowthorpe Oak*, near Wetherby, in Yorkshire, is one of the most gigantic and venerable trees of its species. The late Dr. Hunter says of this celebrated tree, "the dimensions are almost incredible. Within 3 feet of the ground it measures 16 yards, and close to the ground 26 yards. Its height in its present ruinous state (1776) is almost 85 feet, and its principal limb extends 16 yards from the bole." It was the same in 1835.

145. *The Fairlop Oak*, a noble tree, stood in a glade in the Forest of Hainault, in Essex, about a mile from Barkingside; it was cut down not very many years since, and is traced by tradition half-way up to the Christian era. About a yard from the ground, where its stem measured 36 feet in circumference, it divided into eleven vast arms, more in the manner of the beech than of the oak. Its shade overspread an area of 300 feet in circuit; and here an annual fair was long held on the 2nd of

July, no booth of which was suffered to be erected beyond the extent of its boughs. The pulpit, and some other parts of the furniture of St. Pancras' Church, Euston-square, are veneered with the rich and beautifully mottled wood of this ancient tree.

146. *Elizabeth's Oak*, which grew at Heveningham, in Suffolk, and is mentioned by Gilpin was of great dimensions, but in the time of that writer was greatly decayed. In Queen Elizabeth's time it was hollow, to which circumstance it was indebted for the honour of acquiring the name it bore: the queen used often in her youth to take her stand in it to shoot the deer as they passed.

147. *The Queen's Oak*, at Huntingfield, in the same county, about two bow-shots from the Hall, is that under which Elizabeth used to take her station to shoot the deer, tradition stating that from it she shot a buck with her own hand. It thickens upwards, and measures at 7 feet from the ground, 33 feet in girth: it is bold and picturesque, although considerably shortened by age and accidents.

148. *The Duke's Walking-stick* is another oak at Huntingfield, rising to the height of 111 feet, and girding 20 feet at the ground.

149. *The Skelton Oak* stands about a mile and a half from Shrewsbury, at the point where the Poole road diverges from that leading to Oswestry: near it the famous battle between Henry IV. and Hotspur was fought, 21st of June, 1403, and from it the celebrated Welsh hero Owen Glendower made his observations prior to the engagement. Its hollow trunk will contain about a dozen people; it is 37 feet in circumference at a foot and a half from the ground, and parts into two enormous limbs.

150. *The Shire Oak*, near Worksop, so honourably distinguished in name, and shewn in all the larger maps of England, from its standing on a spot where the counties of York, Derby, and Nottingham join, was one of the largest in the kingdom, and equalled by few in point of grandeur. It spreads its shade over a portion of each of these counties, extending 90 feet from the extremities of opposite boughs, being computed to cover an area of 707 square yards, and to be capable of covering a squadron of 235 horse.

## DUNDEE PUBLIC BATHS.

THE following gratifying letter, announcing a handsome subscription by Her Majesty and Prince Albert, has been received by the secretary :—

"Rossie Priory, Inchtute, Nov. 8, 1844.

"Sir,—I have much pleasure in informing you that I have received a letter from Mr. Anson, stating that her Majesty and Prince Albert, having heard of the proposed erection of public baths for the working classes in Dundee, have signified their intention through him of contributing 100*l.* to the building fund. Mr. Anson moreover states that her Majesty and his Royal Highness have only hitherto contributed to the public bath funds of the metropolis, but make an exception in favour of Dundee, in consequence of their having so lately landed there. I am sure that this spontaneous donation on the part of her Majesty and his Royal Highness, shewing as it does that the orderly conduct of the people on that occasion was fully appreciated, will call forth the gratitude of those for whose benefit it has been contributed.

"I remain, Sir, your obedient servant,  
"Mr. John Irvine, "KINNAIRD.  
High-street, Dundee."

### PARTIAL DESTRUCTION OF DYSART HAR-

BOUR.—The extreme point of the pier here was partially demolished on Saturday last by the sea, in consequence of the severe easterly gale which continued during the greater part of last week. The harbour has sustained a considerable amount of damage by the gale. The fair way is half shut up by a large mass of broken fragments of stone and rubbish, which it will require considerable expense and labour to remove. The reconstruction of the pier will be an herculean task—too great, we fear, for the funds of the burgh; although other ways and means may not be wanting in such an exigency to accomplish so necessary an undertaking.—*Edinburgh Journal*.



# PROPOSED METROPOLITAN CLUB-HOUSES AND DORMITORIES FOR THE USE OF THE POOR.

Mr. D. O. Edwards, a respectable surgeon residing in Chelsea, one of the surgeons of the West London Institute for the gratuitous treatment of the diseases of the eyes, has published, in a letter addressed to L. T. Flood, Esq., deputy-lieutenant of the county of Middlesex, a plan for establishing a subscription hotel in the most suitable part of the metropolis, as an "improved method of insuring to the lower ranks of the people a due supply of food." Mr. Edwards appeals especially to the inhabitants of Chelsea, where he says he should like to see "the first seeds of the scheme sown." The mess-house is proposed to be capacious, suitable, and durable; to contain a suite of dining-rooms of ample dimensions, with the necessary offices and collateral apartments. A steward, contractor, or messman, who will undertake to supply a given number of rations daily at a given rate per head, to be appointed. Having carefully calculated the quantity and cost of the aliment necessary to maintain the human frame at all ages in perfect health, Mr. Edwards says he is of opinion that a club or society of 300 boarders, consisting of six classes, viz. single males, single females, married couples, youths of both sexes from twelve to sixteen years of age, children from six to twelve, and infants from birth to six years old, may be fed at rates descending from 5s. to 1s. 6d. per week. In considering these tables, observes the author, it should be recollected, that where several persons mess together with varying appetites, the excess of one ration over appetite compensates the deficiency of another, and thus an average is attained. The total weekly cost of 300 diets of the kind and quality Mr. Edwards enumerates in his table, he estimates at 34l. 17s. 4d., whilst the subscriptions, according to his scale, will amount to 44l. 12s. 6d., leaving a balance in favour of the treasury of 9l. 15s. 2d., applicable to the payment of rent, steward's, and servants' wages. We purpose giving at a future opportunity some further extracts from this proposition.

# DISCOVERY OF A ROMAN TEMPLE AND OTHER BUILDINGS NEAR WEYMOUTH.

At a late meeting of the Ashmolean Society, Dr. Buckland gave a detailed account of the remains of many Roman buildings discovered recently by Mr. Medhurst, near Weymouth. The neighbourhood abounds with vestiges of Roman occupation. The large military station and Roman walls, Roman camp, and amphitheatre, at Dorchester, contiguous to the gigantic British Triple Camp of Maiden Castle, are well known. The situation of Weymouth Bay and Weymouth Harbour, close to the sheltered road of the Isle of Portland (Vindelis), and the distance of Dorchester from any other port, must have rendered Weymouth a most convenient and necessary naval station during the residence of the Romans in Dorsetshire. The nearest rising grounds on the north-west and north-east of Weymouth are strewn with fragments of Roman buildings, tesserae, bricks, pottery, and tiles, and small Roman copper coins. A large handsome Roman pavement was laid open, and covered up again by King George III.; and Mr. Medhurst has recently discovered the foundations of several villas, of a Roman temple, and of a Roman road. Dr. Buckland supposes these villas to have been occupied by the families of Roman officers or civilians connected with their great military establishment at Dorchester. The most remarkable discoveries made by Mr. Medhurst in 1843, and visited in October last by Dr. Buckland and Mr. Conybeare, were the foundations of a temple on the summit of Jordanhill, and of a villa, a quarter of a mile distant, in the meadow between this hill and the village of Preston.

The temple appears to have consisted of a cella 24 feet square, surrounded by a peristyle, the walls of which inclosed an area 110 feet square. In the earth which occupies this peristyle Mr. Medhurst found more than four sacks of bones, and many horns (chiefly of young bulls), also many Roman coins, fragments of Roman pottery, cement, &c. Near the centre of the south wall were the foundations of steps, indicating the ascent to the door

of entrance, and four feet in advance of this wall are the foundations of four small columns. A layer of cement, which probably supported a pavement that has been removed, occupies the interval between these pillars and the foundation of the south front wall. Within the temple, in the south corner, was a dry well 14 feet deep, that had been filled in a very curious and unexamined manner. It was daubed all round with a lining or pargeting of clay, in which were set edgewise (like Dutch tiles round a fireplace) a layer of old stone tiles, which, from their peg-holes, appear to have been used or prepared for use on roofs of houses; at the bottom of the well, on a substratum of clay, was a kind of cist formed by two oblong stones, and in this cist were two small Roman urns, a broad iron sword, 21 inches long, an iron spear-head, an iron knife and steel-yard, two long irons resembling tools used by turners, an iron crook, an iron handle of a bucket, &c., but no bones. Next above this cist was a stratum of thick stone tiles, like those which lined the well, and upon it a bed of ashes and charcoal; above these ashes was a double layer of stone tiles arranged in pairs, and between each pair was the skeleton of one bird, with one small Roman coin; above the upper tier of tiles was another tier of ashes. Similar beds of ashes alternating with double tiers of tiles (each pair of which inclosed the skeleton of one bird and one copper coin) were repeated sixteen times between the top and bottom of the well; and half-way down was a cist containing an iron sword and spear-head, and urns like those in the cist at the bottom of the well. The birds were the raven, crow, buzzard, and starling; there were also bones of a hare.

Dr. Buckland conjectures that this building may have been a Temple of Esculapius, which received the votive offerings of the Roman families and invalids who visited Weymouth for sea-bathing and for health, the bones of young bulls found in the peristyle being those of the victims offered in ordinary sacrifice, while the smaller birds, whose bones are found so remarkably arranged in the well, may have been the votive offerings presented by those who received their cure from sea-air and sea-bathing, and possibly from the mineral waters of Radipole and Nottingham, all in the salubrious vicinity of a temple which there is such professional reason for supposing to have been dedicated to Esculapius.—*Oxford Herald*.

**PROPOSED ALTERATIONS IN GREENWICH PARK.**—Some months ago the Commissioners of Woods and Forests took it into their heads that a reservoir on the highest part of Greenwich-park would add much to the security of the Hospital in case of fire, to the beauty of the park, and the comfort of the inhabitants. The inhabitants, however, influenced as some people would say by local prejudices, took a very different view of the question; they looked upon the reservoir as likely to be a huge pond of water, filled with decayed leaves, and inclosed in unsightly walls of earth. The result was, that by dint of several public meetings, a good many speeches, and a quantity of ink spilt, the commissioners were induced to review their decision, the reservoir stopped, and the park was saved this degradation. Now a more formidable opponent has entered the field. Among the various schemes in existence are some for carrying a railway through the park from side to side, completely destroying its symmetry, and rendering it in a great measure useless as a place of relaxation for the labouring classes. It is unnecessary to say any thing on the hardship of spoiling one of the few green spots allowed to remain near London, and it is to be hoped that this project will not be allowed to pass through Parliament without a few words of remonstrance from some patriotic member.—*Times*.

**IMPROVEMENT OF THE HULL PIER.**—We understand that Mr. Simpson, joiner, of this town, has prepared a model of the pier, with safety railings, so ingeniously contrived as to be lowered in portions at a moment's warning, for the accommodation of vessels. If all we hear of this clever device be true, the inventor will most heartily deserve the thanks of his townsmen. The model, we learn, is to be submitted to some of the influential gentlemen of Hull during the week, and we shall in all probability call attention to it again in our next publication.—*Hull Packet*.

# Correspondence.

## NEW CHURCH OF ST. THOMAS, WINCHESTER.

### ARCHITECTURAL COMPETITION.

To the Editor of "The Builder."

SIR,—I inclose you a letter which it has been deemed necessary to address to the editor of the *Hampshire Advertiser*. It is in reply to one of your correspondents, whose letter (conveying serious charges against the Committee for Rebuilding the Church of St. Thomas in this city) had been transferred into the columns of that paper.

I presume that your sense of justice will induce you to lay before your readers this refutation of the charges which you were the means of promulgating.—I am, Sir, your obedient servant,

ONE OF THE BUILDING COMMITTEE.  
Winchester, November 18, 1844.

"THE NEW CHURCH OF ST. THOMAS, WINCHESTER.  
"To the Editor of the *Hampshire Advertiser*."

"SIR,—The insertion in your paper last week of a letter which had previously appeared in *THE BUILDER*, reflecting on the Committee appointed to rebuild the Church of St. Thomas in this city, & calculated to do injury to the good cause in which they are engaged.

"So long as the reflections on their conduct were confined to the pages of a publication but little known or read by those who are interested in our local affairs, they might safely be left unnoticed; but since you have afforded them the extensive circulation which your paper enjoys, it becomes necessary to check the mischief which they are calculated to produce. I beg, therefore, as no meeting of the committee has since been held, to give, on my individual responsibility, the fullest contradiction to certain allegations contained in the aforesaid letter.

"It is not true that the architect whose plan has been selected by the committee now shrinks from confirming what he led them at first to believe respecting the probable expense of carrying out his design.

"It is also untrue that he was allowed to carry away his drawings, to reduce the design within the sum originally stipulated, which would have justly laid the committee open to a charge of unfairness towards his competitors. He was, indeed, requested to furnish them with some additional drawings, to illustrate certain suggested alterations in the plan, and to make estimates of the expense of carrying out such alterations. In that, surely, there was nothing which could be justly complained of, since it is quite certain that not one of the designs presented to the committee would have been approved of by them without alteration.

"The fact is, that the committee have given offence to certain persons interested in the success of particular architects, whose plans have not been adopted. In a competition invited by public advertisement, they have selected, purely on account of its merits, the design of a person previously altogether unknown to them, and in favour of whom no impure motive can possibly be imputed to them. For doing so, they will doubtless receive no condemnation from an unbiassed public, which, it is trusted, will not be deterred by such groundless assertions as those of *THE BUILDER*'s correspondent, from aiding them in the accomplishment of their pious purpose.

"I ask you, in justice, to give insertion to this, and I furnish you with my name, in order that you may be satisfied I am truly

"ONE OF THE BUILDING COMMITTEE.  
"Winchester, November 14th, 1844."

[We think enough correspondence relative to this paltry church-business has been already inserted in *THE BUILDER*. The meanness of the premium, the unjust lure to unemployed young men to make away with a portion of their property or that of their friends in an almost causeless journey, the incompetence of the tribunal,—all remain. The whole system is a pest to society, and causes the waste of money, sets unchristianly at loggerheads the whole body of subscribers, committee, friends, and professionals, local and foreign; and almost invariably insures the production of architecture unsound in taste and construction. Such competitions violate peace, piety, prudence, and bring to their victims pain, poverty, and privation.—Ed.]

SIR,—Much has lately been written in your paper against architectural competition; it is but fair that some few words should be said in favour of it.

When conducted in a fair and honourable manner, I consider that much good would arise



from it. The young enthusiastic architect would by his exertions and abilities raise himself to honour in his profession, as many have done in days gone by. Bramante was the successful competitor against Giuliano di San Gallo and others, for the church of St. Peter, at Rome; Giovanni da Ponte against Palladio and Scamozzi, for the Rialto Bridge, at Venice; and should we not find splendid and noble ideas in the mind of the aspiring architect of the present day, if his talents were called into requisition; shewing that, in competition, he who submitted the best and most appropriate design, would have the honour of erecting the same, and calling forth the praises of this and future generations, all at bestow upon the magnificent works of the scandalously so-called dark ages.

It enlightened committees of the present day be entirely destitute of justice and fairness, let them depute some impartial architect who would not degrade himself by selecting any other than the best design: some encouragement would then be given to the "young aspirant," and much more good would arise to the profession, than entirely "putting down" architectural competition.

Trusting you will find room for these few remarks, I remain, your obedient servant,  
T.  
London, Nov. 18, 1844.

[We are glad our correspondent has sent the above communication, which, we think, will tend to strengthen the abhorrence felt by many against the false system of architectural competition. We believe it is pretty generally admitted, in the instances mentioned by our correspondent, corrupt architecture supplanted the more pure, and occasioned the superior artist to give place to the inferior.—Ed.]

#### BUILDING COMPETITION AND UNPROFESSIONAL JUDGES.

SIR,—There are so many atrocities committed upon the building community, that I think it incumbent upon its members to publish the most glaring acts of injustice that are perpetrated upon them. By pursuing this course some good may be gained. For when sapient committees formed by unprofessional men, parish boards, and the like, find that their ignorance and unfairness may escape beyond the limits of their court-house, or vestry-room, it is probable that fear of exposure, if no worthier motive, may keep their acts within the bounds of toleration.

In your notices of contracts of the 9th inst., there appeared one for "erecting a foot-bridge over the old river at Temple Mills," in St. John's parish, Hackney. Feeling disposed to contract for the work, I obtained the necessary particulars, and attended at the appointed time with my tender, and as the terms required that persons tendering should wait personally upon the Board of Surveyors of Highways, I remained to hear the result. After staying about an hour, the competitors were called in, expecting of course to hear the different amounts, and the selected tender declared, but to our utter astonishment and annoyance we were coolly informed by the chairman that the estimates were so far above what they considered the value of the work, that they had come to the decision of not having it done at all; and this decision was made with the proposed surveyor of the works at their elbow, and he, too, the son of a builder, as I understand, brought up in the business.

I beg to furnish you with the amount of my tender, and also the quantities in the work; you will perceive it is a trumphy and insignificant affair, and scarcely worth the trouble of this communication, but it is sufficient to illustrate the system I complain of, and will shew my fellow tradesmen what a doubtful sort of thing is a "Hackney Board of Highway Surveyors," so that in the event of there being any more work advertised for public competition, they may not be so misled as to suppose it will be carried into execution:—

The tender was 194*l*. The quantities are as follow:—

25 ft. 1 ft. by 1 ft. Riga piles, sawn all  
100 ft. cube round, and driven from a  
barge .. ..  
Drawing eight piles, forming part of the old  
bridge .. ..  
1½ rods stock brickwork in cement ..  
45 ft. run 1 ft. 2 in. by 9 in. granite  
coping .. ..

264 ft. cube Memel fir in cambered ribs,  
braces, &c. .. ..  
500 ft. superficial 2½ in. English oak battens,  
laid and ends rounded .. ..  
12 ft. 6 in. cube oak .. ..  
16 ft. in No. 8 oak posts .. ..  
2 tons 1 cwt. wrought-iron in bolts, plates,  
spikes, pile, shoes, railing, &c., principal  
part to be galvanized .. ..  
Painting rails and tarring under side of  
bridge .. ..  
Expense of getting a barge to the work,  
and hire of do., the river not being  
regularly navigable .. ..  
Taking down old bridge, the materials not  
worth removing .. ..

Now, at this time of the year, the marshes are generally flooded, the water in the old river is very high, and the current very rapid: at the time of inspecting the position of the bridge, the adjoining farms and lands were inundated. This and the out-of-the-way situation of the work must be taken into consideration, and then I submit to you and your readers whether the tender is unreasonable?

I do not pretend to know what this Board of Surveyors of Highways consists of, perhaps the genus of a Telford, or a Walker may exist in as yet undiscovered brilliancy amongst its members, or perhaps the retail acuteness of a grocer or a tallow-chandler may be the ground-work of their professional reputation; but this I do know that the aforesaid Board had a surveyor, who most likely made an estimate of the work previous to its being advertised, and who ought to have known that the tenders were not more than the work was worth. If the surveyor did make an estimate he has misled the Board, and if he did not, the Board had no right to reject the contracts until their correctness had been ascertained.

Under any circumstances I defy it to be proved that the tenders were exorbitant, the case is therefore one of unfairness, indiscretion, and hardship, and one deserving, through the medium of your columns, to be exposed.—I am, Sir, your obedient servant,

JAMES KNIGHT.

Limhouse, November 20th.

#### TUDOR ARCHES.

SIR,—“T. L.” has shifted his ground from the “Croydon Doorway” to “Groins,” and concluded his observations with stating that “an arch struck from four centres may have points of preference over elliptical or parabolic curves,” but to what other true curves his “may have” is applicable, your readers must conjecture. Cannot “T. L.” or any other of your correspondents assign a better reason than a “may have” for architects and builders remaining ignorant of the most beautiful forms, which can be described by simple continuous motion with much more ease than by any approximate method?

I suppose, however, that although “T. L.’s” letter follows mine, he may not have seen the contents of your No. 91 before his observations were written. Be this as it may, I can assure him that the lines for arches in the first and second examples are neither elliptical nor parabolic; and I must beg to differ from him in the statement he makes, in the particular instance alluded to, that the patch-work line delineated from the double centres can correctly represent an elliptical line, and much less those I have shewn. In the example No. 11, a gradation from acute to depressed (to use “T. L.’s” own words) is shewn. By the same means, more acute and more depressed, to any degree, may be drawn by simple continuous motion for any purpose in architecture. I have shewn that this principle is applicable for drawing a Tudor arch through three given points.

In reference to “Groins,” I beg to refer to the 38th volume of the “Transactions of the Society of Arts,” &c. (published in 1821), for my observations and designs for their construction, shewing the true principles for producing true intersections, and some variety for the “play of light and shade,” which even the Goths had not arrived at; but had they done so, such examples would have been pointed out for imitation. It will then be seen that the Goths in their first groins did not know how to produce true intersections of the ribs (mouldings of the ribs) at the springing, but that at a later period they did so, when a very great change in their designs was effected, which produced that pleasing effect so much admired.

Although they went far in truth, there is room for going farther, and producing still more perfect examples.

True curves and true intersections must in all cases, when understood, be easier of execution and produce more pleasing effects than any patchwork approximations. It will be time enough for me to say more when “T. L.” or some other architect or builder who thinks with him, has pointed out a few examples where imperfect lines “may have points of preference” to true curves. I would beg to suggest that any examples for reference would be best in town, and if to arches in public buildings now executing, so much the better.

Not having seen Professor “Willis’s” paper, I do not know whether any of his ideas correspond with what I discovered more than thirty years ago, and which, as I have stated, was published by the Society of Arts, &c., more than twenty-three years since. Should you deem my communication to the Society of Arts worthy of your pages, I may possibly add something more, which from more experience and consideration I may be able to do, although I am not aware of any thing in the description and drawings then given that I now wish to have altered. JOSEPH JOPLING.

29, Wimpole-street, 15th Nov. 1844.

#### “HASSOCK” SANDSTONE.

SIR,—The introduction of a sandstone, from the neighbourhood of Maidstone (provincially called “Hassock”), for inside walling of churches, &c., has induced me to address the following description of it to you.

It is found in all the quarries of Kentish ragstone, alternating in layers with the hard blue limestone, used for building, paving, &c. &c. It is of various thicknesses and texture, from a soft crumbling loose sand to a firm and tolerably hard freestone, which will take a good face, and, if dried before use, stand exposure to weather, as the surface becomes indurated in a few years, and will then resist the action of the elements.

In the Iquanodon Quarry, layers are found nearly three feet in thickness, and are very similar to the beds of upper green sand dug at Ventnor, in the Isle of Wight; in fact, it is a freestone, and appears to make up for absence of upper green sand about Maidstone. I have faced a wharf with it, which has stood the action of frost for three years, and shews but very slight indication of injury from so powerful an agent of destruction. It has been used for foundation-walls in this neighbourhood for many years, and is a most excellent material for that purpose, as the cost is so much less than brick, and it is equally durable. A great quantity is used for “hearth-stones,” and probably the term “Hassock” was given to it from that cause.—Yours, &c., W. H. BENSTED.

[The “Hassock” is not only found in layers, but is also very frequently attached to the ragstone, and from not being completely dressed away, generally forms those portions of blocks which seemingly decay rapidly: close examination, however, will generally prove that the loose “Hassock” only has fallen away, leaving the ragstone undecayed.—Ed.]

#### THE NEW ROYAL EXCHANGE.

SIR,—Allow me to tell your correspondent “Scrutator” that he is altogether mistaken in fancying the remarks on the Royal Exchange, which appeared in *The Herald*, to have been dictated by favouritism in behalf of the architect. I have no reason to entertain any partiality for Mr. Tite, nor do I seek to ingratiate myself with him. I do not even know whether he has seen the remarks; or if he has, he does not know by whom they were written.

I admit that the article touches upon only comparatively few points of criticism; but for that it may be some excuse to say that it was written off-hand for the occasion, without any time being allowed me, and that it was required of me to make it as popular in tone and as free from technicalities as possible. Besides all which, it was necessary that it should not appear to contradict what had been said in the same paper but a few days before on the subject of the building. Yet it must not therefore be imagined that I spoke contrary to my opinion; that I was equally ready to condemn or approve, as might be required of



me. More minute examination of the whole structure than I have yet had the opportunity of making, and to judge of its anatomy, plans, and sections, would be requisite, and may probably induce me to qualify some of my observations, which were intended to be, and no doubt have been received, as chiefly expressing general impressions.

"Scrutator" himself is not altogether impartial; he seems disposed to decry the building, and is evidently no admirer of its general style. As to the portico, if he considers that of the London University to be superior, I will not quarrel with him on that score, being quite as much disposed to admire it as himself. Both, I should say, are admirable of their kind; and there are beauties in that of the Exchange which the other does not possess, and *vice versa*. I did not argue from it any thing as to "the superior genius of Mr. Tite," for what he has there done might have been done again and again before, did they ever think of introducing inner columns. That you yourself consider them highly conducive to effect is apparent from what you say in a note respecting those in the small composition at the west angle of the Bank.

At all events, "Scrutator" has made one mistake; one of no moment otherwise than as it attributes to one publication what belongs to another, and may lead persons to suppose that it was the *Athenæum*, instead of the *Westminster Review*, which attacked Mr. Tite's design so severely.—I remain, Sir,

Yours, &c.,

THE WRITER IN THE MORNING HERALD.

#### VAULT DESTROYED BY PLACING BRICKS THEREON.

SIR,—I hope you will excuse me while asking you a question; I do so, believing that you are always willing to communicate information relating to the law of building in all its details.

I and another person purchased two carcasses of houses in July last, we having nearly finished ours, and had the paving done by the parish; but last week a man from the other side of the road, placed some bricks on the paving in front of one of the houses without my consent; the consequence was that, an excavation being made some time since, without a vault or any shores being placed against the last wall of the vault of my house, the abutment gave way, and in came the arch of the vault, and also the paving. The wall has stood since July; it was 14 in. thick, built in cement, but still gave way in one mass. This, doubtless, would not have occurred had the bricks not been placed there; neither do I believe the vault could have gone in without the abutment giving way. The person who placed the bricks there is willing to bear half the expense, but the other refuses to be any thing towards putting it up again, and I can ill afford to do so, as it is almost out of my power, being but a journeyman carpenter, and having had some difficulty in finishing it thus far.

Your experience will perhaps enable you to tell me how to act in this case, and you will greatly oblige a working man.—Yours respectfully,

November 18, 1844.

[We suppose, as far as we can judge from the circumstances, as described, that the placing of the bricks upon the public paving was a public offence, and is punishable, and also that the offender ought fully to make good the damage.—Ed.]

#### NEW METROPOLITAN BUILDING-ACT.

SIR,—Though no builder, I have nevertheless taken in, for the last three months regularly, your very interesting and useful work *THE BUILDER*, till it has almost made me one; at all events, I think of building myself a six-roomed house before the new Act comes in force; but my means being very limited just now, I would rather defer it till after January, as I shall be then prepared more for the undertaking. But there are so many opinions about the new Act, even amongst builders themselves, some saying one thing, some another, that I scarcely know which to believe; however, I have purchased the Act as printed and published by you. To set all doubts at rest on my part, and as I am a poor man, I will consider it a lasting favour, if you will be kind enough to inform

me in your next whether old bricks by the new Act are prohibited to be used in dwelling-houses; I see nothing mentioned of it in your version of the Act; and if it is so, it appears to me an absurdity, for it is well known that many of the old bricks are infinitely better than half of what are at the present day called new stocks. Besides, when old houses are to be sold or pulled down, who will buy them? In conclusion, I entreat that you will please to answer my question in your next, as I shall then see my way better; because if old bricks are allowed to be used, I shall have no cause to involve myself by beginning before January. And may I ask as a further favour of you to let me know when the adjoining owner (as I intend building against the party-wall of another person) is entitled to come on me for my share of expense for such party-wall? Trusting you will oblige me on this *only* occasion, I beg to remain very respectfully

Your humble servant,

RICHARD DOFFIELD.

23, Britannia-street, City-road,  
Nov. 15, 1844.

[The use of old bricks is not forbidden by the new Act; but if any question arise as to their soundness, the official referees are to decide, being thereto required in writing. With regard to the time when old party-walls are to be paid for by adjoining parties, we are not at present clear, but will consider the subject, and report further.—Ed.]

#### ON PAYNISING TIMBER.

SIR,—In your last number, under the head of "Mr. Valentine's Substitute for the Iron Rail," I observe it stated that the wood he uses is prepared by the process called "Kyanising," yet the detail given of the process, and the experiment quoted, evidently shew that it is the patent process of Mr. C. Payne, and not that of Mr. Kyan, that is employed. The erroneous introduction of the term "Kyanising" (instead, as probably was intended, "Paynising") may mislead some of your readers unacquainted with the nature of the two processes, and I think it will be satisfactory to you to have thus the opportunity of rectifying the mistake.—I am, Sir,

Your obedient servant,

J. H.

#### CHURCH-BUILDING INTELLIGENCE, &c.

*Manificent Donation in Aid of the Restoration and Extension of St. Mary de Crypt Church.*—We have, upon many occasions, called the attention of our readers to the good work of restoration which, for the last year, has been steadily progressing in this fine old church, and have expressed our earnest wishes that the sanguine hopes of the Rev. A. Sayers, the rector, would be realized, and that he would meet with such support as would enable him to rescue this beautiful building, not merely from further dilapidation, but to restore it in all its parts. We have now the pleasing duty of announcing the truly liberal donation of 500*l.*, which has been presented, in the most handsome manner, to the rector, by the executors and devisees of the late James Wood, Esq.—J. S. Surman, Esq., and Jacob Osborne, Esq., the heirs of the late Sir M. Wood, Bart.; W. P. Price, Esq., and E. Shelton, Esq.—to enable him to complete his praiseworthy designs. The sum already subscribed, including the above donation, amounts to nearly 1,000*l.*, which, although not within the estimate of the architects, Messrs. Dawkes and Hamilton, by nearly 200*l.*, will fully justify the further progress of the works, as we have no doubt that a much larger sum, if required, will be forthcoming. The chancel, with the exception of the monumental window to the late rector, the Rev. J. G. Dowling, will be completed by Christmas; and the restoration of the nave, new pewing, &c., will be commenced when the requisite facilities are obtained. We look forward with more than common interest to the restoration of St. Mary de Crypt: when fully restored, it will be one of the most perfect cruciform churches in the land.—*Gloucestershire Chronicle*.

*New Tower to Leigh Church, Essex.*—The Rev. Robert Eden, rector of Leigh, has lately expended nearly seven hundred pounds in the erection of a tower to his church.

*Queen Adelaide's Church at Malta.*—This church, which has been built at the sole expense of her Majesty the Queen Dowager, is placed on a commanding site, overlooking the Quarantine Harbour, and is one of the first objects which meets the eye of a stranger on approaching the island from the north or the west. The building has been brought into its present state by the skill of Mr. Scamp, the successor of the first architect. The spire, when finished, will be about 200 feet high, and about 300 above the level of the sea. The body of the church and portico are not much unlike those of St. Martin-in-the-fields in their exterior aspect; and the beauty of the stone of which it is built gives it a very striking appearance. The internal effect is still better. It has a semi-circular chancel, and is divided into a nave and two side aisles by two rows of beautiful Corinthian pillars. With the exception of two pews, one for the Governor and the other for the Admiral, the seats are all open with backs. The whole of the seats, stalls, pulpit, and reading desk, are of English oak. The font, of white Carrara marble, is the gift of the late Mr. J. W. Bowden. The church was consecrated on the 1st instant, by the Bishop of Gibraltar, and is to be called "The English Collegiate Church of St. Paul, in Malta."—*Times*.

*Church Restoration in York.*—A gratifying sign of the times is exhibited in the attention which is now devoted to the restoration of our ancient ecclesiastical fabrics. The west front of the church of St. Helen's, York, has been repaired. St. Saviour's Church is being nearly rebuilt. On removing the old whitewash from the pillars and arches which separate the aisles from the body of the church, traces have been found of paintings on the walls—one of which, representing Moses bearing the Ten Commandments, is in a state of perfection hardly to be expected. The beautiful parish church of St. Martin-le-Grand is also undergoing some restoration. The church of St. Martin-cum-Gregory is undergoing an extensive restoration in its tower. In the church of All Saints, the three east windows of richly-stained glass have been re-glazed, repaired, and fixed in new stone mullions and tracery. The church of St. Sampson, which is in a serious state of dilapidation, has been closed, and steps are being taken for raising a requisite fund to undertake its complete renovation.—*Doncaster Gazette*.

*New Churches in Kingswinford.*—The population of the parish of Kingswinford, Staffordshire, having increased to nearly 24,000, the rector, Dr. Penfold, by the aid of the ecclesiastical commissioners, has succeeded in dividing the parish into six districts, containing 4,000 each, and it is intended each shall have its church (there are now three), its parsonage house, resident minister, and national schools. In one of the new districts, Brockmoor, a very interesting ceremony took place on the 12th ultimo, when the first stone of a new church, situated in the midst of a dense population, surrounded by coal and iron works, was laid by the Lady Ward, in the presence of the clergy, churchwardens, and numerous inhabitants.

*Boston Church.*—We understand that the order made some time ago by the Boston town council (who are the lay impropricators) for the re-glazing of the chancel windows with lozenge-shaped panes, cannot at present be acted upon, the impropricators having expended their large funds in lay objects. The massive Corinthian altar-screen should be replaced by a reredos, in keeping with the rest of the architecture, and if the east windows were to consist of stained glass, the effect would be very imposing. A separate subscription should be started for that express purpose: the required amount would soon be raised, as those who refused to contribute towards the repairs of the body of the church would doubtless gladly contribute towards the ornamenting this beautiful edifice.—*Lincolnshire Chronicle*.

*St. Martin's Church, Hereford.*—We understand that the consecration of this edifice is postponed to the spring, when the weather will doubtless be more favourable. The progress of the fabric is in all respects satisfactory—alike creditable to the architect, builder, superintendent, and workmen; and will unquestionably form one of the greatest architectural ornaments to the city.—*Hereford Times*.



## RAILWAY INTELLIGENCE.

**Contract for the Railway Dock at Hull.**—Monday, the 11th inst., was the day appointed for deciding upon the tenders received for the construction of the Railway Dock and entrance. The dock directors met in the morning, and, after examining and considering the tenders sent in (fourteen in number), accepted that of Messrs. Bowers and Murray, of Liverpool, who have been engaged during the last seventeen years in contracts upon most of the docks constructed in that port within that period, and are now at work upon the Albert Dock. The contract includes the excavation of the dock and entrance, and the formation of the walls and quays. The work is to be commenced immediately, and it is expected to be completed, and the dock ready for use, in the spring of 1846.—*Hull Packet*.

**Employment afforded by Railway Undertakings.**—We have calculated, from data afforded us by gentlemen well conversant with the subject, that there are at present employed in merely making the necessary preliminary surveys for the numerous lines of railway now before the public in Ireland, some 520 engineers, sub-engineers, draftsman, clerks, chainbearers, and their assistants. This is exclusive of labourers. The salaries of the above vary from 2l. to 13s. a week, while labourers employed get from 1s. to 1s. 6d. per day. Besides, such a staff of officials gives employment in their turn to carmen, &c. Should all the lines of railway now projected obtain acts of incorporation in the ensuing session of Parliament, and commence operations as soon as possible after, employment would be afforded, one way or another, to some 200,000 persons.—*Irish Railway Gazette*.

**Salisbury and Dorsetshire Railway.**—This line is proposed to commence near Salisbury (83 miles by railway from London), passing near Fordingbridge, through Wimbourn and Bere to Dorchester and Weymouth, with a branch from Wimbourn to Poole; being at least 12 miles shorter between London and Dorchester than the Southampton and Dorsetshire line, and two miles shorter between Dorchester and the towns situate on the eastern coast line of railway. This advantage applies to Poole and other towns on the line.

**Rotherham and the Railways.**—The result of the interview between the Midland Railway directors and the deputation appointed at a public meeting recently held in Rotherham on the subject of the projected railways through that town is, that Mr. Stephenson has been appointed by the directors to survey the country, and report on the practicability of a direct line from Gainsborough to Rotherham. At a second public meeting the inhabitants of Rotherham sanctioned this arrangement.—*Railway Record*.

**Wexford, Carlow, and Dublin Junction Railway.**—The object of this company is to form a railway from Wexford to Carlow, to join the Carlow branch of a main trunk to Dublin; thus placing the port and county of Wexford in direct communication with the metropolis, and by the Great Southern and Western Railway with Cork, Limerick, and other parts of the south of Ireland. The line is about 40 miles in length; the engineer Sir John Macneill.

**Railway Tunnelling.**—At a meeting at Cardiff, Mr. Brunel stated that the Box Tunnel of the Great Western Railway cost 100l. per yard; the White Ball Tunnel on the Exeter Railway cost but 53l.; the Cheltenham Tunnel was estimated at 136l. per yard, and it cost but 34l. per yard; and to shew the reduction in this department alone, he had lately contracted for tunnelling at 28l. per yard.

**HARBOUR OF REFUGE IN THE FRITH OF FORTH.**—We understand that the proposal of a harbour of refuge for the shipping on the east coast of Scotland, to be situated in the vicinity of Granton, has been for some time under the consideration of many influential parties in this quarter. The project, we hear, has been received in the most favourable manner, and we hope to be enabled, in a very short time, to discuss it in its several bearings, as the subject is one of the very greatest importance to the commercial classes and the public generally.—*Edinburgh Witness*.

## Miscellanea.

**WAYSIDE CHAPELS.**—Wayside Chapels were the only ancient places of public worship with which burial grounds were not locally connected. They had no walled inclosures, and could never have been more alone than many are now on the highways to Walsingham. Those near Hillborough have been planted on the bleak brows of elevated ground near the roadside, and are without particular architectural distinction, being little oblong buildings of equal breadth throughout, as plain in design as in their figure. The walls are roofless and broken, the cracks and chasms serving to channel away the water from the moss-grown summit. The interior, which could once afford rest to the weary, and a pittance to the distressed, is now too desolate to be sought as a shelter by cattle. No marvel then that travellers in later days have neglected to turn a few paces out of the way to visit these ancient relics: they would find them not altogether uninteresting, but overgrown with briars, and half filled up with heaps of old rubbish. No kind of sepulchral memorial has been discovered within or on the outside of any of these edifices, often as death must have overtaken the pilgrim on his way. Chances of this kind were not provided for by a consecrated space for burial, as the custom of entombing the dead around the sanctuary in which the living assembled for worship, was never extended to Wayside Chapels, neither was the administration of baptism, nor the celebration of matrimony included in the duties prescribed to them, as was sometimes the case in privileged instances in assistant chapels belonging to districts at a distance from the mother church.—*Remarks upon Wayside Chapels, &c.*, by J. C. and C. Buckler.

**OPENING THE NEW BRIDGE AT ATHLONE.**—The new bridge at Athlone, built by the Shannon Navigation Commissioners, was opened on Saturday, the 9th instant, for public traffic. It consists of three stone arches, each 60 feet wide, with a portcullis 40 feet wide, to afford accommodation to vessels passing. Colonel Jones, to whom the bridge was formally given up, after commenting on its utility, adverted in complimentary terms to the contractor, for the magnificent structure which he had completed, and said that a stronger or handsomer bridge there was not in Ireland. It was the work of Irishmen, and it was delightful to know that from the commencement of the work up to the completion, not a life was lost in the operations, nor was a man one fortnight absent from his work by accident or hurt.—*Morning Herald*.

**THE NEW ROYAL EXCHANGE.**—On Saturday last a number of workmen in the employment of Mr. Jackson, the builder, were actively engaged in erecting scaffoldings on the north side of the Royal Exchange, opposite St. Bartholomew-lane, preparatory to the statues of Sir Thomas Gresham and Whittington being placed in the niches over the shops in that portion of the building. The tessellated paving laid down by Messrs. Seager, of Vauxhall, in the merchants' area on the occasion of Her Majesty opening the Exchange, was also finally removed in the course of the same day, preparatory to supplying its place with the Seyssel asphalt. It seems strange that the authorities will not at once pave, and that properly, the area in question; the improper application of any material brings it into discredit with weak minds incapable of correct judgment.

**ELECTRICAL TELEGRAPHS IN FRANCE.**—The Minister of the Interior has just appointed a special commission to report on the advantages of the system of electrical telegraphs, and the possibility of their application. The minister had previously directed M. Alphonse Foy, the administrator-in-chief of the telegraphic department, and two of the principal employés, to inspect the model of Mr. Bain's electrical telegraph, which has been for some time privately exhibited in Paris.

**ENORMOUS PIECE OF PLATE GLASS.**—There is to be seen at the present time in Regent-street, at Mr. Saunders', a plate of glass containing upwards of 95 square feet, its dimensions being 12 feet 9 inches by 7 feet 7 inches, and its quality is so brilliant as to be generally understood to be the finest glass in the world.

**SUBSIDENCE OF THE SURFACE GROUND OVER A COAL MINE.**—An alarming occurrence took place yesterday (Friday) morning, at St. Peter's Quay, about three miles below Newcastle, the surface of the ground, for some acres in extent, having been affected with what in this district is called the creep, by which considerable destruction has been done to property in the neighbourhood, the extensive building-yard of Messrs. Thomas and William Smith, the eminent ship-builders, having been rendered for a time entirely useless. The first intimation of danger was observed a week ago, but it was very slight, amounting only to a rent in one of the houses to the north of the building-yard, which was repaired, and matters continued in the same state till nine o'clock yesterday morning. It may be proper to state that the dock, though on the north side of the river, is completely undermined by the workings of the Friar's Goose Colliery, situate on the other side; and it is supposed the accident has been caused by the working or falling of the roof, or superincumbent strata. At the period above mentioned, the whole of the men and boys, nearly 200 in number, were at breakfast in the smith's shop and store, on the north side of the building-yard, when they heard a noise like thunder, and on looking out beheld the surface of the ground in motion. They ran away from the spot, and reached a place of safety, and there they were soon joined by the inhabitants of the neighbouring houses, who fled in the greatest consternation. In a few minutes the motion of the surface ceased, and, on the men returning to the building-yard, they found the ground rent in various directions, presenting chasms several feet in depth; the bottom of the spacious dry dock, capable of admitting vessels of the largest size, was thrown up in dreadful confusion; the sides rent; and the whole presented a scene of destruction which might well appal the stoutest heart. The windows in the neighbouring houses were broken, doors and frame-work split and crushed, and several walls were levelled with the ground. The movement was confined to the building-yard and the adjacent houses. The quay next the river has sunk several inches, and the bed of the river, which before was "high and dry" at low water, is now covered to the depth of from 18 to 24 inches. The water in the river was agitated, and the motion was felt on board the vessels lying near. The men employed in the building-yard have been discharged, and all work suspended, and it will be some time before the injury can be repaired.—*Newcastle Journal* of last Saturday.

**ORNAMENTAL STATUES FOR THE SCOTT MONUMENT.**—During the last few days the workmen have been employed in placing the stone figures intended to decorate the architecture in the principal niches assigned to them over the central arches. Two of them have been now fixed, one looking to the north, the other to the west. The former figure is a statue of Prince Charles Stuart, in the full Highland garb. He is in the attitude of drawing his sword, and has an expression of defiance in his countenance. It is, on the whole, well executed, particularly the head, and has a pleasing effect; it was executed by Mr. A. Ritchie, of this city. The other figure represents "The Last Minstrel," a reverend man, bare-headed, dressed in a flowing robe, in the act of touching his harp. This is a very picturesque and poetical figure, and does much credit to Mr. James Ritchie. We understand it is intended to place on the south or east side of the monument a figure of the "Lady of the Lake," which is already executed; she is supposed to be just stepping from a shallop, the prow of which, with oar, &c., is visible under her feet. This is the most pleasing figure of the three which has yet been executed. We believe the subject of the fourth is not yet decided upon, though a model of "Meg Merrilees" has been completed for the purpose.—*Edinburgh Evening Post*.

**THE LONDON ARCADE.**—The project is revived for opening a new street and erecting an arcade, to commence in Lothbury and Throgmorton-street, near the end of Bartholomew-lane, and to terminate near to London-wall and Finsbury-pavement south, together with a branch arcade leading from the last-named place, and terminating near to London-wall and Finsbury-circus.



**UNHEALTHFULNESS OF THE NORTHERN SUBURBS OF LONDON THROUGH THE EFFLUVIA OF PONDS.**—A vestry meeting of the parish of St. Pancras has been held, for the purpose of considering the application on the part of a body of the inhabitants of Highgate, to be permitted to divert the roadway, alter the drainage, and make such other improvements in the Highgate ponds as would be conducive to the better health and comfort of the neighbourhood. Mr. Bird, the parish surveyor, in submitting plans of the proposed alterations, said, a committee of gentlemen had been formed for this purpose, and, excepting a sum of 65*l*, which the directors and guardians had already agreed to give towards so beneficial an object, it would be carried into effect without expense to the parish. The water contained in the ponds was the only water the inhabitants could command in cases of fire. They were also very deficient there of water for household purposes, and when the drainage was diverted from its present course, the purity of the water would be much greater. A vestryman said that great effluvia arose from the ponds in their present state, and no doubt seriously affected the health of the inhabitants. The project would confer a great benefit on the district. Mr. Morris thought malaria very prevalent in the neighbourhood. The vestry, as conservators of the health as well as the funds of the parish, were bound to acquiesce in that which was likely to be a remedy for the evil. The consent of the vestry was given to the plan.

**DURHAM SCHOOL.**—A new building, in the neighbourhood of the Prebend's Bridge, has been devoted to the purposes of this ancient foundation by the munificence of the dean and chapter, and was opened on Monday last. It is built in that style of domestic architecture which commonly prevailed about the reign of our first James, and the school-room, with its projecting gable and long mullioned window, and the dormer windows and bell-turret of the other part of the structure, as seen from the south road and other neighbouring points of view, combine in a picturesque and pleasing manner with the dark masses of trees which form its back-ground. The school-room has an open timber roof, is lofty and well proportioned, and is capable of containing about 200 boys. A spacious cloister unites this with the house, which is henceforward to be occupied by the head-master, in which provision has been made for the accommodation of forty or fifty boarders. —*Durham Advertiser*.

**PAINTING ON GLASS.**—From Munich we learn that the king has ordered the formation of a special school of painting on glass, and the construction of a large workshop, to be entirely dedicated to that branch of art, and in which all who pursue it shall be admitted to labour.

**THE BRISTOL ATHENEUM.**—A proposition has been made to establish an Athenæum Institution at Bristol, similar to the one at Manchester.

**ST. MARYLEBONE BANK FOR SAVINGS, 76, WELBECK-STREET.**—ESTABLISHED 5TH JULY, 1830. COMPARATIVE STATEMENT OF PROGRESS at specified periods during the last seven years.

	Open Deposit Accounts.	Sums invested with National Debt Commissioners.
	£.	£.
On Nov. 20, 1838	11,278	196,334
" 1839	11,935	223,353
" 1840	12,680	253,167
" 1841	13,004	266,407
" 1842	13,349	285,382
" 1843	14,130	319,496
" 1844	15,124	350,089

D. FINNEY, Secretary and Actuary.

### Tenders.

**TENDERS** delivered on the 18th inst. for building Two Houses in the Clapham-road, Kennington, for P. T. Torkington, Esq.—Mr. J. Barnett, 68, Chancery-lane, Architect.

Notley .....	£2,180 0
Pearse and Guerrier .....	1,998 0
Glenn .....	1,990 0
Lawrence .....	1,987 0
Haynes and Co. ....	1,937 10
Locke and Nesham .....	1,875 0

The above tenders were opened in the presence of the builders

**TENDERS** delivered for building a new School at Rotherhithe. November 8, 1844.

Kelacy .....	£837
Piper .....	826
T. Anson .....	797
J. and T. Ward .....	790
Ashley .....	786

### NOTICES OF CONTRACTS.

For building a Sewer in Ellison-street, Petticoat-lane. — Joseph Daw, Sewers' Office, Guildhall. November 26.

For supplying Iron Railing and Gates round the Birkenhead Park, about 3½ miles.—The Chairman of the Improvement Committee, Town Hall, Birkenhead. November 26.

For the supply of First, Second, and Third-class Carriages to the Manchester, Bury, and Rossendale Railway. — James Smithells, Secretary, Railway Office, Bury. November 30.

For the construction of Locomotive Engines and Tenders for the Manchester, Bury, and Rossendale Railway. — Mr. C. E. Cawley, Engineer, Railway Office, Bury. November 30.

For the supply of 600 Coal Waggon to the York and North Midland Railway Company. — George Baker, Secretary, York, December 4.

For the building of a Tunnel on the Edinburgh, Leith, and Granton Railway. — December 4.

For Lighting the Southampton Paving Trust with Naphtha or other strong Light for the period of eight months from the 1st of February next. — John Arnell, 10, Edmund-street, Hampstead-road. December 11.

For making a Survey and Valuation of Property in the town of Kingston-upon-Hull, for the better rating of the same to the relief of the poor. — John Moxon, Workhouse, Hull. December 12.

For the execution of Works necessary for the completion of the whole of the Railway from Shoreham to Chichester, being a distance of about 22½ miles. — Frederick Otley, Secretary, Brighton and Chichester Railway Office, 4, Dean-street, Tooley-street. December 17.

For the supply of 6,000 tons of Iron Rails, each rail to be 16 feet in length, and weighing 65 lb. per yard. — H. Parker, Secretary to the Great North of England Railway Company, Darlington. December 23.

### COMPETITIONS.

The Committee of the Association recently formed in the Metropolis for the Construction of Baths and Wash-houses for the Labouring Classes, are desirous of obtaining Plans and Estimates for the Erection and Fitting-up of the First Establishment. The general basis of the plan can be seen at the Office, No. 3, Crosby-square. The author of the plan considered the best by the Committee will be selected to execute the work.

### TO CORRESPONDENTS.

James Kendall. — *We have made the inquiry, but have not yet received an answer.*

To the correspondent who wishes to know from "actual knowledge" whether Job and Brothers' patent paper resists the damp in walls as thoroughly as the laminated lead, we answer we have not at present the knowledge, but recommend him to examine instances, or to depute some agent to do so: the chief difficulty lies in keeping attached to a damp wall any such separating medium; thus tin-foil applied to the same purpose, though at first appearing to be a cure, soon falls off, and forms no effectual remedy.

G.B. is quite correct. Mr. Locke, who is so much engaged in the construction of French railroads, is an Englishman, while Mr. Brunel is a Frenchman.

J. B. S. — *We believe Martin's Cement was used and found to answer: it was also adopted in stuccoing the interior of the Sun Fire-office.*

Inquirer. — *The system referred to is essentially faulty. Dr. Rees, in his report "On the Ventilation and Warming of the Cells" in the New Model Prison, at Pentonville, states that "Any required temperature once established, cannot be materially lowered in less than from ten to fourteen days."*

The Communications of "An Architect," "A Draughtsman," "T.S.," and "A Subscriber," have been received, and are under consideration.

### PUBLICATIONS RECEIVED.

*Description and Uses of the Ship Manœverer, by means of which a ship's head may be directed at all times to any point required.* Thomas Dean and Co., Threadneedle-street.

*Remarks on Ventilation and Warming, chiefly having reference to Prisons, and also applying to other Public Buildings.* By An Engineer. — Bradbury and Evans, Whitefriars.

### MEETINGS OF SCIENTIFIC BODIES

*This day and during the ensuing week.*

**SATURDAY, November 24.**—*Royal Botanic,*

Regent's-park, 4 p.m.

**MONDAY, 25.**—*Geographical, 3, Waterloo-place, 8½ p.m.; Medical, Bolt-court, Fleet-street, 8 p.m.*

**TUESDAY, 26.**—*Medical and Chirurgical, 53, Berners-street, 8½ p.m.; Zoological, Hanover-square, 8½ p.m.*

**WEDNESDAY, 27.**—*Society of Arts, Adelphi, (Exhibition Night).—Papers will be read "On Mr. R. Davidson's Cask-cleaning Machinery;" and "On Mr. Higgs's Plan of Collecting the Contents of the London Sewers," 8 p.m.; Pharmaceutical, 17, Bloomsbury-square, 9 p.m.; Ethnological, 27A, Sackville-street, 8 p.m.*

**THURSDAY, 28.**—*Antiquarian, Somerset-house, 8 p.m.; Royal Society of Literature, 4, St. Martin's-place, 4 p.m.; Medico-Botanical, 32, Sackville-street, 8 p.m.*

**FRIDAY, 29.**—*Botanical, 20, Bedford-street, Covent Garden, 8 p.m. (Anniversary meeting).*

**SATURDAY, 30.**—*Royal, Somerset-house, 8½ p.m. (Anniversary meeting); Westminster Medical, 32, Sackville-street, 8 p.m.*

### ADVERTISEMENTS.

**NEWLY INVENTED GLAZING FOR WORKSHOPS, WAREHOUSES, OFFICES, HORTICULTURAL PURPOSES, &c.**—Gerard Arney and Co.'s Transparent Waterproof Glaze Paper, Linen, and Calico, being substitutes for the above-mentioned purposes.

The proprietors solicit the attention of Builders, proprietors of manufactories, &c., to the above-mentioned preparations. The Glaze-paper will be found the most suitable for windows from its superior transparency and great cheapness; it affords a light very similar to ground-glass, and the frames for its support need only consist of a lattice-work of wood or wire, the waterproof materials being affixed either with tin tacks or cement. The linen and calico, being of stronger texture, will be found very suitable for sky-lights, glazing for conservatories, &c.

Parties desirous of seeing either of the above-mentioned materials, the proprietors will be happy to forward samples for their inspection, upon application by letter, post-paid, to their Manufactory, High-hill Ferry, Upper Clapton, Middlesex.

**Prices.**—*Waterproof Glaze-paper at 6d. per yard, 23 in. wide; Waterproof Glaze-calico at 1s. per yard, 31 in. wide; Waterproof Glaze-linen at 1s. 6d. per yard, 28 in. wide.*

**TO BUILDERS, CABINET-MAKERS, AND OTHERS.**

**SALISBURY GLUE** 60s. per Cwt.; fine Scotch do. 50s.; Town 46s., 44s., and 42s.; Best Glass Paper 104d.; Second do. 9d.; French Polish and Spirit Varnishes 19s. per gallon; Naphtha do. 10s.; Genuine White Lead 56s.; Second do. 34s. and 28s.; Improved Stucco Paint 28s.; Invisible Green and Chisel Colour 25s.; Fine Green, and all Colours used in House Painting, prepared by a new process to dry in six hours, 6d. per lb.; Turpentine 21. 6d. per cwt.; Linseed Oil 1s. 6d.; Fine Copal Varnish 30s.; Quick Drying Carriage 14s.; Oak do. 12s. and 10s.; Paper 14s., 10s., and 6s.; Turpentine Varnish 3s.; Dry Brunswick Green 3d., 4d., and 6d. per lb.; Lamp Black 3d.; Emerald Green 1s. and 1s. 3d.; Whiting 1s. 8d. per cwt.; Stockholm Tar 18s. per barrel; Pitch 10s. per cwt.; Glider's Materials, Ladders, Bronze, Dutch Metal, Patent Gold Paint, Dies and Die-woods, Acids, Alkali, Gums, and Salts of every kind and description at equally low prices. **W. NIXEY'S** Old-Established Warehouse, 22, MOOR-STREET, SEVEN-DIALS, LONDON.

**PLUMBERS, PAINTERS, BUILDERS,**

and OTHERS supplied with CROWN and SHEET WINDOW GLASS, SHEET PLATE, &c. &c., for Pictures, Glazing, &c., at any quantity, by Messrs. TURPIN & CO., TURPIN, per gallon . . . . . 2s. 4d.

LINSEED OIL, ditto . . . . . 2s. 4d.

SHEET LEAD, in sheet 16 in. per cwt. . . . . 15s. 4d.

Ditto, cut to sizes and PIPE . . . . . 16s. 6d.

WHITE LEAD (Genuine) per cwt. . . . . 26s. 0d.

Colours, Pine, Brushes, &c. &c., equally low, and quality warranted. Lists, &c., may be had on applying to R. COGAN, 5, Princess-street, Leicester-square, London. PRINT PUBLISHERS, PICTURE FRAME AND CABINET MAKERS, can be provided with flatted Crown, flattened Sheet, and the patent Sheet Plate. Lists of which, shewing the price for any Square, from 14 by 12 to 40 by 30 of Best and Second quality, will be sent (gratis) upon receiving the address. Builders, Glaziers, and others having to Contract, sending a copy of their specifications, with a list of dimensions to R. COGAN, will receive by return of post the lowest prices for all qualities and sizes of Crown Sheet-Glass and Sheet-Plate, &c. Glazing estimated for, if required.

**NURSERYMEN, MARKET GARDENERS, AND OTHERS** requiring Small Glass, will find a greater variety of sizes (a large Stock of Glass is constantly on hand) than is kept by any other House in London.

**COMMON SHEET AND CYLINDER.** The advantages Common Sheet over Crown for Glazing Sky-lights is decidedly great, and is generally used where strength or superior appearance is required; a light 5 feet 6 in. long, with openings of any width, needs only one pane. This Glass is considerably stouter than Crown, and may be had from 1s. 3d. per foot.

Also may be had, **COGAN'S PATENT CHIMNEY FOR GAS OR OIL**, which effects a great saving in the consumption, produces a more brilliant light, prevents smoke, and is cheaper than any other Patent Chimney sold.

**LAMP SHADES AND GAS GLASSES,**

of every description. **GAS CONTRACTORS, FITTERS, GLASS MERCHANTS,** and others supplied with Lists of nearly 100 Patterns, with prices affixed, sent to any part of the Kingdom gratis.

**CLOCK MAKERS, ALABASTER FIGURE MAKERS, ARCHITECTS, MODELLERS, AND OTHERS,** supplied with FRENCH ORNAMENTAL SHADES, for covering Models of Public Buildings, Geological Curiosities, &c. &c. of all sizes and shapes. List of Prices may be had on application.

French Table Flowers, China Vases, Fancy Glass Ware, and Alabaster Figures in every variety.

R. C. having just completed his Show Rooms for the above articles, begs to invite the inspection of the Public. A Liberal Discount to Bazaar keepers and others.



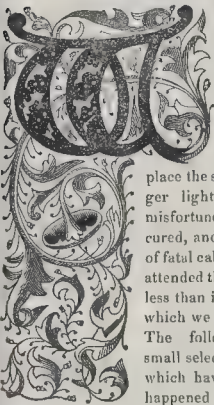
## NOTICE.

IN answer to several inquiries by letter, we beg to state that a few copies of Mr. Bartholomew's Cyclopadia of the New Metropolitan Building-Act can still be had of our publisher, No. 2, York-street, Covent-garden, at the usual price of a double number.

*The Builder.*

NO. XCIV.

SATURDAY, NOVEMBER 30, 1844.



E thought we had last week completed the catalogue of calamities to buildings, but we find, as if on purpose to place the subject in a stronger light, other similar misfortunes have just occurred, and the proportion of fatal calamity which has attended them has not been less than in the aggregate which we gave last week. The following form a small selection from those which have most recently happened:—

"**FALL OF A WALL.**—On Thursday, the 21st inst., a wall, about forty feet in height, suddenly fell at the corner of Showfield-street, in Chelsea-road, with a tremendous crash, burying underneath the ruins four individuals who were at the time at work upon it. The unfortunate men—John Newman, aged 30, a master bricklayer; William Lee, aged 45, journeyman; James Lardner, aged 28, journeyman; and Arthur Ellis, aged 16, an apprentice—were standing upon some scaffolding erected near the summit of the above wall, when the latter, which had recently been run up, gave way near its base, and the whole instantly fell. Assistance having promptly arrived, the men were got from among the rubbish, and three of them were conveyed in a sadly mutilated state to St. George's Hospital, whilst Newman, who resides near the spot where the accident happened, and sustained a severe injury of the skull and legs, was conveyed home. Each of the unfortunate men lies in a very precarious state. The cause of the occurrence is stated to have been the wet weather, which prevented the work from setting or drying."

"**FALL OF A HOUSE.**—On Thursday, the 21st inst., a new building, situate at the corner of Duke's-place, in Old-street, St. Luke's, fell, and buried a number of workmen, bricklayers and labourers in the ruins. The accident is stated to have been occasioned by an overflow of water from an old sewer leading along the main road, which, becoming choked, the water rushed through it near to the new buildings, and flowing into the foundation; the mortar was washed from the brickwork, and the footing eventually yielding to the superincumbent pressure, the upper work fell perpendicularly into the excavation, scarcely a single brick falling outside of the base of the frontage wall."

So that we have still the same alleged causes, greenness, and mal-adroitness in the temporary management of the building-operations. Thus, more and more does there appear to be requisite an adequate controlling power, which shall watch over such affairs, and put in execution all means practicable for gaining the desired end.

## ELECTION OF SURVEYORS TO THE NINE NEW DISTRICTS IN THE COUNTY OF MIDDLESEX.

(Thursday, the 28th instant.)

## FOR FULHAM.

No. of Votes.

98. Mr. Andrew Moseley—elected.  
58. — Henry Harrison.  
7. — Augustus Abraham Winterbottom.

## FOR HAMMERSMITH.

63. Mr. James Charles Christopher—elected.  
38. — Samuel Beazley.  
33. — Frederick Claudius J. Parkinson.  
30. — Martin Joseph Stately.

## FOR SOUTH KENSINGTON.

138. Mr. Thomas Leverton Donaldson—elected.  
18. — John Blore.

## FOR NORTH KENSINGTON.

134. Mr. Charles Beachcroft—elected.  
34. — George Godwin, Jun.

## FOR HAMPSTEAD.

127. Mr. Henry Edw. Kendall, Jun.—elected.  
39. — Thomas Bird.

## FOR HORNSEY.

108. Mr. Alfred Bartholomew—elected.  
38. — James Harrison.

## FOR TOTTENHAM.

115. Mr. John Henry Taylor—elected.

## FOR STROKE-NEWINGTON.

128. Mr. William Lovell, Jun.—elected.  
15. — William Frederick East.  
12. — James Moon.

## FOR BROMLEY.

56. Mr. John Blyth—elected.  
55. — Henry John Hammon.  
37. — John Morris.  
1. — George Henry Simmonds.

## FOUR NEW DISTRICT-SURVEYORSHIPS IN THE COUNTY OF SURREY.

THE magistrates will meet at twelve o'clock on Monday next, to elect surveyors to the four new Metropolitan Districts in the county of Surrey.

## SOCIETY OF ARTS.

Nov. 27.—W. Pole, Esq., V. P., in the chair.

The secretary read a paper by Mr. Robert Davison, engineer, "On the Manufacture of Casks, more particularly those used by Brewers, with remarks on the various methods adopted for Cleansing and Purifying such Casks."

The next paper was by Mr. Higgs, on his plan of collecting the contents of the London sewers.

The author proposes to form, at convenient stations throughout the metropolis, three parallel tanks or reservoirs, at levels sufficiently low to receive the contents of the sewers; each of these tanks to be furnished with a gate, somewhat resembling a flood-gate.

Into one of these reservoirs the soil to be allowed to enter until completely filled, the gate then to be closed, and the matter allowed to settle for one tide.

In order to precipitate the phosphates, &c., hydrate of lime is proposed to be spread evenly over the surface by means of a hopper-formed waggon running to and fro on a moveable railway, placed over the reservoir.

The precipitation having been effected, the comparatively pure water would be let off or drawn off, and the valuable residue removed.

In the meantime, the second reservoir would be filled, and the process repeated.

The plans of Mr. Garling and Mr. Martin for effecting the same object were discussed at some length.

## BUILDING SOCIETIES.

TO THE EDITOR OF THE BUILDER.

IN the fifth number of *THE BUILDER*, a letter to the editor of the *New Zealand Journal* was inserted, detailing the operations of a Building Society, established for the purpose of enabling parties to purchase freehold or leasehold property, as follows:—

"A fund is raised by monthly contributions from each member or shareholder, out of which subscribers are assisted in their endeavours to become possessors of such property as may be best suited to their own interest or advantage. Each shareholder must contribute to the association (say, for example) ten shillings per month for each share of which he is the possessor, until these monthly payments shall, with the profits, amount to 120*l.* per share. The operations of the society will thus extend over a space of about ten years, and then cease altogether.

"When the funds become sufficiently large to make advances to the subscribers, due notice is given, and that member who will submit to the *largest* deduction or discount from the amount of his share of 120*l.* for priority of advance, is the one to whom the loan will be immediately granted; the property purchased with the society's funds to be mortgaged to the association, as security for the continuation of his monthly instalments, until the termination of the society.

"A few figures will illustrate this more clearly. Suppose a subscriber, living in a house for which he pays an annual rent of 35*l.*, subject to a ground-rent of 5*l.* per annum, wishes to purchase such house by means of the society, the method is as follows:—

He holds one share, which at the expiration of ten years would realize .....	£120	0	0
But for immediate cash he submits to a deduction from such share, of .....	50	0	0

Leaving a balance on one share in his favour, of .....

£70 0 0

"Now, as the sum of 70*l.* obviously cannot be sufficient to purchase property valued at 300*l.*, the subscriber avails himself of the society's resources to enable him to complete the purchase.

Surveyor's valuation of premises desired .....

£315 0 0

4*½* Shares at the agreed price of 70*l.*, as before stated, makes ..

315 0 0

"The monthly payments to the society for such advance would be as under:—

4*½* Shares at 10*s.* per share .....

£2 5 0

Interest or redemption money per share, 4*s.* per month .....

0 18 0

Monthly payments .....

£3 3 0

Which multiplied by months ...

12

Makes yearly payment to the society .....

£37 16 0

In addition to which, for ground-rent annually .....

5 0 0

Total amount cost .....

£42 16 0

"So that, instead of paying 35*l.* per annum to the landlord as rent, by paying the association 42*l.* 16*s.* annually, a difference of 7*l.* 16*s.* more, the freehold or leasehold property in ten years becomes the borrower's own; shewing that in ten years the house has been purchased for only 78*l.* more than in the same time he would have paid for rent alone."

Assuming this statement to be correct, the question of advantage or disadvantage to the parties interested may be thus viewed.

Let the company consist of 100 gentlemen, each of whom puts down 315*l.*; and that 100 other persons consent to become subscribers of 42*l.* 16*s.* a year, the company being able to locate these 100 subscribers at the beginning of the year in 100 houses, for which 31,500*l.* are paid.

Now, in ten years the company must get back these 31,500*l.*, with 5 per cent. compound interest; that is to say, they must receive 51,310*l.* 3*s.* 10*d.*, when the houses will belong to the subscribers. But they receive this by an annual rental of 4,280*l.*, which in ten years, as improved at 5 per cent. compound interest, will amount to 53,833*l.* 7*s.* 8*d.* There is, therefore, a bonus of 2,523*l.* 3*s.* 10*d.* to the 100 capitalists, or 25*l.* 4*s.* 8*d.* to each.

This goes on the supposition that none of the subscribers die in the course of these ten



years; and, moreover, that they one and all pay annually 42*l*. 16*s*.

With regard to the capitalists, we must dismiss from that side of the question all idea of mortality, as, in the event of any one of them dying, there would be heirs and assigns to represent him, and his share would stand as it originally did when he paid his 31*5*l**.

But with the subscribers the case is different; and if we suppose there will be a mortality commensurate with that published by the Registrar-General at Somerset-house, then we may estimate it at two deaths in the 100 annually.

Now, supposing two of the subscribers to die in the course of the first year, and the widows or families cannot continue the subscriptions or pay the rent, for that is the terms, then two houses would fall to the share of the capitalists, who could sell these again to two new subscribers, and so on till the end of the tenth year, when, by twenty deaths, they would have all the advantages of these windfalls, to enhance their gains and preserve their stock entire.

This is no imaginary case, but one that results from the course of nature, and which, to these capitalists, resembles lapsed policies in an assurance-office.

But the estimate we have quoted proceeds on the principle, not of an annual payment of 42*l*. 16*s*., but of a monthly payment of three guineas by the subscribers for the period of 120 months, and which the capitalists would improve at 5 per cent. compound interest.

It is manifest that if the buyer pays 3*l*. 3*s*. monthly to the capitalists, the question is reduced to this:—

To what sum would an annuity of 37*l*. 16*s*. for ten years amount, when received and laid up at interest in monthly portions of 3*l*. 3*s*. each, the interest, at the rate of 5 per cent., being converted into principal twelve times in the year?

Now, this amount is 479*l*. 5*s*. 4*d*. in ten years; but the buyer pays besides 5*l*. a year ground-rent, and we must suppose the capitalists to be the ground-landlords in such a case, therefore the buyer pays an additional annuity of 5*l*. a year for ten years, which at 5 per cent. compound interest amounts to 62*l*. 17*s*. 9*d*. in these ten years.

Therefore he pays the capitalists in ten years the sum of 542*l*. 3*s*. 2*d*. for his house.

And he has to pay this ground-rent of 5*l*. annually, unless there be some special agreement that it is redeemed by the ten payments of 5*l*. each, for which the prospectus does not afford any information to the contrary.

In the event of 100 capitalists clubbing in this speculation to provide 100 buyers at the beginning of the year with 100 houses, the problem is briefly this:—

The capital of 31,500*l*. invested at 5 per cent. per annum compound interest, would in ten years amount to 51,310*l*. sterling; the buyers would repay to the capitalists the sum of 54,215*l*. sterling; hence, the capitalists would divide a bonus of 2,905*l*. amongst them, or each would get 29*l*.; and be entitled besides to an annual bonus of 5*l*. in the shape of his ground-rent, after realizing all his capital, with compound interest at the rate of 5*l*. per cent.

But if we throw into the calculation the vicissitudes of fortune, and the stern law of mortality as impressed upon the buyers, there is no arithmetic strictly applicable to the enormous gains of these hundred capitalists, who always remain as a fixed quantity in the estimate, while the buyers are a fluctuating quantity, every increment of decrease in which yields a corresponding increment of augmentation, which enhances the gains of the capitalist in a ratio which time and circumstances can only develop.

I am, Sir, your obedient servant,  
WILLOUGHBY WILTON.

#### INSTITUTION OF CIVIL ENGINEERS.

TELFORD AND WALKER PREMIUMS.  
SESSION 1844.

THE Council of the Institution of Civil Engineers have awarded the following premiums: A Telford medal in silver to William Fairbairn, M. Inst. C.E., for his paper "On the properties of the Iron Ores of Samakoff, &c." A Telford medal in silver to John Murray, M. Inst. C.E., for his "Description and Drawings of the removal of the Lighthouse on the North Pier, at Sunderland."

A Telford medal in silver to James Bremner, M. Inst. C.E., for his papers "On Pulteney Town Harbour," "Sarclet Harbour," "A new Piling Engine," and "An Apparatus for floating large stones for Harbour Works."

A Telford medal in silver to Andrew Murray, Assoc. Inst. C.E., for his paper "On the construction, &c. of Steam Boilers."

A Telford medal in silver to Alexander Angus Croll, Assoc. Inst. C.E., for his paper "On the purification of Coal Gas, &c."

A Telford medal in silver to James Braidwood, Assoc. Inst. C.E., for his paper and drawings descriptive of "The means of rendering large supplies of Water available in cases of Fire, &c."

A Telford medal in silver to Jacob Samuda, Assoc. Inst. C.E., for his "Account of the Atmospheric Railway."

A Telford medal in silver to Charles Hutton Gregory, Grad. Inst. C.E., for his paper "On Railway Cuttings and Embankments."

A Telford medal in silver to Captain William Scarth Moorsom, Assoc. Inst. C.E., for his "Description and Drawings of the Avon Bridge at Tewkesbury."

A Telford medal in silver to Thomas Grissell, Assoc. Inst. C.E., for his "Description and Model of a Scaffolding used in erecting the Nelson Column."

A Telford Medal in silver to Charles Manby, Secretary and Assoc. Inst. C.E., for the translation and arrangement of the "History of the Canal and Sluices of Katwyk," and the "Description of the Works of the Amsterdam and Rotterdam Railway," by the Chevalier Conrad, M. Inst. C.E.

A Walker premium, "The Transactions of the Institution of Civil Engineers," suitably bound and inscribed, to the Chevalier Conrad, M. Inst. C.E., for his "Description and Drawings of the Works of the Amsterdam and Rotterdam Railway."

A Walker premium of books, suitably bound and inscribed, to James Leslie, M. Inst. C.E., for his "Description and Drawings of the Iron Lock Gates of the Montrose Docks."

A Walker premium of books, suitably bound and inscribed, to John Geale Thomson, Grad. Inst. C.E., for his "Description and Drawing of the Landslip in Ashley Cutting, Great Western Railway."

A Walker Premium of books, suitably bound and inscribed, to John Timperley, for his "Account of the building of the 'Wellington' Bridge, Leeds."

A Walker premium of books, suitably bound and inscribed, to George Willoughby Hemans, Grad. Inst. C.E., for his "Description and Drawing of a wrought-iron lattice Bridge on the Dublin and Drogheda Railway."

A Walker premium of books, suitably bound and inscribed, to William Evill, Jun., Grad. Inst. C.E., for his "Description and Drawings of the London Terminus of the Eastern Counties Railway."

A Walker premium of books, suitably bound and inscribed, to Arthur John Dodson, Assoc. Inst. C.E., for his "Description and Drawings of the Hydraulic Traversing Frame, used on the Great Western Railway."

A Walker premium, "The Transactions of the Institution of Civil Engineers," suitably bound and inscribed, to James Forrest, Jun., for his "Drawings and Diagrams illustrative of numerous Papers read at the Meetings."

The Council take this opportunity of calling attention to the importance of making the Institution the depository of drawings, descriptions, and models of works and machinery; also of books, papers, reports, and pamphlets, which latter, though apparently of only local or temporary interest, would, when collected, be of great value to the profession.

#### SESSION 1845.

THE Council invite communications on the following, as well as other subjects, for Telford and Walker premiums:—

1. On the Theory of Arches, Abutments, and Piers, comparing the hypotheses of different writers; with practical examples of the application of the theory.

2. The history of the invention of, and the improvements in, oblique Arches, with the theory and the practical methods of setting them out.

3. Experiments on the pressure upon every

part of an oblique Arch, especially how the pressure varies as the angles become oblique.

4. On the construction of Retaining and Wharf Walls, with examples of failure and the causes.

5. A description of the Canal of the Helder (Holland), or of any foreign engineering works of a similar kind and importance.

6. The modes of Irrigation in use in Northern Italy; of Drainage adopted in the Lowlands of the United Kingdom; or works of a similar nature in Holland or in other countries.

7. On any of the principal Rivers of the United Kingdom (the Shannon), or of Foreign Countries (the Po, Italy,) describing their physical characteristics, and the Engineering works upon them.

8. An account of the waste or increase of the Land on any part of the coast of Great Britain, the nature of the Soil, the direction of the Tides, Currents, Rivers, Estuaries, &c., with the means adopted for retarding or preventing the waste of the land.

9. The principles and practice of constructing Cofferdams.

10. The best and most economical mode of raising large Stones or Rocks from the beds of Rivers or Harbours.

11. The application of Gunpowder as an instrument of engineering operations.

12. The conveyance of Fluids in Pipes, under pressure, and the circumstances which usually affect the velocity of their currents; with accounts of Water Works and Gas Works.

13. The most advantageous method of employing the power of a Stream of Water, where the height of the fall is greater than can be applied to Water Wheels of the usual construction.

14. Experiments on Water Wheels, Steam Engines, and other machines, with the friction brake.

15. The construction of Cranes for raising and lowering weights.

16. The proportions of large Chimneys, as affecting their draught; with examples and drawings of the construction.

17. The drainage of Mines, exemplified by a statement of the actual condition of some of the Coal-fields or Mining Districts of Great Britain.

18. The ventilation of Coal Pits or Mines in Great Britain or in Foreign Countries.

19. The construction of Spiral and Fan-blowing machines, and the power required to drive them, in relation to the pressure and volume of air delivered.

20. The smelting and manufacture of Metals in Great Britain or in Foreign Countries.

21. The comparative advantages of Iron and Wood, or of both materials combined, as employed in the construction of Steam Vessels; with drawings and descriptions.

22. The sizes of Steam Vessels of all classes, whether River or Sea-going, in comparison with their Engine Power; giving the principal dimensions of the Engines and Vessels, draught of water, tonnage, speed, consumption of fuel, &c.

23. The best forms for River and Sea-going Steam Vessels; with practical examples.

24. The various modes of propelling Vessels in actual or past use, and their comparative merits.

25. The results of the use of tubular boilers, and of Steam at an increased pressure, for Marine Engines.

26. On the best application of the principle of Expansion to the improvement of the Steam Engine; with examples of the effect of such application, from actual experiment, and a description of the Engines experimented upon.

27. On the term "Horse Power," as applied to Steam Engines.

28. Description of Pyrometers, for ascertaining the degrees and the fluctuations of the temperature of the Flues of Furnaces, &c.

29. The various modes adopted for moving Earth in Railway Tunnels, Cuttings, or Embankments with the cost thereof.

30. The proper slopes for Cuttings and Embankments in various soils.

31. Notice of the principal Self-acting Tools employed in the manufacture of Engines and Machines, and the effect of their introduction.

32. On the most effective and best adapted Machines for bruising or crushing the Sugar Cane, and for separating the juice from the vegetable fibre.



33. Memoirs and accounts of the Works and Inventions of any of the following Engineers:—Sir Hugh Myddelton; Arthur Woolf; Jonathan Hornblower; Richard Trevithick; William Murdoch (of Soho); and Alexander Nimmo.

Original Papers, Reports, or Designs, of these or other eminent individuals, are peculiarly valuable for the Library of the Institution.

The communications must be forwarded, on or before the 31st of May, 1845, to the house of the Institution, No. 25, Great George-street, Westminster, where copies of this paper, and any further information may be obtained.

CHARLES MANBY, *Secretary*.  
25, Great George-street, Westminster, 1844.

*Extracts from the Minutes of Council, February 23rd, 1835.*

"The principal subjects for which Premiums will be given, are—

"1st. Descriptions, accompanied by Plans and explanatory Drawings, of any Work in Civil Engineering, as far as absolutely executed; and which shall contain authentic details of the progress of the Work. (Smeaton's Account of the Edystone Lighthouse may be taken as an example.)

"2ndly. Models or Drawings with descriptions of useful Engines and Machines; Plans of Harbours, Bridges, Roads, Rivers, Canals, Mines, &c. Surveys and Sections of Districts of Country.

"3rdly. Practical Essays on subjects connected with Civil Engineering, such as Geology, Mineralogy, Chemistry, Physics, Mechanic Arts, Statistics, Agriculture, &c.; together with Models, Drawings, or Descriptions of any new and useful Apparatus, or Instruments applicable to the purposes of Engineering or Surveying."

*Note.*—The communications should be legibly written on foolscap paper, on the one side only of each page, leaving a margin of one inch and a half in width on the left side, in order that the sheets may be bound.

The Drawings should give as many details as may be necessary to illustrate the subject, and should be to such a scale that they may be clearly visible when suspended on the walls of the Theatre of the Institution, at the time of reading the communication.

Papers which have been read at the Meetings of other Scientific Societies, or have been published in any form, cannot be read at a Meeting of the Institution, nor be admitted to competition for the Telford and Walker Premiums.

#### ON THE EXPENSE OF SURVEYS.

CAPTAIN TUCKER'S REPORT TO THE ORDNANCE DEPARTMENT.

In obedience to your order of the 22nd of February, 1844, I have the honour to submit the following estimates for the Health of Towns Commission, plans on the scale of five feet to one mile, shewing contour altitudes, or altitudes marked at equal vertical distances, in the streets of towns, contour lines without the towns, sufficient to be serviceable for the sewerage and drainage of them, and including

the expense of ascertaining sewers, water-pipes, and gas-pipes, arranged under the following heads:—

1st. Of towns of which the survey is completed.

2nd. Of towns of which the survey is in progress.

3rd. Of towns of which the survey has not been commenced.

No. 1. *Towns Surveyed.*—In the estimate under this head the expense of the surveying and levelling already done is not included, as I have considered them to have been performed for the Ordnance Survey; therefore, I have only charged the additional expense of marking contour altitudes in the streets, and contour lines outside the towns, ascertaining sewers, water-pipes, and gas-pipes.

The cost of making copies of the plans is inserted, to which the additional cost is added, to shew the cost of copies of the plans with the additional information for sanitary purposes.

No. 2. *Towns in progress for the Ordnance Survey of England.*—The estimate for levelling and marking contours in the streets is for the levelling which will be necessary for the improvement of the sewerage and drainage of towns, supposing it to be done for that purpose.

The cost of copies of the plans is the same as for Class No. 1.

No. 3. *Towns of which the Survey is not commenced.*—The surveying, plotting, and drawing are charged, shewing the cost of levelling, contouring, ascertaining sewers, water-pipes, and gas-pipes, as in No. 2.

The expense of fixing points is not included in the estimate.

The expense of surveying varies in proportion to the size or population and the compactness of the town.

The area or extent of the close or compact part of a large town being greater in proportion to the whole area or extent of the town, than the compact part of a small town bears to its whole area or extent, the cost of surveying will be greater in proportion to its area than the cost of a small town; therefore, I have estimated the cost of preparing plans of towns having a population of 10,000, 20,000, 50,000, 100,000, 300,000.

The levelling and marking contour altitudes in the streets embraces the shewing the water-shedding line, and the lines of natural drainage, as accurately as the sinuosities of the streets will allow of their being traced, and the levelling is supposed to be arranged for that particular object, as contour lines cannot be laid out within the towns; shewing also a sufficient number of contour altitudes to connect altitudes marked along the line of drainage with equal altitudes marked along the water-shedding lines.

The expenses of levelling and contouring are estimated for towns situated on gentle slopes. For abrupt slopes the expense of levelling will be nearly one-third greater, but the contour altitudes in the streets will be at greater vertical distances, and fewer contour lines will be laid out.

I have considered the towns of 10,000 and 20,000 inhabitants to consist of long branching streets with few cross streets, and requiring

less levelling than towns that are compact with numerous cross streets.

The expense of contouring or marking the contour lines outside the town is calculated on the supposition that one-third of the whole area, usually included on the Ordnance plans, will admit of their being laid out, and the expense shewn in the estimate is the average expense per acre for the whole area of the plan.

The levelling performed at Windsor cost 6d. 5. per acre, including the levelling for four lines of sections, in addition to that which would have been sufficient for sewerage and marking the contours.

The contouring cost 2-75 per acre.

The contours above the datum mark at the bridge are laid out at four feet vertical distance from each other.

Those below the datum point at two feet vertical distance apart.

The expense of contouring was much increased by the necessity for laying out and surveying the lines before the plan was drawn, in order to complete them before her Majesty's return to the Castle, which caused an increase of 0d. 75 to the expense.

The cost of contouring Windsor exceeds the expense per acre, shewn in the estimate for towns, arising from the large extent of country in proportion to the area covered by the town, the contoured area being three-fifths of the area of the plan; whereas, in the estimate for plans of towns, the space or extent of ground on which it will be possible to lay out contour lines is supposed to be one-third only of the area of the plan.

The cost of ascertaining the sewers, water-pipes, and gas-pipes of Windsor, and the Castle, and putting them on the plan, amounted to 1d. 3 per acre for the space occupied by the town.

The sewers, water-pipes, and gas-pipes of Manchester have not been ascertained.

The cost of obtaining them for the town of Oldham amounted to 1d. 1 per acre.

The sewers and water-pipes, but not the gas-pipes, have been ascertained for Bury at the expense of 0d. 25 per acre.

The plans of Oldham and Bury are not sufficiently advanced for the insertion of the sewers; therefore the expense of putting them on the plan is not known.

The expense of ascertaining the sewerage, water, and gas-pipes, varies according to the facilities given by the local authorities in appointing persons to shew their position and the quantity of the sewerage; some places being very deficient, and few or none possess plans.

There is not a plan of the sewers of Oldham, and only one man, eighty years of age, could be found who knew the situation of a principal sewer.

I have not included contingent expenses, as office rent, conveying parties or stores, as, should the commissioners wish to undertake the surveys of towns, these expenses will depend on the strength of the party or parties employed, each of which, I think, should consist of sixteen to twenty surveyors, to be divided into two parties, when the towns nearest to each other are small, or to be employed as one party if a town be large, that the survey may be promptly executed.

ESTIMATE OF THE COST PER ACRE OF FIVE FEET PLANS OF TOWNS.

Population of the Towns.	First Class. Copies of Plans of Towns of which the Surveying and Levelling are completed.						Second Class. Copies of Plans of Towns of which the Levelling is not commenced.						Third Class. Plans of Towns of which the Survey is not commenced.					
	Additional Expenses per Acre for			Expense per Acre for			Expense per Acre for			Expense per Acre for			Expense per Acre for			Expense per Acre for		
	Cost of a Copy of the Ordnance Plan per Acre.	Contour Altitudes in the Towns.	Contour Lines without the Towns.	Sewers, Water, and Gas Pipes.	Total additional Expenses.	Total Cost of the Copy, per Acre.	Cost of a Copy of the Ordnance Plan, per Acre.	Levelling and Contour Altitudes in the Towns.	Contour Lines without the Towns.	Sewers, Water, and Gas Pipes.	Total Cost for Levelling Contours, Sewers, &c.	Total Cost of the Copy, per Acre.	Surveying.	Folding and Drawing, Levelling and Contour Altitudes in the Towns.	Contour Lines without the Towns.	Sewers, Water, and Gas Pipes.	Total Cost of Plans, per Acre.	Total Cost of Plans per Acre, including Calculation of Points.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
10,000	8	1-5	1	1-5	4	12	8	4	1	1-5	6-5	14-5	12	21	4	1	1-5	3 8
20,000	9	1-5	1	1-5	4	13	9	4	1	1-5	6-5	15-5	15	22	4	1	1-5	3 7-6
50,000	11	2-0	1	2-0	5	16	11	5	1	2-0	8-0	19-0	21	25	5	1	2-0	4 6
100,000	12	2-0	1	2-0	5	17	12	5	1	2-0	8-0	20-0	28	29	5	1	2-0	5 5
300,000	14	2-5	1	2-5	6	20	14	6	1	2-5	9-5	23-5	40	32	6	1	2-5	7 6-5



ANCIENT ROME AND MODERN LONDON  
CONTRASTED.

BY H. G. MONTAGUE, ESQ.

(Continued from page 569.)

Modern Rome, says a recent writer, occupies a triangular space, each side of which is nearly two miles long; the ground upon which it is built covers about 1,000 acres, or one square mile and a half; its walls form a circuit of about 15 miles, and embrace an area of 3,000 acres. Other writers make its circumference, including all the sinuosities of the walls, but 13 miles. This space embraces the seven hills, or mounts, on which ancient Rome stood, the names of which are still retained. Three of these only are covered with buildings, and are only thinly inhabited, the Trans-tiberine district, including the Borgo, contains the rest of the inhabitants. The ancient city, with its enormous palaces, amphitheatres, temples, baths, and other public buildings and gardens, most probably filled in the whole extent within the walls. But although it is asserted that the city was then thrice the extent, including vast suburbs without the walls, there is no proof that there existed any other than country-seats of the great and wealthy, who in the most palmy state of Rome were few in number. Modern Rome contains 54 parishes and 300 churches, 114 convents and monasteries, 335 noblemen's houses, 872 elementary schools, and in 1836 its population consisted of 153,678 souls. There are a great many villas in the immediate vicinity, and even within the walls.

That ancient Rome could not have occupied more space than the boundaries of the present city, is evidenced by numerous historical facts. Augustus Cæsar had two cohorts of soldiers posted in the Trans-tiberine region, which was then one of the suburbs of Rome, whose duty it was to put out fires, and suppress tumults; this region was connected with Rome as Southwark and Westminster are with London. Publius Victor gives it 423 streets. Pliny tells us that, in the time of the emperor Trajan, it consisted of 213 streets. Donatus says the walls of Aurelian were the same in compass as in his days. Olympiodorus observes that it was measured in the time of Honorius, 150 years after Aurelian, and that the city had been preserved in its extent and beauty. Victor remarks that every one of the fourteen regions, into which it was divided, being measured and taken apart, its whole compass did not make up 13 miles.

Seneca, Lucan, Aristides, and others speak of numerous country-houses in the suburbs, "Innumera nobilium villæ intra mœnia erant, quæ suburbanæ vocabantur," which seems to prove that the suburbs were walled about as well as the Trans-tiberine region, which was considered as suburban. Pliny, when he speaks of 213 streets, says, "We have seen the whole city surrounded by the houses of Caius and Nero, and even, that nothing might be wanting, the fine palace of the latter was of gold, or gilded over."

The streets of ancient Rome were always narrow and inconvenient, after the fashion of Oriental countries; even the Appian and Flaminian Ways were only broad enough for two vehicles to go abreast. The houses of the lower orders were exceedingly mean and poor, and seldom more than one story high, and the temples, theatres, and many of the domus or noble residences were built of wood when Augustus assumed the purple; he improved and rebuilt a great portion of the city, and added many splendid edifices to it, but in this and during the succeeding reigns the streets were still continued narrow and inconvenient, and the chief of the two largest, viz. Flaminia or Triumphalis, was not more than eight or nine feet broad, and not long within the city; yet it was in this street, Martial tells us, all Rome assembled on a day of triumph. Mardini tells us, after Donatus and Publius, that there were not above 42,000 or 45,000 houses, and that they were but one story high, the people lodging on the ground, and that the houses were extraordinarily mean. Lipsius also, who has so grossly exaggerated the grandeur and extent of Rome, reckons only 46,000 houses; among these were 1,700 or 1,800 domus or palaces for the senators and wealthy citizens

of rank, the rest being insulæ, and were inhabited by the common people.

After the conflagration in Nero's time, Tacitus tells us "The streets were made regular and wide, the height of the houses limited, with areas and porticoes in front, nor was timber used in their exterior parts, but stone only. Public reservoirs of water were provided in various places, and persons to assist in extinguishing fires appointed, and every edifice had its distinct party walls. These regulations, though dictated by utility, did not fail to give beauty also to the new city." From this we may conjecture that, previous to the conflagration, it was somewhat similar to London in olden times, the major part of the city consisting of mean, narrow streets and wooden tenements; and this is demonstrated by the then general destruction, the greater portion of the city having fallen a prey to the flames.

The Romans had few of the elements of wealth which we possess: divided into two classes, freemen and slaves, rich and poor, their nobility were wretchedly poor when put in comparison with the rank and wealth of the City of London. Their boasted temples, palaces, amphitheatres, and baths, their aqueducts and other public works, evidence the debased and prostrate condition of the common people and the effects of successful war, which gave them slaves beyond count. Merchants, traders, and shopkeepers were held in no estimation, for the Romans were not a commercial people, nor had they any but woollen manufactures and a little linen. Architecture and sculpture were encouraged as administering to luxury, and not from a refined love of the arts, and the few trades followed to any extent were chiefly carving, joinery, gilding, goldsmiths', jewellers', and blacksmiths' works, and trades connected with their games and amusements and the army; also those of tailors, shoemakers, vintners, carpenters, fishermen, masons, cartwrights, and shipwrights, and linen and woollen weavers. Their chief source of wealth was war; from the foundation of the empire to the final close of its career, they could scarcely boast an interval of peace without themselves or with other nations; fortune favoured them on most occasions, and every victory contributed to increase their riches, and gave them, from the multitude of slaves taken in battle, a constant accession of wealth and a profitable investment for their capital. War supplied them with slaves to cultivate the soil in the absence of the citizen-soldiers; thus the desolating effects of war were unfelt by the citizens, who also participated in the advantages of every great victory, which threw such multitudes of slaves upon the market, that the meanest citizen, if so inclined, might purchase one or more of those human machines from whose industry they expected to extract wealth. Lipsius affirms there were no less than three or four millions of servants or slaves; and Vossius says there were more servants in Rome than there are inhabitants in any kingdom on earth, and no less than fourteen millions of inhabitants of all sorts; but this can only apply to the whole Roman territory, and not to the capital; and even then it is questionable whether the country, depending almost solely upon its own internal agricultural resources, was sufficiently fertile to supply such a population.

It is utterly impossible to reconcile to our minds the weak, insulated position of the Romans at the breaking out of the first Punic War, and the powerful fleets and armies brought forward during the twenty-three or twenty-four years of its continuance. Polybius, who is considered the most correct of Roman historians, tells us, that previous to the breaking out of that war the Romans had no ships either for war or commerce, and that a navy was created for the purpose of combating the Carthaginians. We are then told that under the conduct of Marcus Attilius Regulus and L. Manlius, they had a fleet of 350 ships, *naves longæ* triremes, quadriremes, and quinqueremes (vessels exceeding one another by one bank of oars), but even the exact nature and uses of these vessels are uncertain; that each galley had 300 rowers and 120 fighting men, and provided with the necessary munitions of war for land and sea. How are we to reconcile this with the knowledge of seamanship we at present possess? The

Mediterranean is no fish-pond, nor is an army of this extent a trifling one to be cruising about in open galleys; to each vessel must be attached many days' provision and water; the military engines were also very heavy and cumbersome. The dimensions of each galley must have been large enough to admit each man to have fighting room, and to have admitted the upper rowers to have full sweep between the lower ones, and the platform above must have had ample accommodation for 120 soldiers and their warlike implements. Again, if the Romans during the Punic War had attained to so great excellence in the naval art, how is it that this naval superiority was not maintained in the after periods of Roman grandeur? that the Romans in Polybius's time, when they were arrived at almost universal empire, could not fit out such fleets, and make such naval preparation? To this we have no answer, simply because no satisfactory answer can be given! The whole account is grossly exaggerated, and no doubt much of it fabulous.

Wherever memorials exist, we find the like exaggeration. When speaking of population, victories, and defeat, Polybius tells us, that in the time of the consuls M. Valerius Messala and L. Apustius Fullo, the force landed by the Romans to oppose the Gauls amounted to near 700,000 foot and 7,000 horse; and Polybius, on the occasion of the muster, expresses his admiration of the hardy enterprise of Hannibal to attack an empire of such prodigious strength with an army of scarcely 20,000 men; and how much more is this admiration increased when we find it reported to the Carthaginian senate that, in the course of his progress up to the conclusion of the battle of Cannæ, he had defeated six consular armies, slain 200,000 men, and taken 50,000 prisoners, 50,000 having also fallen at the battle of Cannæ!

(To be continued.)

## HARWICH RAILWAY AND PIER.

It will be interesting to know that the project for improving the harbour of Gluckstadt, and making it available for the purposes of the intended communication, is likely to be met by a corresponding effort on the part of the government with respect to the port of Harwich.—The report of Captain Washington is now before us, from which we learn that the present difficulties in the navigation are easily removable, and that a very moderate outlay will suffice to render Harwich available for every purpose which its geographical situation suggests; and we may speedily hope to see Harwich harbour once more "the only real Harbour of Refuge on the east coast of England, between the Thames and the Humber," as well as the "best point for steam communication with Holland, Hamburg, and the North of Europe."—The method proposed by Captain Washington is based on the proposal of the Eastern Counties Railway Company to give 30,000l. towards the construction of a pier, on the plan proposed by Mr. Rendel. This, with the breakwater as suggested, will not only afford a perfect shelter to vessels under stress of weather, but would also entirely protect the Government property, which is greatly jeopardised by the present state of the harbour. The plan, as laid down by Captain Washington, is extremely simple, and is comprised under the three following heads:—"1. To put an immediate stop to the quarrying up and carrying away the cement stone from the foot of Beacon Cliff.—2. To replace, by an economical breakwater of rough stone, run out from Beacon Cliff, the natural barrier that has been taken away, so as to confine and guide the ebb tide against Landguard Point, and thus stop its increase.—3. To dredge a 15-foot channel (or if preferred, an 18-foot channel) in lieu of the former deep-water passage now lost."—These suggestions being carried into effect, the port of Harwich will present a perfect shelter, with a channel of 15 feet deep throughout a quarter of a mile along the whole length of the Suffolk shore. This will enable "large steamers at all times of the tide, frigates at a quarter flood, and the largest ships of the North Sea fleet at high water to enter the harbour by night as well as by day."—*Railway Times.*



## ON THE ARRANGEMENT AND CONSTRUCTION OF HOUSE DRAINS.

BY MR. JOHN PHILLIPS.

The attention of the public being now very much drawn to the subject of house drainage, it would appear to be extremely desirable that clear views of the elementary principles of the subject should receive the utmost publicity, to the intent that a better mode should speedily succeed the present bad and inefficient system of building house drains. And as I have found much difficulty in procuring information upon many points which require elucidation, I have ventured, as a practical man, to throw together a few thoughts, being anxious to add my mite to the general stock of knowledge upon this subject.

A system of perfect drainage is, in a sanitary point of view, of paramount importance, for without it no habitation can be considered as a fit place of residence, the general health and comfort of the inhabitants of every dwelling being very sensibly affected by it. There are a great many confined and densely-populated localities in and about London where the want of house drainage is evidently very apparent. All the refuse water and matter at these places, from not being carried off, accumulate, saturating the whole extent of the adjacent ground to the depth of several inches, thus producing boggy tracts of black, stagnant, and putrid matter. The exhalations evolved from the decomposition of these accumulations are of the most noisome and intolerable description, infecting the surrounding atmosphere with pestilential impurities. In such localities, a shower of rain must be looked upon rather as an evil than as a means of doing good, for as the water cannot escape, it stirs up the vast amount of accumulated abomination, thereby producing the most dreadful effluvia. The interiors of dwellings in places of this description never become clean; they are kept nearly in the same state as the ground out of doors; thus the floors and walls of such dwellings are being continually luted over with foul matter, and the inhabitants, instead of keeping the floors cleansed by washing, actually endeavour to do so periodically by scraping them with a shovel or other instrument. In fact, these disgraceful dens of filth and neglect cannot be considered in any other light than as vast corrupt dung-heaps.

The building of cesspools and bottoms of drains is usually performed with bricks laid without mortar, the consequence of which is, that the surrounding earth becomes saturated from the permeation of the sullage matter through their interstices. This is frequently observable in making excavations, where, in taking up the old cesspools and drains, the ground adjacent and for some considerable distance is found blackened from the soaking of the sullage matter. The foundations of the walls, and the walls themselves, often become saturated from the same cause. Floorings also become rotten, from the exsuarine acid which is exuded, and a kind of oxydation is also found to gather on the surface of the ground and on the underside of the flooring. The fetid odour evolved by evaporation from the saturated ground and walls finds its way through the chinks of the flooring, and thus the whole atmosphere within the house becomes tainted; this process is continually going on, for as evaporation takes place, the ground is receiving incessant supply from the permeation through the interstices of the brickwork.

Besides the insalubrity of the atmosphere, produced from the evaporation of the stagnant accumulations on the surface of badly drained localities, as well as the saturated ground from cesspools and drains, the malaria emitted from the decomposed animal matter retained within the cesspools, is of a poisonous and highly noxious character, very frequently producing typhus and other infectious fevers. Considerations of public health, therefore, point out the immediate necessity of providing a wide and extended system of efficient house drainage. The use of open, permeable

cesspools ought to be entirely prohibited, as, by allowing the retention of the more solid matter within such receptacles, the effluvia emitted therefrom is productive of the most injurious effects, and for the future the construction of such ought not to be tolerated under any circumstances.

To insure perfect house drainage, it is most essential that a sewer be formed and carried up to the front of each tenement, and that a perfect and properly-formed drain be made therefrom, to communicate directly with such sewer. It is also essential that the sullage from each tenement be carried off through the drain into the main sewer as fast as engendered, and with the greatest despatch possible. The purpose of sewers is to afford ready means to receive and carry off the drainage of premises; but the pains taken in the construction of the sewers to give them the proper form and fall, are rendered entirely useless while cesspools and drains are not at the same time kept clear. This is best effected by an abundant and well-regulated supply of water passing through them, for no drain, however formed, can be effective in producing complete and rapid transmission of soil to the main sewer otherwise than by this power. Hence, no system of house drainage can be considered perfect that does not include the proper construction of and cleansing of both drains and sewers by an abundant supply of water, for they are so combined, that they may be considered as one.

Each individual is now allowed to carry a drain from within a few feet of the sewer, according to his own fancy, the part next the sewer being generally built by the Commissioner of Sewers, consequently drains are not made with that due consideration of their use which the nature of the subject demands. So long as a drain is made, it is considered sufficient, and being under ground and unseen, it is consequently less thought of. Proper construction is seldom or never attended to, and drains are made of all manner of shapes, and very frequently of the worst possible materials. The obtainable fall is scarcely even strictly regulated so as to produce the greatest effect; and the junctions with the main sewer and with each other are generally formed in a very imperfect manner. The usual workmanship of drains, after the first 3 feet, is executed in an improper and slovenly style, the interior surface of the brickwork being made very undulating and rough, and in turning the upper arched work, pieces of mortar fall from the joints to the bottom, where they lie and become hard, and in consequence present a series of obstructions along the whole extent of the drain. While the inventive faculties are usually put to the utmost test upon the other details of a building for the purpose of producing effect and good workmanship, this most essential adjunct is neglected, the proper form, size, construction, and general efficiency of drains being seldom considered.

From the examinations which are constantly being made into complaints of the stoppages of drains, the cause of stoppage is generally found to arise from the drains themselves, and not from any accumulations in the sewers: in fact, this is nearly always the case. The forms of the drains and the irregularities of their falls, the unevenness of the surface, and the pieces of mortar which lie on the bottom, as well as the badly-formed collateral junctions, are the general causes of stoppages, but the principal reasons arise from the drains being too large, and from an inadequate supply of water to carry off the soil; as it is, drains generally form receptacles for retaining within them matter which they were intended to convey away.

The size of every drain should be consistent with the size of the building, and the quantity of water and matter likely to pass through it; for if a drain be made too large, the water will be spread over a wide surface, the velocity of the stream will be diminished in proportion, and, in consequence, it will not have sufficient power to carry away the soil, and eventually the drains will become choked. A disproportionately large-sized drain is more likely to become choked with the same quantity of water and matter passing through it than one of a smaller size; for, when contracted, the water, having a greater depth and velocity, is better able to carry off any obstructions which it may meet with in its course.

Drains to sewers should be carried in direct lines right through premises, and their falls should be regulated so as to form perfect inclinations from their heads to the sewers. The lateral junctions of drains should be curved in the direction of the fall of the stream, otherwise deposits will be formed at those junctions. The interior surfaces of drains should be even, uniform, and smooth, for the purpose of facilitating the passage of the sullage water and matter, and also to prevent any adhesion to their sides. They should also, if possible, be formed perfectly water-tight, so as to prevent the permeation of the sewerage. Wherever an inlet is formed to a drain, an efficient trap air and water-tight should be constructed, to prevent the escape of any noxious and offensive smells; and the neck of the soil-pan of every water-closet should be connected immediately with a properly-formed water-tight trap, communicating with the drain.

The power of a stream running in a cylindrical pipe is the greatest at the axis, and gradually decreases from thence towards the surface of the pipe where it is least. The forms of drains should be made as much as possible in accordance with the natural action of running water. The circular form suits nearly that action, therefore flat-bottomed and upright-sided drains should never be made. The sectional area of a drain of twelve inches diameter is sufficient, if properly constructed and managed, to carry off the sewage of several houses; but, from conflicting interests, it is far preferable and much more convenient that each tenement have a separate drain communicating directly with the main sewer in the street. As was previously observed, the size of a drain should be in proportion to the area of the building, the adjacent ground to be drained, and the quantity of water conveyed thereto. If drains were thus proportioned, the present supply of water would be found nearly effectual in preventing any accumulations and consequent obstructions within them. The effect of the present supply of water is rendered of little avail in consequence of the size of the drains, as at present constructed. Therefore, in order to render the action of water more certain, when collected within drains, it is absolutely necessary that their size should be considerably reduced, which being done, accumulation would be next to impossible: the soil would be carried off into main sewers, instead of being retained within cesspools and drains; and by a proper and well-regulated system of sewerage, the refuse-water from every drain could be rendered available for keeping the sewers themselves perfectly clear from accumulations of soil.

Drains of from 4 to 8 inches diameter are of capacity sufficient to afford efficient drainage from any ordinary dwelling-house, and as the best and most effectual form is nearly that of a cylinder, and as it is not practicable to build them of such small sizes, and of such a form with common brick, we should look to another material for their construction. The ordinary common drain-tiles seem to answer the purpose extremely well; but, as it has become requisite to reduce the subject to a clearly defined system, in order to supersede the present ill-constructed brick conduits, these tiles do not afford any very great advantage over them. The most efficacious manner of constructing drains would be with thick, strong clay pipes, well burned, and glazed inside; made of an entire piece nearly of a circular form, and of a length convenient for use, so that the end of one pipe could fit into the next without forming a protrusion within it. Drains thus formed and carried in direct lines with regular inclinations to sewers, with proper curved junctions, all properly laid, and with an efficient and well-regulated supply of water, would be effectual in carrying off the sullage and keeping themselves perfectly free from accumulations, for the calibre being smaller, the stream would be more contracted, and in consequence would have greater velocity. The smoothness of surface produced by glazing would vastly facilitate passage through them. With proper apparatus they could be cleansed if required at any time, precisely in the same manner as chimneys are now swept, consequently breaking up floors and paving, with all the accompaniments of foul stench, and



matter distributed about, would be rendered unnecessary. The above method would insure the perfect cleanliness of drains; and a properly-constructed trap to every inlet would be a preventive to any noxious and offensive exhalations emanating from them. In laying the tubes, the ground should be cut as near as possible to their form, and the lower half should be thinly bedded with mortar to fill up any little irregularities in the cutting of the ground, the tubes would then have a solid foundation.

If a line drawn from the vertical and horizontal extremities of the diameters of the tube fall within its substance, it will support any external pressure short of crushing the materials. Therefore, the proper thickness, to insure the stability of a cylindrical tube drain, is determined thus:



Fig. 1.

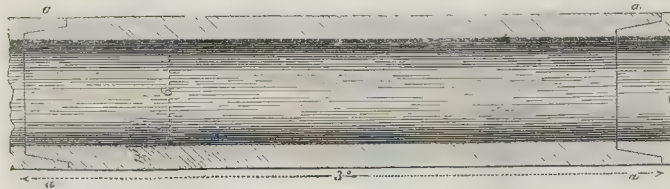


Fig. 2.

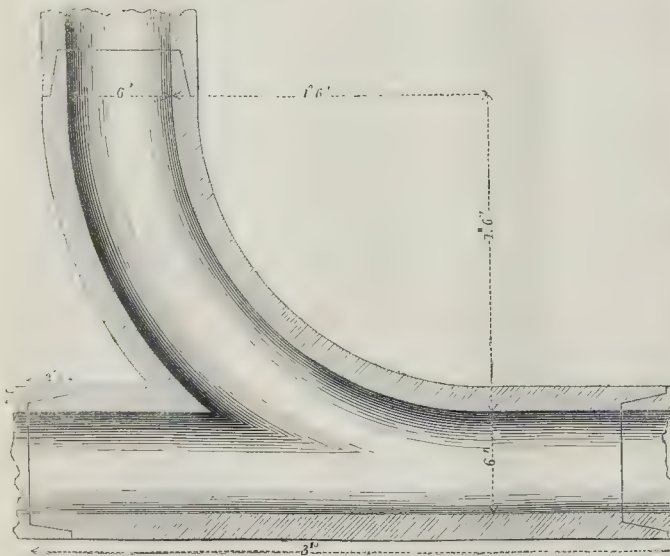


Fig. 3.

Figure 2 is a section of a pipe of 6 inches diameter; *a a a* shewing the manner of forming the joints.

Figure 3 is a horizontal section, shewing

Let A B C (Fig 1) represent the interior semi-circumference of a cylindrical drain tube; join the extremities of the vertical and horizontal diameters at the vertex and side B and A, and draw the line E F parallel thereto, forming a tangent to the curve, cutting the diameters produced in E and F, either of those points will give the extent of the least thickness of the ring. With the radius D E or D F, draw the circle F E G, concentric to A B C. Thus the substance between the two circles is the proper thickness for a tube, for the lower half having the solid ground for its foundation, and being firmly bedded therein, any weight placed on E will be distributed through its substance because the line of pressure E F drawn from the two outer extremities falls within the substance of the tube.

According to the foregoing method for determining the proper substance for the tubes, the following are the thicknesses requisite for the several diameters, viz.—

Inch.			
For a pipe of 4 inches diameter the proper thickness is	0 2		
" 5	"	"	1
" 6	"	"	1 1/2
" 7	"	"	1 3/4
" 8	"	"	2
" 9	"	"	2 1/2

Being made of entire pieces, they are better able to resist pressure; they are as durable, if not more so, and are far more efficacious in action, than common cylindrical brick drains. The cost of them would be about half the price of the present brick drains.

Wherever any alterations are being made to premises, and a desire is evinced to improve the drainage, or where drains are troublesome from often becoming stopped, cylindrical tube-drains should be immediately substituted for the present inefficient drains.

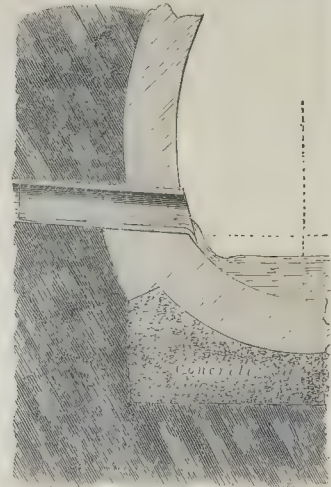


Fig. 4.

Figure 4 is a section of a portion of the sewer in use in the Westminster Commission, shewing the proposed manner for forming the connection of a tubular drain with the sewer. The tube is formed with a lip at the bottom, so that the water flowing from the drain into the sewer shall trickle down the invert, instead of being projected into the current. The junctions of drains with a sewer should be formed as near to the bottom of the sewer as is convenient, for when placed too high from the bottom, the water and matter, dropping from them into the main current, cause a retardation to take place, producing violent eddies, which prevent the heavier matter from flowing with the main current, and cause deposits to take place in the upstream, which, by increasing, eventually fill up the sewer.

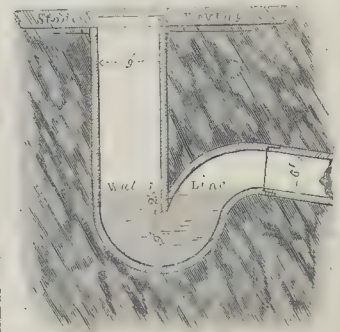


Fig. 5.

Figure 5 shews the method of forming a trap to receive surface drainage; it is made of one entire piece, with a socket on the outlet end, fastened on to a tube. The stone paving is bedded on the top, with an iron grating let into the stone, and a hole cut in the stone underneath the grating the same size as the pipe. It is evident no foul smell can escape from this trap while the bottom is kept filled with water, and in dry weather care should be taken to pour water into the trap, to make up for the water which the heat of the weather will have evaporated.

(To be continued.)

CHINESE GRANITE.—At the meeting of the highway board, on Thursday the 21st instant, an offer was made to sell the commissioners a quantity of Chinese Granite at 6s. per square yard, being about half the price generally paid. The granite is of very superior quality, and is of lighter colour than is found in this country. The specimen sent to the commissioners has been nicely squared by the Celestials, and it appears to have formed a portion of some building.—*Liverpool Paper.*

the lateral junctions formed in one piece. These junctions should be made of different sizes, so that smaller drains may branch from the main lines.



## NEW APPLICATION OF RAILWAYS TO SUPPLY TOWNS AND CITIES WITH WATER.

An agreement has been executed between a committee of inhabitants of Edinburgh and the committee of management of the Caledonian Railway, for the use of part of that line for the supply of the city with water.

The following extract from the proceedings of a public meeting in Edinburgh, the Lord Provost being in the chair, will serve to shew the view which is taken in Edinburgh on this subject.

Mr. Hunter, after having stated the position of the inhabitants of Edinburgh with respect to their present defective supply of water, thus proceeded:—From a report of Mr. Rankine, a young engineer of high promise,—it was thought a good supply of water could be brought along the line of the Caledonian Railway. You are generally aware that the line of that railway will, at a distance of 12 or 14 miles from Edinburgh, come along high grounds, saturated with the fluid of which we stand in need, and thus afford an ample supply of pure water to the city, provided the requisite measures be taken to render those sources effective. Mr. Rankine has made a survey of the line through which the railway is to pass, and I will now read to you his letters to Mr. Morton, the secretary, on the subject, giving an estimate of the probable expense of putting the plan into execution. [Here Mr. Hunter read the letters referred to, from which it appeared that the total sum required to bring a supply of water by the proposed line, which would give 226,800 gallons per day, or about 14 gallons to each inhabitant of Edinburgh and Leith, would not exceed (exclusive of the cost of distributing pipes in Edinburgh) 85,000*l.* or 90,000*l.*] This statement (continued Mr. Hunter) is made upon a rough estimate only, but I think it is sufficient for present purposes, and is perfectly satisfactory. The Lord Provost, along with the Provost of Leith, Mr. Morton, and other gentlemen who have taken a great interest in promoting this plan, highly merit the gratitude of their fellow-citizens for the manner in which they have acted. They knew no time was to be lost, for, as I shall immediately shew you, it is altogether indispensable that we should come to a final decision, and be ready to act when the Caledonian Railway Bill is before the House of Lords, which I hope will be at no very distant period of next session. After communicating with the Railway Company, the following heads of agreement were drawn up:—

1. That the said second parties (inhabitants' committee), or any public board of trustees, or company of shareholders, to whom they may transfer their right under this agreement, shall be entitled and have right, at their own expense, or having obtained Parliamentary or other sufficient powers for that purpose, to lay down or carry a conduit or pipe capable of delivering from 300 to 500 cubic feet of water per minute, along the line of the Caledonian Railway, from a point at or on the north side of its summit level near Cobbinshaw to the Edinburgh terminus; and to convey water thereby for supplying the city of Edinburgh and town of Leith and neighbourhood from such suitable springs or streams as they may acquire right to. The arrangements for forming said conduit or laying said pipe, and for connecting the same with the springs or reservoirs, shall also be made and executed according to plans to be submitted and approved of by the engineer of the Railway Company, and to his satisfaction, and the arrangements for maintaining, repairing, and using such works after they are executed, shall also be subject to the approbation of the Railway Company's engineer.

2. That any springs or streams of water that may be found in the line of the cuttings of the railway, may at convenient time and seasons be taken and collected by the said second parties, and also convey along said pipe or conduit, in so far as the said Railway Company may not require them—the said second parties always obtaining the consent of any parties having right to such springs or streams.

3. That the Railway Company shall be entitled to take from said pipe or conduit, if informed, a supply of water for their engines, or any other purposes, at such places or stations

as may be pointed out by the said company, such supply not exceeding in all 20 cubic feet per minute.

4. That the said second parties shall use their best endeavours to aid the Railway Company in procuring an Act of Parliament for the formation of the said railway.

5. That the agreement now made shall not be binding upon either party, unless the engineer of the railway shall be satisfied that the proposed conduit or pipe can be laid in the line of the railway, and maintained and made use of, without causing injury or risk thereto.

6. It is anticipated by the second parties, that the fulfilment of the plan proposed will not cause any material addition to the expense of forming the line of railway. But as the parties are not at present fully informed in regard to this point, it is further agreed, that if the engineer of the Railway Company shall find that the expense of the railway will be thereby increased, the second parties shall pay the whole additional expense that may be incurred by the Railway Company, in consequence of the acts of the said second parties, as the same may be ascertained by the engineer of the railway.

7. That the second parties or their foresaids shall be bound to state, within eight days after the Bill for the railway shall have been read a second time in the House of Lords, whether they intend to take advantage of, and act upon, this agreement or not; and in the event of their failing to do so, they shall forfeit all right under it.

8. It being the object of the Caledonian Railway Company by thus lending the use of their line of railway, to assist in furnishing to the cities of Edinburgh and Leith a cheap and ample supply of water, through a public trust to be created for that purpose—but it being stated by the second parties hereto, that the contemplated works must probably originate in a private company; therefore it is conditioned, that in the event of a public trust being at any time created, and executing or using the contemplated works for the purpose aforesaid, the Caledonian Railway Company shall have the power of exacting a sum not exceeding 5*l.* annually in the name of lordship; but should the contemplated works be executed and carried on by a private company, then the Caledonian Company shall be entitled to claim annually from said company one-tenth of the nett surplus profits arising from said undertaking, whenever such nett surplus profits shall amount to or exceed 5 per cent. per annum on the capital laid out; or in the event of said surplus amounting to 4½ per cent. and being less than 5 per cent., the difference between 4½ and 5 per cent., whatever it may amount to, shall be paid to the Railway Company over and above said lordship of 5*l.* annually in all events to be exigible; declaring that if such company shall at any time transfer the concern and works to a public trust, then the right of the Railway Company to the said tenth of the nett surplus profits shall cease, and the payment shall be restricted to a sum not exceeding 5*l.* annually of lordship as aforesaid.

THE TIMBER TRADE.—It is said that the timber, wool, and guano trades are the only ones in which large sums of money have not been lost by importers during the present year, and it is a fact worthy of notice that in two out of three of these trades the protective system has been, in whole or in part, abandoned during the last four years. It will be remembered that one of Sir Robert Peel's earliest measures was to diminish the amount of protection on colonial timber, and it was most confidently predicted at the time that the colonists would be ruined by the change. The result has shewn that this was a false prophecy, for the timber trade has never been in a more healthy or prosperous state. This is partly the result of a breaking up of a system of speculation and overtrading, but still more of the revival of trade and commerce. People have once more begun to build houses, mills, warehouses, and ships, and the result has been to create a brisk demand for timber, and to shew that commercial and manufacturing prosperity are of infinitely more value in the timber trade than all the protecting duties ever invented.—*Liverpool Times.*

## ON THE PLAN ADOPTED IN VENTILATING THE CELLS OF THE PENTONVILLE PRISON.

BY DR. OWEN REES,

*Principal Medical Officer of the Prison.*

THE report of Major Jebb on the Pentonville Prison, recently presented to Parliament by command of her Majesty, has once more drawn public attention to the various experiments now being made there. As the whole system must necessarily hinge upon the health of the prisoners, and as their health must be affected for the better or for the worse, according to the plan adopted in warming and ventilating their cells, much attention has been given to this important subject. There are various opinions alford with respect to the efficiency of the plan adopted; some go so far as to condemn it *in toto*, others call only for a modification, while a few are to be found who confess that they cannot imagine the ingenuity of man to devise a more perfect system.

It will be well if these differences of opinion are cleared up, and the truth demonstrated, before the Government commence the proposed introduction of the same plan into the various prisons throughout the country; and it is with this view that we present our readers with the subjoined report, our object being to excite discussion, and to induce observation and experiment:—

"Having been desired to give my opinion in writing on the plan adopted for ventilating and warming the prison, I beg leave to state, that the former of these objects has been most effectually attained during every season of the year.

Prisoners employed at trades requiring great exertion have frequently, when questioned, spoken in terms of praise of their cells as a workshop, even during the warmest months of the summer.

During the winter complaints have occasionally been made, having their origin in an excess of warmth, rather than a deficiency of ventilation, the former producing distress under exercise, which was not always attributed to its proper cause.

The experiments which have been made on several occasions in order to test the purifying powers of the system in use, have shewn its superiority over the usual plan of stove and chimney ventilation, an advantage mainly to be attributed to the perfect diffusion obtained by the method applied to the cells, while the greater part of the fresh air entering a room and passing up a chimney, is productive of draught, and therefore less available as a purifying agent.

The bulk of air passing through each cell was ascertained at the commencement of last summer to be about 30 cubic feet, or 180 gallons per minute; but the quantity at present drawn through each cell must be more than this, in consequence of the flues having become thoroughly dry since the experiments were made.

The prison cells contain about 800 cubic feet of air, and 180 gallons per minute pass through every cell, with the advantage of perfect diffusion; thus all conditions appear to have been secured to render the ventilation in every respect satisfactory.

As regards the plan which has been adopted for warming the cells, some difficulty has been experienced in regulating the heat, any required temperature when once obtained not admitting of being materially lowered under from 10 to 14 days after the fires have been extinguished. This inconvenience is owing to the non-conducting nature of the materials of which the building is constructed, and the large extent of surface for radiating heat contained within the fresh-air flues; and in virtue of the same conditions, nearly a fortnight has been required even now, that the building is dry, in order materially to raise the temperature of the cells by means of the winter fires.

Notwithstanding the difficulty above alluded to, it is fully anticipated that when the properties of the apparatus are better ascertained in relation to its effects on the building, that the quantity of coal for consumption during the 24 hours will admit of being so adjusted, as to produce any required temperature within such limits as shall remove all likelihood of inconvenience being felt either from excess of heat or cold.

It might at first view be supposed, that since



so long a period was required either to decrease or increase the warmth of the cells, that it would be impossible to guard against those sudden changes of temperature so commonly experienced in England. This would certainly be the case, were it not for a property of self-adjustment possessed by the apparatus, in virtue of a law governing the radiation of caloric from heated surfaces. The influence of this property is shown by the fact, that when the external air is at 20 to 25 degrees, an increase of from 25 to 30 degrees upon that temperature is, without difficulty, obtained in the cells; but if the external air suddenly rise to 48 or 50 degrees, instead of obtaining, as before, that which would now be an inconvenient addition of 25 degrees, or more, by the effect of the apparatus, we find only from 10 to 12 degrees increase on the atmospheric temperature produced in the air of the cells, the combustion of coal in the apparatus remaining the same.

The following table, taken from the prison register, exemplifies the adjusting power of the apparatus:—

Date.	Minimum temperature of External Air.	Minimum temperature of the Cells.
1844	0	0
January 1	33	66
" 2	31	69
" 3	32	67
" 4	33	67
" 5	42	67
" 6	45	68
" 7	39	66

It appears by this table that when the external air was 31 degrees the cells were 60 degrees, and when the former was 46 degrees the latter were 58 degrees, so that when the external air was 15 degrees hotter the cells were 2 degrees colder. It also shows that the night temperature of the cells ranged between 57 and 60 degrees.

This property of self-adjustment has, up to the present time, shown a sufficient range to remedy the inconvenience felt on sudden accessions of warm weather.

At the commencement of the present winter the cells were brought to a higher temperature than could have been wished, owing to the unexpected increase of effect produced by the heating apparatus, which in consequence of the flues being dry, acted more powerfully when 1 cwt. of coal was consumed during the 24 hours, than it did last year with a consumption of 3 cwt.; nor did even 5 cwt. suffice to raise the temperature to its present height when the prison was first erected, as was shown by results obtained from experiments made during the winter of 1841 and 1842. This great difference in effect is undoubtedly to be accounted for by the present dry state of the building, the greater part of the coal used during former years having been expended in vaporization of water, and consequently productive of no effect upon the air passing into the cells. It had been anticipated that owing to this circumstance, some difference of effect would be found in the action of the apparatus, and the furnaces for the winter fires were consequently built in at the commencement of the season, so as to burn only 1 cwt. of coal during the 24 hours, a rate of combustion which will now suffice to guard against the frosts of the winter, but which proved somewhat too powerful in effect for the mild weather experienced at the commencement of the present season.

G. OWEN REES,  
Principal Medical Officer."

**LIGHTING OF THE CHAPEL ROYAL, BUCKINGHAM PALACE.**—Prince Albert inspected the lighting of the Chapel Royal at Buckingham Palace a few evenings since. The chapel has been fitted up with gas lights inclosed in large glass globes ornamented with appropriate inscriptions, and fixed upon handsome ornate columns. They are ventilated upon Professor Faraday's principle of conveying away from the lights all the noxious products of combustion, by means of a descending draught, which is obtained in this instance by the assistance of Dr. Reid's ventilating shaft and apparatus. The Prince expressed himself much pleased with the perfect success of this application of that invention, as well as with the chaste and brilliant effect produced by the lights.

## FIRE-PROOF WAREHOUSES AT LIVERPOOL.

The noble pile of warehouses now being erected for Mr. Branch, is unquestionably the largest yet erected in Liverpool, occupies the three fronts of Great Howard-street, Dublin-street, and Dixon-street, and covers 4,433 square yards of land, being only 407 yards less than an acre. It is divided into eleven warehouses, of something less than 400 square yards each, not including the walls. The external walls are 3½ bricks thick, and the division walls are three bricks. When completed, the warehouses will be 65 feet high, and will have six stories of rooms, besides the basement or cellar story. Every window throughout the pile is to be glazed with large sheets of plate-glass, and each is protected by a strong wrought-iron shutter, secured to an iron frame. The floors are formed by iron girders or beams, resting on columns of great strength, and are all secured together by wrought-iron coupling-bars. The bearing-beams rest on large blocks, made of Welsh fire-clay, and brick arches of 9 inches thick are to be thrown from beam to beam, the lateral thrust of the arches being counteracted by wrought-iron tie-rods, strongly secured to the beams, which are placed horizontally every 6 feet on the average. These connecting rods are 1½ in. square, and are tested to resist a tension of thirty-five tons each. Every bearing-beam is also tested by a lever press at the building, to bear on its centre a pressure of thirty-eight tons, which is equivalent to a weight of four tons on each square yard. The floors of the whole structure are to be laid with Welsh fire-tiles, bedded in Terras mortar, there being an intervening stratum of sand to prevent the fracture of the arches, should heavy goods be thrown down upon them. The entrance-doors are made double—that is, of two separate plates rivetted together, having a cavity of an inch between them, with six small air-holes, so that if either side of the door became heated, the other side would be comparatively cool. The various rooms have also iron double doors of communication, each door being placed on the internal face of the wall, so as to leave a space of two feet between them. The staircases are inclosed from the rooms by walls of two bricks thick. These staircases are 18 feet long, by 7 feet 6 inches broad, and all the steps are of Yorkshire stone. Each staircase is to be provided with an upright main, of 6 inches diameter, which is to be supplied with water from the mains about to be laid down by the Sewerage Commissioners, and which, from the pressure of the Low-hill reservoir, will always be full of water. On each landing there is to be a brass stop-cock screwed, to fit either the hose kept on the premises (60 feet long being appropriated to each room), or it will fit the hose of the Commissioners and Fire Police, so that in case of fire, there will be an abundant supply of water on each landing, and instantly available. Small apertures are provided through which the branch can be inserted, and as each room will be perfectly air-tight, it will be impossible, if a fire occurs, for it to break out into flame. The staircases are so admirably constructed, that if every room in the building was on fire, men may be placed in perfect security on each landing, and pour a continuous stream of water into every room. All the entrance-doors are recessed back from the fronts of the building, and there are no projecting cat-heads or pent-houses beyond the line of the edifice. The roofs are all to be formed of wrought-iron trusses, covered with Welsh slates; and parapet-walls are to be built between each warehouse for additional security. Great attention seems to be paid to the drainage, there being three large dry wells of 5 feet diameter and 20 feet deep, and barrel sewers are being carried from all parts of the cellars into these wells. The whole of these magnificent buildings have been designed, and are being erected, by Messrs. Samuel and James Holme.—*Liverpool Journal*.

## THE ALBERT DOCK AND WAREHOUSES, AT LIVERPOOL.

It is impossible to view the extensive excavation of the dock itself, or the immense piles of warehouses upon its margin, without seeing that we have been making provision for the future upon a scale of magnificence, and at an outlay proportionably commensurate with the

importance of the vast estate under our control. The area of water space, for instance, to be gained by the construction of the dock, will be 7 acres 1,805 yards, or better than 7½ acres. Some idea of this extent of water space may be formed, when we state that the Albert Dock will be nearly as large as the King's. The area of the latter is 7 acres 3,356 yards; that of the George's is 5 acres 154 yards; and that of the Waterloo is 5 acres 2,790 yards. The Albert, as we have said, will be upwards of 7½ acres; and this is by no means an inconsiderable quantity of additional space, particularly when we take into consideration that the facilities expected to be afforded to the commerce of the town by the Albert Warehouses will enable it to despatch more business than a dock double its size. The subsoil which has been excavated, and the greater part of which has been waggoned, on an iron tramroad laid down expressly for the purpose, to Beacon's gutter, on the north shore, where it has been made available in filling up the strand and forming the outline of new docks, which are now, in point of fact, being carried out with the greatest vigour, amounted to about 440,000 cubic yards, at a cost of nearly 82,000*l*.

The dock is at present nearly excavated to the full extent, and from its immense depth will be capable of affording accommodation to vessels of the largest tonnage and draught of water. Its walls are constructed of solid masonry, principally of granite stone, with a slight inclination towards the top. The cement was manufactured by steam in a house erected for the purpose on the western quay, and the piles for the foundation of the warehouses were driven by steam, according to a simple and ingenious process, which the King of Saxony, during his visit to the dock, seemed particularly to admire. The entrance is 50 feet wide, and the gates are formed of the best material.

None of the warehouses are as yet completed. Some are in a state of great forwardness, others are being raised, and the foundation-stone of the remainder has still to be laid. Those which are approaching completion are the finest specimens of solid and substantial workmanship we have ever seen. There is nothing like them in Liverpool or any other port in England, with the exception perhaps of those round St. Katherine's Dock, in London. The Albert Warehouses consist of four spacious stories, each of which gradually diminishes in height as you ascend. For instance, the height of the first floor is 12½ feet, of the second 11½ feet, of the third 10 feet, and of the fourth 8½ feet. To this splendid pile of building immense vaults are attached, approachable by flights of stone steps. The vaults separately contain an area of 27,457 square yards. They are an average height of 8 feet, and will afford the amplest accommodation for the storage of wines, spirits, and other excisable articles. The area of the warehouse-room, inclusive of the vaults, and exclusive of the quay, amounts to the enormous number of 138,805 square yards.

Taking cotton as the basis of stowage, and limiting it to four floors of the warehouses only, omitting the vaults altogether, it is calculated they will contain about 234,950 bales. Supposing one-half of the quay should, in a time of great pressure, be temporarily used for stowage, an additional quantity of cotton may be accommodated to the extent of 32,037 bales, making a total of 266,987 bales.

The parliamentary estimate of the cost of the Albert Dock, basin, and river wall in front, was about 217,448*l*., and that for the vaults and warehouses was 317,106*l*., making together 534,554*l*.. The cost of the land, inclusive also of the cost of Canning's grave-dock, was 247,711*l*., making a total cost of 782,265*l*.—*Liverpool Courier*.

**SUDBURY IMPROVEMENTS.**—The commissioners for improving the town of Sudbury are acting vigorously in the execution of their office; two more of the houses surrounding the church of St. Peter are in a course of demolition, and it is expected in a few months that venerable building will no longer be blocked up by the unsightly tenements, which could only have been erected in by-gone times, when, in the absence of all proper control, "every man did that which was right in his own eyes."



## BRICK MAKING MACHINE.

A PATENT has lately been enrolled by William Hodgson, of 42, King-street, Kingston-upon-Hull, for "A machine for making and compressing bricks, small paviors, floor bricks, flat tiles, ornamental bricks, &c., at one operation." The invention relates to certain arrangements of machinery or apparatus for making or moulding and compressing, &c. bricks and tiles; that part of the invention which relates to the making or moulding of bricks, consists in having a mould constructed in such manner that all its sides shall fall down so that the brick can be removed. The sides and ends of this mould are covered with moleskin, which is turned over the upper edge and fastened thereto by means of brass beading or plates and screws; this mould when in use is placed within an outer mould, which during the making of the brick keeps the sides of the inner mould in a vertical position. The outer mould here spoken of is fixed upon a table, on the underside of which there are two or more treadles to suit the convenience of the workmen when on different sides of the table; these treadles communicate with a vertical spindle, the upper end of which passes through the table and is attached to the inner mould having moveable sides; the object of this arrangement being that when a brick has been formed in the inner mould, in the usual way of making bricks, such mould is raised from the outer one by placing the foot upon some of the treadles; the sides of the mould at the same time falling down admits of the brick being removed by means of a pallet-board in the ordinary manner. Upon the same table, and near the machine just described, is fixed the compressing apparatus, which forms the second part of the invention, and consists of a mould having its two sides attached to the bottom part by means of hinges, the ends of the mould being moveable and capable of approaching each other; this mould is made to drop within another similar to that just described, and over the mould is a pressing-box having inclined ends, which come in contact with the moveable ends. This pressing-box can be raised or lowered upon an arrangement of levers, the parts being so arranged that when the pressing-box is lowered for the purpose of compressing a brick, the underside of such box comes first in contact with the upper face of the brick, the inclined ends of the pressing-box coming at or near the same time into contact with the moveable ends of the mould cause the same to approach each other, and thereby compress the brick which is contained in the mould. The inventor claims the arrangement of making bricks by means of a mould having falling sides and ends, and also the arrangement for making and compressing bricks, paviors, and tiles by a mould with falling sides and moveable ends, as above described.

## Correspondence.

## BUILDING-ACT.

SITUATION OF NEW PARTY-WALL WHERE PREMISES ARE NOW DIVIDED OVER THE CENTRE OF A WAY TO PUBLIC MEWS.

To the Editor of "The Builder."

SIR,—Perhaps some of your numerous correspondents will inform me how I shall be situated when the New Building-Act, of which you have given so able an exposition in No. 92 of THE BUILDER, comes into operation? There is a house adjoining an opening leading from a street into a public mews, over the centre of which opening is a party-partition supported on breast-summers; now, it is intended to pull down the front of the house, and I wish to know *where* and *how* the new party-wall will be situated provided the works are not commenced before the 1st of January next, and what will be the thickness required of the walls on either side of the opening, and also of the arch. The wall that supports the breast-summer on the side of my neighbour was at one time the party-wall, and now runs up above the roof, but it has been cut through, and now half the space over the opening belongs to each house.—I am, Sir, your obedient servant,

November 12th, 1844.

T. O. M.

[This case must be left to the official referees, who, as parts of the adjoining buildings

project over the way to the public mews, have power, at discretion, to divide the freeholds, assign the site of a party-wall, and determine the sum to be paid by one party to the other for loss.—Ed.]

## COTTAGE CONSTRUCTION AND DECORATION.

SIR,—Intending to erect a cottage similar to the design in No. 44 of THE BUILDER, and there being none other near, I thought of using chamfered bricks for the window-jambes (they are near at hand), with a moulding of cement to run round the sash-frame, the mullion to be of wood. Would you advise me to have a label moulding over the windows? if any, would you have cement or bricks moulded, or bricks with stone knees? As stone coping is expensive, would you prefer barge-boards to a coping of bricks? Also, do you think that bricks coated with cement would answer for window-sills? and as you were recommending iron-hooping, instead of bond timber, would you advise the bond for the floor to lie on bricks corbelled to receive it, or the joists to lie on the hooping? If you would have the kindness to answer these questions, I shall be greatly obliged to you, and you will confer a great favour on a country carpenter.

Gedney.

W. HALL.

[We do not advise a cement moulding in the situation stated, as it would be out of correct style. Chamfered bricks will serve very well for the window-jambes; label-mouldings of brick, if well-made, will answer the purpose: we should not recommend the use of stone in labels, without they be wholly made of it. The sills should be either of brick or of stone. Wooden barge-boards are improper to buildings of brick or stone, and suitable only for buildings of wood, or of timber, lath and plaster. "Bond" is a term improperly applied in this case; the article mentioned is "a wall-plate," and must be of a stiff material; therefore, iron hooping, which is only for receiving and restraining tension, is not proper. Corbelled work is excellent, particularly for ground-floors, as in case plates and joists rot, the walls still remain sound.—Ed.]

## INQUIRY RELATIVE TO A KNOWLEDGE OF MARQUETRY.

SIR,—Can you or any of your valuable correspondents inform me how I may gain a knowledge of marquetry-work? By giving this a place in this month's magazine, you will oblige.

—I am, Sir, yours, &c.,

A SUBSCRIBER FROM THE COMMENCEMENT.

Ellesmere, Nov. 24, 1844.

[We insert our correspondent's request, and shall be glad to avail ourselves of any original observations upon the subject.—Ed.]

## APPLICATION OF THAMES' MUD TO BRICK-MAKING AND OTHER USES.

SIR,—At the present day, when invention and discovery appear to occupy the minds of almost every individual, I think it strange that no one has thought of applying to some useful purpose the vast accumulation of mud for many miles on the banks of the Thames. It appears to me that if it were properly analysed, it would be found an excellent material for making bricks.

The great increase of building, and the consequent demand for bricks in the metropolis, as well as in all parts of the kingdom, would be a means of removing that great nuisance from the river, and, at the same time, render it worth the while of any speculative company engaging in so seemingly desirable an object.

Trusting this letter will induce an inquiry into the subject, and that I shall see your own opinion, with that of some experienced and practical men, in THE BUILDER,—I am, Sir,

Your obedient servant,

Nov. 26, 1844.

A SUBSCRIBER.

## LATHES FOR SPIRAL TURNING.

SIR,—I should feel obliged if some of your correspondents would inform me (through the medium of your valuable publication) what kind of lathe is generally used for spiral turning, and what the expense of such an article would be, and at the same time inform me if there is any work extant on the subject.

—I am, Sir, yours, &c.

A WELL-WISHER.

Nov. 23rd, 1844.

[We insert this letter in order that any

correspondents who may have lathes with sliding-rests, or any other apparatus by which screw-cutting may be effected, may afford our correspondent information.—Ed.]

## SIEBE'S ROTATORY PUMP.

SIR,—I shall be much obliged if you or any of the numerous readers of THE BUILDER can, through the medium of that paper, give me any information respecting Siebe's Rotatory Pump, its merits, cost, and where to be purchased.—I am, Sir, your obedient servant,

A SUBSCRIBER.

Diss, November 22, 1844.

## ARCHITECTURAL COMPETITION.

THE CHORISTERS' SCHOOL, MAGDALEN COLLEGE, OXFORD.

SIR,—Having seen, from the careful perusal of your paper, the great desire you have always evinced towards exposing the present faulty mode of competing for new buildings, now so generally adopted, and frequently so unfairly terminated, I would call your attention to the subject of the late public competition for the Choristers' School for Magdalen College, Oxford, which has, I hear, been decided in favour of a design sent in by Mr. Derrick, architect of that city.

In the printed instructions issued to architects who might be willing to compete, it was distinctly specified that the designs must be sent in by the 1st of October, ample time being given (nearly two months) for completing the drawings in question.

In commencing a competition, two questions of the greatest importance naturally suggest themselves to the architect—first, the sum of money to be expended; secondly, the time allowed for preparing the plans; these are then considered as fixed points to be scrupulously observed, and he proceeds accordingly. However, on the present occasion all such general rules appear to have been treated with contempt by both parties; the facts of the case being simply these:—Mr. Derrick, who sends in his designs at least two weeks after the time specified, is appointed to carry out his designs, he being a resident at Oxford, and having access (as any one had who was taken in by a member of the college) to the room where all the drawings already sent in were exhibited. The sum of 20l. to each has, I hear, been voted to Messrs. Allom, Pugin, and another, the estimate of the former being 1,800l. more than the sum mentioned to be expended (5,000l.)\* and the second only submitting a pen-and-ink perspective view of what he considered the building ought to be, instead of sending plans, sections, and elevations, as expected from the other competitors. I must say, I am much surprised at such a termination to a competition, which I hoped, knowing the high character of the parties who had to make the selection, would have proved itself a pattern of justice and impartiality; and can only attribute it to a want of knowledge of business on their part; and must, in conclusion, call upon the profession generally to come forward, and appeal to the Institute of British Architects to take the necessary steps to put an end to a system marked with such gross injustice. The Institute is an incorporated body, possessing a royal charter, and it is scarcely necessary to add that public bodies can easily accomplish that which a private individual would not venture to attempt.

Unless some remedy is found for this crying evil, these repeated acts of inconsistent conduct must necessarily tend to lower the profession in the eyes of the public, and will end by destroying its respectability altogether when they see such treatment as it constantly suffers borne with impunity, and without any measures being taken to remedy the evil, and at the same time protect professional men from wasting their money and valuable time in such an unprofitable manner.

By inserting the above in your very useful paper, you will put others on their guard in future, and at the same time oblige your obedient servant,

AN OLD SUBSCRIBER.

London, Nov. 25, 1844.

\* This amount was not specified in the printed instructions, but that can be no excuse, for of course on so essential a point application would be made to the Bursar of the College, who named 5,000l. immediately as the sum to be spent on the proposed new building.



## THE NEW ROYAL EXCHANGE.

Sir,—I feel extremely obliged to "The Writer in the *Morning Herald*" for pointing out the blunder which I had the misfortune to make relative to the name of the publication mentioned in my letter—it was the more unfortunate arising solely through carelessness; the fact is, that my letter was written several days after I had seen the *Herald*, and writing from memory alone, I by some means made the mistake in the name. When I looked over my letter in *THE BUILDER*, I immediately discovered it, but supposing some remarks would be made on the subject by your correspondents, I deferred mentioning it till I should have occasion to write again.

It appears to me that "The Writer in the *Herald*" has not strengthened his position by the explanation he has given; there is not one word in his letter in support of his approbation of the Exchange, and the very faults which I pointed out as derogating from the value of his remarks, he has confessed. He writes, "It was required of me to make it as popular in tone and as free from technicalities as possible; besides all which, it was necessary that it should not appear to contradict what had been said in the same paper but a few days before on the subject of the building." Now what a prostitution of criticism is this, and what dependence can be placed on the opinions of a writer who, to join in a ready-made opinion, is obliged to bolster up the reputation of a building by passing over its numerous defects of taste, ascribing to it merits which it does not possess, and all for the purpose of making his criticism as palatable as possible to those competent judges of architecture—the public? But the writer evidently thinks this going too far, and adds, "Yet it must not therefore be imagined that I spoke contrary to my opinion, that I was equally ready to condemn or approve, as might be required of me; more minute examination of the whole structure than I have yet had the opportunity of making, and to judge of its anatomy, plans, and sections, would be requisite, and may probably induce me to qualify some of my observations, which were intended to be, and no doubt have been received as chiefly expressing general impressions." It is some time since I have seen any thing so *mal-a-propos* as this, and I have yet to learn that it is necessary, before a judgment could be offered on the external effect of a building, to study the internal arrangement; or will the writer advance further in his *reductio ad absurdum*, and attempt to maintain that a critic cannot express a competent opinion on the external appearance of the Exchange without examining "its anatomy, plans, and sections?" If so, it falsifies his own remarks, for he admits he has not yet had an opportunity of doing so. He further considers me "partial," and "disposed to censure the building;" I objected to the style employed for reasons which I gave, and I pointed out what seemed to me defects in the composition; rather would it have been more satisfactory to your readers had he pointed out some of the "admirable beauties" of the portico to the Exchange. The *onus probandi* lies with him, and he will excuse me for not placing much reliance on the mere assertion of a writer, although connected with the *Herald*; and I must contend that a writer who lauds the Exchange merely to please the public taste, together with the fulsome flattery with which his criticism was so plentifully besprinkled, can have the charge of favouritism for Mr. Tite imputed to him; and that the fact of ascribing merit to the Exchange does "argue for the superior genius" of the architect.

I will take the present opportunity to make an observation on the note you added to my letter; you have, I think, mistaken the meaning of my remark, "that columns" in the Italian style "are seldom fluted." It was my intention to have conveyed the idea that one radical fault of that style was, that the entablature (with the exception of the frieze) was invariably overloaded with enrichments, while the columns were seldom fluted; this is faulty for a two-fold reason; the first being that the eye is offended by the abrupt change from bareness to ornament; and the second, that the expense incurred by enriching the cornice to so great an extent would be more effectively employed by fluting the columns and lessening the mass of ornament above, thus producing a more subdued and pleasing

richness. My observation applied to external columns only, the inner ones being unfluted, carries with it its own reason; by their different aspect they avoid the confusion which would inevitably follow were they fluted, besides which they contribute materially to picturesque effect. And I still remain of opinion that it materially injures the effect of the Italian style, that in composition columns are seldom fluted; neither can I admit that fluting gives a heavy appearance to a column; on the contrary, they are used principally to remove the bare appearance of an unfluted column, in many situations, possesses; and I think it bespeaks little for the impartiality with which "the writer in the *Herald*" read my letter, though he chimes in so admirably with you.\*

I ought here to break off my remarks, and give place to some one else; before I put down my pen I will trespass on your pages a short space further, and notice the letter of "T., in the last number of *THE BUILDER*, on architectural competition. He is certainly in error when he supposes that "much has been written in your paper against architectural competition;" undoubtedly much has been written against the *abuse* of competition, but he will find the majority of letters refer to the unfair, unjust, and partial decisions of committees. That "enlightened committees" cannot be found is manifest to every one connected with architecture, and it is pure nonsense to talk of selecting an "impartial architect;" such a method leaves most of the grievances untouched. Hardly would an architect commit himself by selecting a design with glaring faults; yet it is not to be supposed that Sir Robert Smirk (I mention the name as an illustration and not individually), if placed in such a position, would choose a design if the originality and genius displayed might seem to clash with his professional reputation at the British Museum or elsewhere; and another and more serious objection is, that an opportunity for jobbing would still remain. Competitions are allowed by most architects, when conducted upon fair and honourable principles, to produce beneficial effect, by drawing out talent in young architects which would otherwise lie dormant: but I will give credit to an architect for something more than *enthusiasm*, if he supposes it possible to raise himself to honour in his profession, with the advertisement in the last *BUILDER*, and others of the same class, constantly before him. This advertisement says, "the name and address of the author of each plan to be written on its right-hand corner;" this looks very suspicious, but it is surpassed by the continuation, which says, "the author of the plan considered the best by the Committee of Works will be selected to execute the work on his giving satisfactory references, and finding adequate security not to exceed his estimate." Truly, the Committee for Baths and Wash-houses have at the onset shewn a desire to wash their hands of any thing like the suspicion of making a job of their building; and perhaps they wanted to cleanse the profession of that feeling of importance which architects are so liable to consider their time worth, which induced them to offer no premiums. Very bright is the prospect for the aspiring architect, "though his noble ideas" may be occasionally damped by a wet blanket, in the shape of satisfactory references, adequate security, and no premium. I have no doubt that a large number of designs will be sent in; the authors, I cannot suppose expect to obtain the honour, and I do hope the profession generally will express their disapprobation by refusing to be made the tools of the committee; they may depend they will save money by it, and it may prove beneficial hereafter.—I remain, yours, &c.,

SCRUTATOR.

London, Nov. 25th, 1844.

OXFORD IMPROVEMENTS.—The President and Fellows of Magdalen College, Oxford, have determined on the erection, contiguous to the college, of a new choristers' school and masters' house attached.

\* [Our correspondent does not shew himself in this matter to be a master of architectural optics. We know for certainty that upright flutings do make the shafts of columns appear considerably thicker, and that spiral flutings make them appear considerably thinner. We imagined there never existed any question of this.—Ed.]

## CHURCH-BUILDING INTELLIGENCE, &amp;c.

*Salford New Church.*—This church will be in the Decorated style of Gothic architecture, which prevailed in England in the 13th and 14th centuries, the fine churches of Howden, Selby, and Newark, being the models principally studied in the preparation of the design. It stands on a commanding site, adjacent to one of the principal entrances to the town; the streets being wide, and the ground around the site level and open. The interior length is 130 feet, of which the chancel occupies 23 feet, the nave and transept 102 feet, the transept from north to south 99 feet, the nave 24 feet wide, the aisles, including the pillars, 17 feet. There will be a clerestory lighted with coupled windows of two lights, and a triforium passage in the thickness of the wall; the nave is shortened by the want of space, but there are instances of cross churches of equal size, as at Rotherham, where the nave is still shorter. The west, or principal front, is divided by four massive buttresses, crowned by open tabernacles of beautiful design; the great window is 40 feet high; the splay of the west door is 5 feet deep; the west wall is 5 feet thick, and we may here remark that the entire structure is of stone, built in the ancient manner; the nave is approached by a north porch, the site not admitting this important portion of the church on the south side. The organ will be placed over the screen, which separates the north transept of the church from the nave. The tower and spire, which are supported on four massive pillars of solid stone, rise to the height of 225 feet; the tower is lighted with coupled windows, having a gabled pediment with niches, in which are placed the twelve apostles, three on each front. The tower is 30 feet square; the spire has four stages of Louvre windows with crocketed gables, the whole surmounted by a cross and vane. The eastern end of the chancel will be occupied by a window of seven lights, 18 feet wide and 45 feet high, in which it is proposed to depict the genealogy of our Lord on the roof of Jesse. It is also proposed that the west window shall be occupied by subjects relating to the life of the patron saint. The whole interior will be painted and gilded in the ancient manner, for which purpose a design has been furnished by Mr. Taylor Bulmer. Mr. Benjamin Hollins, of Sheffield, is the builder; and the architects Messrs. Weightman and Hadfield, of that town.

*Rocliffe St. Mary's Church.*—This church has been erected in and great part endowed at the expense of Andrew Lawson, Esq., M.P., aided by contributions towards the endowment by Mrs. Lawrence, of Studley Park, and other benevolent persons, for the use of the inhabitants of Rocliffe, distant two miles from the ancient parish of Aldborough. It is 50 feet long, 22 feet wide, and 24 feet high, and contains sittings for 150 persons. It is entirely built and vaulted with stone from Mr. Lawson's own quarry, and from those of C. Duncombe, Esq., of Copgrove. The chancel and steps leading up to it are paved with marble from near the altar of York Minster, with some necessary additions. The vestry-door is also a relic of the same edifice, rescued from the disastrous fire of 1829. The scroll panels of the wainscot of the chancel are from Nun Monkton Priory. The cover of the font is copied from one in Charlton-on-Omere Church, near Oxford. The pulpit is that from which Isaac Milner and John Scott preached in the church of the Holy Trinity at Hull. The fabric has been built from the designs and under the direction of Messrs. Sharp, architects, of York.

*Royal Donations.*—Among the Queen Adelaide's numerous donations and benefactions we have to mention that her Majesty has been pleased to transmit 30*l.* to the fund now forming for the erection of a church, a parsonage-house, and village school-room, on the moor, near Woodhall Spa, in Lincolnshire; 25 guineas towards the erection of a new church at Kingsclere, near Newbury; and 20*l.* in aid of the fund for rebuilding the ancient parish church of Bednall, Staffordshire.

*Munificent Bequest for the purpose of Church Restoration.*—It is said that the sum of 6,000*l.* has lately, by a bequest, been placed at the disposal of the Cambridge Camden Society, for the purpose of restoring old churches.



## RAILWAY INTELLIGENCE.

**Railway Schemes.**—We copy the following striking statement from the monthly circular of Messrs. Raiton and Son, sharebrokers, of Manchester, published last week:—"Since our last monthly circular of the 14th ult., there have been put forth forty-one new prospectuses of railway schemes, and the shares applied for in each have far exceeded the number to be issued. Taking the above forty-one lines into the account, the following will result:—On the 14th of August upwards of ninety new lines, requiring more than 60,000,000*l.* of subscribed capital to complete them, were put forward, to which add the above forty-one, stating a requirement of 35,265,000*l.*, together upwards of 131, needing an investment of 95,265,000*l.*, with the power of borrowing one-third more, devoted to the same object; making a grand total of 127,020,000*l.*!!"

**Great Southern and Western Railway.**—The contracts for two lots on the Great Southern and Western (Dublin and Cashel) Railway, twenty-one miles in extent, were let on the 13th inst. Thirteen tenders were received by the directors, and three were rejected—namely the tenders of Mr. McCormick, of Dublin; Mr. Dargan, of Belfast; and those of the firm of Hammond, Patterson, Murray, and Butler, of Dublin. The difference was very trifling, not exceeding 1,000*l.* on the two lots, and Messrs. Dargan and McCormick were declared the successful competitors, and Mr. Fagan, of Dublin, the contractor for the sleepers. We understand that the successful contractors for the works were guided in making their estimates by the quantities calculated by Mr. Kelly, architect and building-surveyor, of Upper Gloucester-street, Dublin.—*Railway Record.*

We learn from Berlin that the works of the railroad from Potsdam to Magdeburg have been commenced; and that, as the road will traverse a portion of the royal park, the king takes a personal interest in the undertaking, and occasionally superintends it.

## Miscellaneous.

**METROPOLITAN IMPROVEMENTS.**—The *Gazette* of last Saturday consists of fifty pages, and contains, amongst others, a notice of an application to Parliament for an Act to annex so much of the garden, ground, and buildings belonging to the Hon. Society of Lincoln's-inn, as are locally situate in the parish of St. Giles-in-the-Fields, to the vill or township of Lincoln's-inn. Also to stop up the present thoroughfare for carriages, horses, and cattle along the eastern side of Lincoln's-inn-fields, in the said parish, and to form a new footway, of the width of 20 feet, adjoining the iron-railing inclosing the garden of Lincoln's-inn-fields on the eastern side thereof, and to inclose the remaining portion of the carriage-way along the said eastern side of Lincoln's-inn-fields, and to annex the same to that part of the garden, ground, and buildings belonging to the said society as aforesaid, and to the said vill or township. There is also notice of a Bill to improve the streets, squares, &c., in the parishes of St. Margaret, St. John, and St. George, Hanover-square, in the city of Westminster. The others, with the exception of one or two relating to turnpike-roads, are railway notices. So that instead of opening a carriage-way from Holborn, it is absolutely proposed to injure, if not destroy, the present inefficient roadway; what probability can exist of the effecting of so absurd a project?

**STEAM BOAT PIERS ON THE THAMES.**—Two reports of the Thames Navigation Committee have been made lately to the city authorities. In one, relative to the pier at Blackfriars-bridge, the committee recommend the erection of a pier at the eastern side of the bridge, upon piles, according to the suggestion of Mr. Walker, the engineer. In the other they recommend that all piers in which due provision had not been made for the security of the public should be immediately removed, and that the corporation should act merely as conservators of the river, leaving the pecuniary business connected with the piers to private speculation. The first report was referred back to the committee to be carried into effect; the second was ordered to be printed and taken into consideration on a future day.

**THE STATUE OF WHITTINGTON AT THE ROYAL EXCHANGE.**—On Friday, the 22nd instant, the scaffolding was struck after the statue of Sir Richard Whittington was raised into the niche on the north side of the Royal Exchange. This piece of sculpture is from the chisel of Carew, and attracted during the whole of Saturday the notice of the crowds who visited the spot. The figure represents the distinguished citizen replying to an address in his robes as Lord Mayor of London, in the reign of Henry V. Whittington lived in the reigns of Richard II., Henry IV., and Henry V., and was knighted when sheriff. He was, as is known from all the little penny histories of him, and by the celebrated stone at Highgate, three times Lord Mayor of London. He built the Newgate part of Bartholomew's Hospital and part of Guildhall, and his last mayoralty was in the year 1419. Of the year in which he died there is no record amongst the citizens. An accident occurred in Mr. Carew's studio, which might have proved fatal to the workmen employed in removing this statue to the Royal Exchange. The figure was raised from the ground above its own height some feet when the tackle broke, and it fell amongst the men, but without injury either to those engaged in the removal, or to the statue itself.

**RESTORATION OF THE SALISBURY TOWER, WINDSOR CASTLE.**—These works have just been commenced. It being intended to raze to the ground, at an early period, the five residences of the military knights on the lower foundation, accommodation will be provided for three of the knights in the Salisbury Tower, when the necessary restorations and alterations have been completed. Accommodation for the remaining two military knights, on the lower foundation, will be provided in the upper tower of Henry VIII.'s gateway. The Salisbury Tower will be entirely gutted, and convenient apartments substituted for the dilapidated portions which have been removed. A noble terrace, to be open to the public, will be formed on the site of the houses on the lower foundation. The Salisbury Tower is the official residence of the Chancellor of the Order of the Garter. The plans about to be carried out are stated to be those of the late Sir Jeffery Wyattville.

**MONUMENT TO THE LATE COMMANDER OF THE PRESIDENT.**—A monument has just been erected to the memory of Captain Roberts, in Passage churchyard, Cork. The cenotaph is a large square building of rich cut stone, with a fine base and cap moulding, and having a bold pediment on either side. On the angles of the monument are represented in strong relief the sterns of the vessels which Captain Roberts commanded, viz. the Black Jack, the Sirius, the British Queen, and the President. The following is part of the inscription which the monument bears:—"This stone commemorates, in the churchyard of his native parish, the merits and premature death of the first officer under whose command a steam-vessel ever crossed the Atlantic Ocean—undaunted bravery exhibited in the suppression of the slave traffic in the African seas, enterprise and consummate skill in the details of his profession, recommended him for that arduous service. Lieutenant Richard Roberts, R.N., in accomplishing it, not only surpassed the wildest visions of former days, but even the warmest anticipations of the present."—*Herald.*

**ST. GEORGE'S NEW SCHOOLS, SHEFFIELD.**—The first stone of the above schools was laid, on the 21st instant, by the Right Hon. the Lord Wharnclyffe, lord president of her Majesty's council. These buildings are to consist of three separate schools, with suitable class-rooms. The Girls' School, fronting St. George's Church, 60 feet by 40 feet; the Infants' School, forming the centre division, and fronting Beet-street and Siddal-street, 60 feet by 40 feet. These dimensions do not, of course, include the class-rooms. There will also be comfortable dwelling-houses for the master and mistress; the basement of the buildings being occupied by library, soup-kitchen, play-grounds, &c. The estimated cost, without fittings-up, is nearly 4,000*l.*, which sum includes 1,200*l.* for the site alone. To meet this about 1,200*l.* has been raised by subscription, 1,393*l.* granted by the Privy Council, and 649*l.* by the National Society.

**SINKING OF THE SURFACE GROUND IN PARIS.**—About two o'clock in the morning of Tuesday, the 16th inst., a considerable mass of earth detached itself from the hill of Montmartre, on the side of the Barrier of Rochechouart, Paris, and fell upon a lime-kiln, a cartwright's factory, a weaver's workshop, and a dwelling-house, which were partly buried under it. The inhabitants were fortunately awoken by the cries of some dogs, and escaped in time. At six o'clock another house experienced a similar fate, and a third was surrounded with earth up to the first story. Fragments of earth and stone continued to roll down the hill, which is extremely steep on that side, during the whole day, and the alarmed inmates of a number of dwellings situate at the bottom of the declivity abandoned their homes, carrying away their furniture and most valuable effects. The event had been long foreseen from the extensive excavations made in the hill to procure "plaster of Paris." The sinking (*éboulement*) was still making progress at the hour of post on that day.

**PAINTED GLASS.**—There are some remains of painted glass in the churches of Ashburn, Bradley, Dronfield, Eggington, Hault-Hucknall (the burial place of Hobbs, the philosopher of Malmesbury), Sutton, and Sandiacre, in the county of Derby, and of sufficient consequence to merit particular notice. In the churches of Morley and Norbury the remains are considerable, those in the chancel of the latter shewing very good taste, and evidently coveiled with the building, which is in the style of the fourteenth century.

## Tenders.

**TENDERS** delivered for building a new Gaol at Banbury.—Architects, Messrs. Hurst and Moffatt, Doncaster.

Haines, Cheltenham .....	£9,081
Sissons, Hull .....	8,476
Kirk, Slensford .....	7,940
Porter and Co. ....	7,840
Watson and Co., Birmingham ..	7,821
Claridge, Banbury, .....	7,747
Plowman and Co., Oxford ....	7,696
Waterfield and Co., Leicester ..	7,312

**Tenders** delivered on Saturday last for Building an intended Public-house, at the corner of King's-row, Walworth, for Mr. Ireland. The tenders were opened in the presence of the Contractors, and were as follow, viz.:

Mr. Gerrey .....	£1,374	0	0
Waller .....	1,160	0	0
Mason .....	1,148	0	0
Hawkins .....	1,075	0	0
Brown .....	795	10	0

Mr. Brown had made an error, having left out one of the trades, his estimate was corrected, and settled at 1,650*l.* and accepted.

**TENDERS** delivered for the erection of a new public-house at Wandsworth for Mr. Ireland.

J. Brown .....	£795	10
Hawkins .....	1,075	0
Mason .....	1,148	0
H. P. Wallen .....	1,160	0
Gerrey .....	1,374	0

## NOTICES OF CONTRACTS.

For the supply of 600 Coal Waggon to the York and North Midland Railway Company.—George Baker, Secretary, York, December 4.

For the building of a Tunnel on the Edinburgh, Leith, and Granton Railway.—December 4.

For the making of Sluices, Bridges, Excavations, and other works in the New Cut from the Sixteen-foot River to the Eau Brink.—George Game Day, Clerk to the Middle Level Drainage Commissioners, St. Ives. Plans and Specifications are being prepared.

For Paving and Repairing certain Carriage and Footways in the district of Knightsbridge, for one year from Christmas-day next, and also for Lighting the same district with Gas for the like period.—James Rogers, 22, Manchester-buildings, Westminster. December 9.

For building an Infirmary at the County Gaol and House of Correction, at Ipswich, Suffolk.—Mr. John Whiting, County Surveyor, Ipswich, or Mr. John H. Barton, Clerk of the Peace, Bury St. Edmunds. December 10.

For the erection of a new Barrack Establishment at Bristol.—C. J. Selwyn, Major and Commanding Royal Engineer, Exeter. December 11.



For Lighting the Southampton Paving Trust with Naphtha or other strong Light for the period of eight months from the 1st of February next.—John Arnell, 10, Edmund-street, Hampstead-road. December 11.

For making a Survey and Valuation of Property in the town of Kingston-upon-Hull, for the better rating of the same to the relief of the poor.—John Moxon, Workhouse, Hull. December 12.

For Building a Sewer in Hoxton Old Town, being a length of about 576 feet.—Messrs. Stable and Lush, Office of Sewers, Hatton Garden. December 13.

For the execution of Works necessary for the completion of the whole of the Railway from Shoreham to Chichester, being a distance of about 22½ miles.—Frederick Otley, Secretary, Brighton and Chichester Railway Office, 4, Dean-street, Tooley-street. December 17.

For the supply of First, Second, and Third-class Carriages to the Manchester, Bury, and Rossendale Railway.—James Smithells, Secretary, Railway Office, Bury.—December 21.

For the construction of Locomotive Engines and Tenders for the Manchester, Bury, and Rossendale Railway.—Mr. C. E. Cawley, Engineer, Railway Office, Bury.—December 21.

For the supply of 6,000 tons of Iron Rails, each rail to be 16 feet in length, and weighing 65 lb. per yard.—H. Parker, Secretary to the Great North of England Railway Company, Darlington. Dec. 23.

#### COMPETITIONS.

THE Committee of the Association recently formed in the Metropolis for the Construction of Baths and Wash-rooms for the Labouring Classes, are desirous of obtaining Plans and Estimates for the Erection and Fitting-up of the First Establishment. The general basis of the plan can be seen at the Office, No. 3, Crosby-square. The author of the plan considered the best by the Committee will be selected to execute the work.

Plans for an Agricultural College to be erected at Cirencester, to accommodate 200 pupils and 6 tutors. The style is left to the taste of the architect. A Premium of 10 Guineas to the author of the most approved plan.—Robert J. Brown, Esq., Hon. Sec. Cirencester. January 1.

#### TO CORRESPONDENTS.

"Spectator" is not a master-builder, or if one, little acquainted with his business; if he need the information which he mentions, he must seek it in those common, ordinary books where it is to be found, but retailing the contents of which would insure us few subscribers besides himself. If "Spectator" have no respect for fine, ancient examples of architecture, he is to be pitied, and probably has a little respect for fine modern ones. We indeed look for circulation among master-builders, and know that THE BUILDER has the largest proportion of circulation which is perhaps possessed by any technical periodical, and we know also the estimation in which it is held, by its steady increase. We imagine "Spectator" to be in need of information upon some of those common technical matters which, were we to fill our columns with them, would only create a smile from operative builders. If "Spectator" be judge enough, or inventive enough to produce to us any new information upon building technicalities, we shall, if we find them meritorious, give them immediate insertion. If "Spectator" need, however, only ordinary information upon common subjects of operative building, which every workman possesses, he must follow the means which they did—serve an apprenticeship.

A letter relative to the Hackney-bridge came too late for insertion this week, but will appear in our next.

A Subscriber is referred to our advertising columns.

Argus.—The terms of the proposition are, "to use for building or other purposes the open space or area of a certain court-way or passage, called Darby Court, leading from Jermyn-street to Piccadilly, in the parish of St. James, Westminster."

Cuddy Thomas.—We are obliged for his suggestion, and will act upon it. The error he points out will be corrected.

George Field, will obtain the information he seeks by addressing a note to Mr. Manfred, No. 36, Palace-street, Piccadilly.

J. Pickard, in our next number.

W. J. Short.—"A Plan for Alms Houses," is under consideration.

#### BOOKS RECEIVED DURING THE WEEK.

The British Almanac and Companion for 1845. Charles Knight and Co.  
The Church Restorers, a Tale, treating of Ancient and Modern Architecture, and Church Decorations. By F. A. Paley, M.A., Hon. Sec. to the Cambridge Camden Society. John Van Voorst.

#### MEETINGS OF SCIENTIFIC BODIES

This day and during the ensuing week.

SATURDAY, November 30.—Royal Society (Anniversary meeting), Somerset-house, 8½ p.m.; Westminster Medical, 32, Sackville-street, 8 p.m.

MONDAY, December 2.—Entomological, 17, Old Bond-street, 8 p.m.; British Architects, 16, Grosvenor-street, 8 p.m.; Chemical (Society of Arts, Adelphi) 8 p.m.; Medical, Bolt-court, Fleet-street, 8 p.m.

TUESDAY, 3.—Linnean, Soho-square, 8 p.m.; Horticultural, 21, Regent-street, 2 p.m.

WEDNESDAY, 4.—Society of Arts, Adelphi, 8 p.m.; Geological, Somerset-house, 8½ p.m.

THURSDAY, 5.—Zoological, Hanover-square, 3 p.m.; Royal, Somerset-house, 8½ p.m.; Antiquaries, Somerset-house, 8 p.m.

FRIDAY, 6.—Botanical, 20, Bedford-street, Covent Garden, 8 p.m.

SATURDAY, 7.—Asiatic, 14, Grafton-street, 2 p.m.; Westminster Medical, 32, Sackville-street, 8 p.m.

#### Current Prices of Wood and Metals.

November 26, 1844.

	£.	s.	d.	£.	s.	d.
Box, Turkey, bd. per ton.	2	0	0	5	0	0
Cedar, Pencil, per foot	0	0	3	0	0	4
Cuba	0	0	3	0	0	4
N. S. Wales	0	0	3½	0	0	5½
Green, per ton	5	5	0	9	0	0
EBONY, Ceylon, large	6	0	0	7	0	0
small	4	10	0	5	15	0
Madagascar, small	5	0	0	6	0	0
LIGNUM VITÆ, Jamaica	3	0	0	5	0	0
St. Domingo	8	0	0	12	0	0
MAHOGANY, Cuba, per foot	0	0	8	0	1	2
St. Domingo	0	0	9	0	1	2
Honduras	0	0	5½	0	0	10
TIMBER						
Teak, African, per load	9	0	0	0	0	0
Oak, Quebec	3	15	0	4	10	0
Fir, Riga	4	2	0	5	0	0
Dantzic and Memel	3	17	6	4	10	0
Swedish	3	15	0	3	17	6
Pine, Quebec, red, per load	4	0	0	4	2	6
yellow	3	10	0	0	0	0
Miramichi & St. Johns	4	10	0	0	0	0
Wainscot Logs, 18 ft. each	5	0	0	0	0	0
Lathwood, Memel, &c. fm.	9	0	0	0	0	0
Deals, Gefle, 14ft. 3in. by 3	31	0	0	32	0	0
Stockholm	27	0	0	28	0	0
Gottenburg, 12ft. 3in. by 9	26	0	0	27	0	0
Christiana, 1st & 2nd	28	0	0	30	0	0
St. Petersburg, Memel,						
Dantzic, 12ft. 1½ in.	13	0	0	20	0	0
Quebec yellow Pine,						
first quality	17	0	0	18	0	0
second ditto	10	0	0	12	0	0
White Spruce, 120.	16	10	0	19	0	0
Dantzic Deck, each.	0	18	0	1	6	0
Plank, Dantzic Oak, load.	9	0	0	10	0	0
STAVES, Baltic, per 1200.	130	0	0	140	0	0
Quebec Pipe, 1200	65	0	0	0	0	0
Punccheon	17	0	0	0	0	0
COPPER—Brit. Cake, p. ton	84	0	0	0	0	0
Tile	83	0	0	0	0	0
Sheet, p. lb.	0	0	9½	0	0	0
Old	0	0	8½	0	0	8½
South Amer., ton	72	0	0	0	0	0
IRON, British Bars	6	0	0	0	0	0
Rods	6	10	0	6	15	0
Hoops	8	0	0	0	0	0
Sheets	8	10	0	9	0	0
Cargo in Wales, Bars	5	5	0	0	0	0
Pigs No. 1, Wales	3	5	0	3	15	0
No. 1, Clyde	2	15	0	0	0	0
Russian, c.c.n.d.	16	10	0	0	0	0
Swedish	9	15	0	10	0	0
LEAD—British, Pig, p. ton	16	10	0	0	0	0
Sheet, milled	17	5	0	0	0	0
Shot, patent	19	15	0	0	0	0
Red or Minium	21	10	0	0	0	0
White	23	10	0	0	0	0
Litharge	20	0	0	0	0	0
STEEL—Swedish Keg	15	15	0	16	0	0
Faggot	16	10	0	0	0	0
TIN—in blocks, p. cwt.	3	12	0	0	0	0
Ingots	3	12	0	0	0	0
In Bars	3	13	0	0	0	0
Banca	3	5	0	3	6	0
Straits	3	3	0	0	0	0
Plates, p. box, 225 shts.—						
No. 1. C. 13½ by 10 in.	1	5	0	1	10	0
I. X.	1	11	0	1	16	0
SPELTER—On the spot, ton	22	0	0	22	5	0
Delivery	22	0	0	22	5	0
ZINC, English Sheet	32	0	0	0	0	0
ORSIDEV	0	3	0	0	0	0
QUICKSILVER	0	4	6	0	0	0

#### ADVERTISEMENTS.

##### CAEN STONE.

LUARD and BEEHDAM have a quantity of the above stone, of the best quality, direct from their Quarries at Aldenham, which may be inspected at the Norway Sufferance Wharf, Greenwich.—Further particulars at Mrs. G. GATES', 19, SOUTHWARK-SQUARE, SOUTHWARK.

##### TO ARCHITECTS AND BUILDERS.

DOOR SPRINGS AND HINGES.—GERISH'S PATENT DOOR SPRINGS, FOR CLOSING every description of DOOR, consists of Single and DOUBLE-ACTION BUTT HINGES in Brass and Iron for Doors to open one or both ways, and Rising Hinges for the convenience of Doors opening on uneven Floors. Like-wise Swing Centres, which consist of a combination of power unequalled by any made at present. Manufactured by F. W. GERISH, East-road, City-road; and sold by all respectable Ironmongers in the United Kingdom.

##### E. G.'S TRACING-PAPER.—RE-

MOVAL OF AGENCY.—The proprietor of the above unequalled article begs to return his grateful acknowledgments for the extensive patronage afforded by artists, surveyors, civil engineers, and consumers in general. It is warranted to take Ink, Oil, or Water colour, and may now be had of MESSRS. ROBEYSON AND CO., SOLE AGENTS, 51, LONDON-AGENCY, at the following cash prices:—

THIN TRACING-PAPER.						
50 by 40, at 14s.	0s.	per Ream, or 15s.	0d.	per Quire.		
40 by 30, at 7s.	0s.	"	7s.	6d.	"	
30 by 20, at 3s.	15s.	"	4s.	0d.	"	
THICK TRACING-PAPER.						
40 by 30, at 14s.	0s.	per Ream, or 15s.	0d.	per Quire.		
30 by 20, at 7s.	10s.	"	8s.	0d.	"	
N.B.—Every sheet is stamped with the Initials of the Manufacturer.						

TO ARCHITECTS, BUILDERS, AND PAINTERS IN FRESKO.

##### MARTIN'S PATENT CEMENT.

STEVENSON and SON beg respectfully to announce that this beautiful cement has now arrived at a degree of excellence far surpassing their most sanguine expectations. For all internal work it possesses a great superiority over every article hitherto in use; it is now being used extensively by Government in the British Museum and other public buildings. It does not throw out any salt, but presents a beautifully plain, perfect surface, which may be applied upon within four days of its manufacture. It is equally applicable for walls or lath, for moldings, architraves, skirting, or flooring; and is admitted to form the best ground for fresco painting, having been used by many of the artists fresco lately exhibiting in Westminster Hall. It will bear an intense heat without cracking, and for hardness, durability, and economy, cannot be equalled.

165, Drury-lane, London.

##### KEENE'S PATENT MARBLE

CEMENT.—This Cement has now been tested during six years, and in no case, where properly applied, has it failed to answer the purposes for which it is recommended. While most Cements trust for durability to a surface hardness, it is a distinguishing feature of Keene's Cement that it is alike hard through its entire thickness, and it is mainly owing to the rapidity of this hardening process that work executed in it can be painted in a shorter time than any other Water Cement.

It is now in extensive use at the British Museum, at the Royal Exchange, and many other public and private Works, where it takes the place of wood for skirtings, architrave and panel moldings, and of stone for the paving of halls, staircases, &c., for each of which purposes it is economical and efficient.

In the manufacturing towns this Cement is taking the precedence of other materials for the flooring, &c., of fire-proof buildings, in consequence of its lightness and durability.

The Patentees and only Manufacturers are J. B. WHITE and SONS, MILLBANK-STREET, WESTMINSTER.

TO ARCHITECTS, ENGINEERS, CONTRACTORS, BUILDERS, MASONRY, AND PLASTERERS, MERCHANTS, SHIPPERS, AND THE PUBLIC IN GENERAL.

JOHNS and CO.'S PATENT STUCCO CEMENT.—The following are the positive advantages possessed by this Invention over every Cement hitherto introduced.—It will effectively resist Bang. It will never vegetate nor turn green, nor otherwise discolour. It will never crack, blister, nor peel off. It will form a complete Stone casing to any Building covered with it. It so closely resembles Stone that it is impossible to detect it. It never requires either to be painted or coloured. It will keep fresh and good in the case in any Climate for any number of years. It is the only Cement that can be depended upon for export. It may be used with confidence by the Sea-side. It may be used in the hottest or coldest Climates at any season. It will adhere to any substance, even to Wood, Iron, or Glass. It will carry a larger Proportion of Sand than any other Cement. It matures by age, and becomes perfect when other Cements begin to perish. It may be worked through the Winter, as frost has no effect upon it. It may be used on the Inner Walls of new Houses, which may be papered over or painted directly. Roofs laid or pointed with this Cement will remain undamaged by the severest Storms. Any Plasterer may apply it, the Instructions being very clear and distinct. The first cost of this material does not exceed that of the cheapest Cement now in use; but with all the above-named extraordinary and valuable advantages, nothing can approach it in point of economy.

Architects and Builders who have used this Cement have declared that it requires only to be known, to be universally preferred.

Specimens may be seen, and a Prospectus fully describing the Cement and its mode of application, together with a volume of Testimonials from every part of the Kingdom, may be obtained on application to MANN and CO., SOLE AGENTS for the Patentees, 5, Maiden-lane, Queen-street, Clerkenwell, London; or may be had also of JOHN and CO.'S PATENT STUCCO COLOUR STUCCO PAINT, expressly intended for Painting over exterior Walls of Houses that have been covered with Roman or other Cements, and which have become dirty and discoloured. It is in every way better suited for this purpose than White Portland Cement, which frequently comes off in flakes, being in direct chemical opposition with Cement; whereas JOHN and CO.'S PATENT PAINT having an affinity for Stucco, binds itself with it, stopping the suction, thereby rendering the wall proof against weather, and in the finish producing a pure stone-like effect, producible by no other Paint whatever. It is cheap in its application, and may be used by any Painter, in any climate, even in the most exposed Marine situations.



# The Builder.

No. XXVI.

SATURDAY, DECEMBER 7, 1844.



EW cities, ancient or modern, contain more architectural beauties than London, and perhaps none.

The various objects of interest which it contains are too numerous to particularize; externally they unite to render it one of the most picturesque of places in the universe. It is true that artists by profession have uniformly little favoured it with their attention, and comparatively few architectural representations of its ancient glories have been produced. There have from time to time issued an abundance of coarse prints of buildings in it, and of the whole city, but that kind of artistic talent, whether of Englishmen or foreigners, which has illustrated most of the continental cities, has been lacking towards our own ancient metropolis. Everywhere, as the eye turns, some new view is presented, with an increased interest and picturesqueness.

In the city of London there is a narrow lane, some fine church campanile is seen terminating, or perhaps a group of steeples of the most elegant outline: and such scenes as these are countless. If you enter the great court of St. Bartholomew's Hospital, West Smithfield, the most singularly rich and beautifully picturesque group of towers and steeples, accompanied by the dome and turrets of St. Paul's Cathedral, is seen through the narrow interval between two of the masses of building surrounding the court. If you go into Aldersgate-street, one of the most enchanting scenes in the world is presented in a view over the cemetery of St. Botolph's Church, in which the bell-tower of St. Sepulchre's Church, Snow-hill, with its four high crowning spires, and the numerous changeful gables and turrets of Christ's Hospital, and many other objects of interest present themselves, while in the foreground lies the new French Church, and at greater distance rises like an Alpine background almost the whole length and altitude of the huge and richly-decorated cathedral. If you go to the bridges over the Thames, more comprehensive and more varied views are in succession seen, perhaps each unrivalled in the world, and each greatly differing from the other.

Whether beheld from the interior of the city itself or from the Surrey hills, from the water, from the parks, from the country road, or from the close by-lane, the same evidences are shed abroad of changeful variety, architectural beauty, and the outlay of vast wealth, in the accumulation of such an amount of value.

Among some of the most interesting objects within the city itself, we may reckon the city companies' halls, most of which, though built

after the great fire of London in 1666, bear considerable marks of antiquity. Mercers' Hall has next the Poultry a front which is profuse in stone carvings, while the interior of the hall itself contains some of the most exquisite wood carvings in the world, jetting forth with more than the imagery of life. The costly Goldsmiths' new Hall is increased in value by a chimney-piece of marble which came from the former hall, and which is so wonderfully wrought over with fruit, flowers, butterflies, and other lively imagery, and with so masterly a hand, that we were told, when in the old hall it was valued at a thousand guineas.

The entrances to most of the ancient city halls present some architectural peculiarities; many of them are heavy in style, are incorrectly designed, and are of coarse execution; yet they exhibit magnificence, often rich though somewhat rude sculpture, and are the very subjects for displaying the effect of the painter, who generally fails when he attempts to imitate the classical and elaborate exactness of perfect specimens of architecture. Among such examples, are the street and court portals of the Haberdashers' hall, in Maiden-lane, of Barber Surgeons' hall, Monkwell-street, of Merchant Tailors' Hall in Throgmorton-street (which has lately received the addition of a duplicate copy of it in the same street), also of the Brewers' Hall, and the hall of the Tallow-chandlers; and many more lying in the neighbourhood of Thames-street, and other close and dirty parts of the city, are each possessed of some one beauty at least, whatever defects they may contain. Nearly all these fraternity halls are replete internally with sculptured oak, oil paintings, stained-glass, cote-armoury, fine ancient furniture, and collections of plate (some gilt, and some wholly of gold). Many of these old examples of architecture contain curious specimens of red brickwork, generally "gauged," and often a mixture of stone naturally light, or painted to appear so, and which, contrasting violently with the deep-coloured brick rendered half black through age and soot, gives to the whole a singularly motley appearance. Most of these halls consist of buildings surrounding a court-yard, some few of which still, after "improvement," remain paved with marble, and, if we mistake not, one or two, if not more, exhibit the pride of a fountain, and many of them still retain their ancient cisterns of thick, solid lead, cast all over with strange devices, and the arms of the company and donors, and still firm and sound, having been made when lead, weight sixteen pounds to the foot superficial, was laid upon churches, and thought to be none too thick or heavy: around these courts ranges many a column and pilaster, and is seen many a quaint device, sculptured with less of cunning than of drollery; and in some, as at Brewers' Hall, within the court-yard rises a mighty external staircase, leading to the principal apartment (properly termed the hall), on the one-pair story. The oaken doors of many of these halls are very curiously designed and carved, and, though still sound, have survived two or three generations of doors to the neighbouring houses.

If you want fine and interesting views, and so original that the world at large knows almost nothing of them, you must come into the heart of London, where the rough carman daily almost brushes them in passing, without noticing whether they have beauty or deformity, sculpture or plainness. About Tower Royal, in the neighbourhood of Watling-street, carved, quaint, and original doorways, whether to public or private edifices, meet you at every step.

At Saint John's Church, Clerkenwell, and St. John's Chapel, Bedford-row, there are examples worthy of appreciation. In Queen's-square, Westminster, are still remaining many of the original doorways, with carved open-work canopies stretching forward like bed-testers. In Bloomsbury-square, Great Ormond-street, and the neighbouring places, are many fine examples still in existence, each of which would furnish an excellent subject for a beautiful drawing. In Carey-street are several very peculiar specimens, one of which, near the entrance to New Boswell-court, contains parts of remarkable beauty, and there is one in Old Boswell-court itself which has a curious piece of scroll-work, and a head in a compartment below the centre of the architrave which seems to be looped up for their reception. Opposite the House of Correction, Coldbath-fields, there was once a whole row of doorways with fine consoles, with flowers running down their fronts. Many of these are gone, though originally some of these examples extended down the neighbouring streets. In a narrow avenue leading from the western end of Great Marlborough-street, are two very quaint specimens, with fine consoles. At the comparatively modern doorway of St. Helen's Church, Bishopsgate, remains a pair of consoles, with trumping angels, projecting in a very singular way. In Rufford's-row, by Islington Church, are some doorways with consoles something like them, but less valuable and not so well executed. In Red Lion-street, Clerkenwell, are some very fine pierced door-trusses, and in Featherstone-buildings, Holborn, are examples exactly like them, these two places being probably built by the same person, as in each are the two same patterns of doorways many times repeated.

(To be continued.)

## ELECTION OF SURVEYORS TO THE FOUR NEW DISTRICTS IN THE COUNTY OF SURREY.

(December 2nd, 1844.)

FOR CAMBERWELL.		No. of Votes.
Elected—	William Crawford Stow ..	48
FOR STREATHAM.		
Elected—	John Mullins .....	25
	Edwin Nash .....	22
	Charles Baalam .....	1
FOR CLAPHAM AND PART OF BATTERSEA.		
Elected—	Edward P. Anson .....	48
	William Watson—Resigned.	
FOR WANDSWORTH AND TOOTING.		
Elected—	Alfred James Hiscocks ..	32
	George Enoch .....	10
	John Turner .....	5
	Alfred Beaumont .....	1

The surveyorship of the district consisting of Rotherhithe (vacant by the election of Mr. Stow to the Camberwell new district) and of the Surrey portion of St. Paul, Deptford, will be filled up on the 16th instant.

In our account last week of the "Election of District-Surveyors for the County of Middlesex," we inadvertently gave Mr. James Harrison's number of votes as 38 instead of 39.

## BUILDING SOCIETIES.

### LETTER II.

BY WILLOUGHBY WILTON.

*The Metropolitan Equitable Investment Association and Savings' Fund; for enabling members to purchase residences for occupation, or other freehold or leasehold property for investment, by monthly subscriptions of 10s. per share.—* Offices, 28, Leadenhall-street, London.

"ALL persons upon joining this association are required to pay an entrance fee of 2s. 6d. per share, a monthly subscription of 10s. per share, and a postage fee of 1s. per annum to the general fund, until such subscriptions, with the profits, amount to 120l. per share, when the association will be dissolved: from the



Experience of similar societies, this is computed to be in about ten years, but as the funds accumulate, members desirous of purchasing their own residences, or other freehold or leasehold property, for occupation or investment, previously to the expiration of the society, will have the amount of their shares advanced to them, on allowing an equitable bonus thereon and executing a mortgage of the property purchased, as security for the regular payment of their future subscriptions, &c., in accordance with the rules."

Such is the preamble of the prospectus put forth by this "Metropolitan Building Company," and in which there are four things to be considered and never to be forgotten in working the prospectus: 1st, The entrance fee of 2s. 6d. per share; 2ndly, The monthly contribution of 10s. per share; 3rdly, The annual postage fee of 1s.; and 4thly, The continuous payment of the subscriptions until they amount, with the profits, to 120l. per share. To these items we shall have to refer in the sequel; and in order, therefore, to bear the case from the lips of the directors, we shall now quote the advantages they offer additionally: thus,

"In other societies of this description, members, on having their shares advanced, are required to pay 4s. per share per month, as a redemption fee or interest, until the termination of the respective societies, which in the event of a protracted duration would subject them to a considerable loss: to obviate which, the redemption fees in this association will cease at the end of ten years, whether the whole of the shares are realized or not, and in order to prevent monopoly and to secure the advantages as nearly as possible in an equal degree to all members, none are allowed to subscribe for more than five shares on entering the association, but on having their shares advanced, members may take as many additional shares as will enable them to purchase any property they may desire."

The superior advantage here offered is stated to be, that the "redemption fees will cease at the end of ten years, whether the whole of the shares be realized or not;" for it cannot be argued that the subsequent portion of this notice holds out any advantage at all.

The directors further proceed to illustrate the principle of operation in this association, and we shall in justice set that illustration forth in their own words: thus,

"The following examples will act as a key to the calculations which form the basis of this association, and are given for the purpose of demonstrating the safety and eligibility of becoming a shareholder:—

"Supposing a member to occupy a house at a rental of 30l. per annum, and the landlord is willing to dispose of his lease, having sixty or seventy years to run, at a fair valuation; the ground-rent of such a house being 4l. per annum, and the purchase-money 240l. By subscribing for four shares, and allowing an equitable bonus to the association, or, in other words, a present discount of equal to 50 per cent. from the increased value of his shares, he would receive an immediate advance of cash from the association, sufficient to cover the amount of his intended purchase, thus—

Four shares, of 120l. each	£480 0 0
From which deduct 50l. per cent.	
per share, as above mentioned	240 0 0

Making the amount to be received for the four shares	£240 0 0
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For the amount of 240l. received as above, the member will have to pay his monthly subscription of 10s. per share	£2 0 0
And 4s. per share as interest or redemption	0 16 0

Making a total monthly payment of	£2 16 0
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"So that instead of 30l. a year for rent to his landlord, by paying this association 33l. 12s. per annum for about ten years, in addition to the ground-rent, he has become the purchaser of his residence, which he could not have done on such advantageous terms, but through the medium of this or some similar association; and although at first sight 50l. per cent. may appear a large discount for immediate cash, instead of waiting the termination of the society, it will be found on calculation not to be so, because a payment of 33l. 12s. per annum

for ten years for the present receipt of 240l. is only at the rate of about 5l. per cent. compound interest; whilst the actual sum paid to the association for the use of the money is but 4l. per cent. thereon, thus—

A payment of	£33 12 0	per annum.
For	10 years.	

Amounts to	£336 0 0
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£4. per cent. on 240l.	£9 12 0
Multiplied by the number of years	10

Add cash advanced, as above	240 0 0
	£336 0 0

"From the above calculations, it is obvious that to become a member of this association must be highly advantageous to every tenant, because by paying to the association a trifle more per annum than he has been in the habit of paying for rent, he may by monthly instalments buy his present residence, or some other equally suitable for him, with the very money he would otherwise be paying to the landlord for rent only, while, if he is not a member of a similar institution to this, he may pay his rent for thirty or forty years, and never become the owner of the premises, although in the shape of rent he has paid their value several times over."

What is meant by the term bonus? Is it meant that the man surrenders 240l. to the association, when it allows or lends him 240l.? And that he binds himself to pay up the amount of the four shares of 120l. each? The prospectus leaves this point altogether unsettled, as far as an ordinary reader can understand it; and our conclusion is, that the borrower undertakes to pay, in the long run, the sum of 480l. If we are in error here, we shall be glad to be corrected; but believing we view the matter through the same medium it is seen in by the association, we proceed to the examination of the details in the prospectus.

To analyze this account, or the examples propounded, the party taking four shares of 120l. each covenants to pay the association in the long run 480l.; but if he elect to take a house, he consents to surrender one-half, and take 240l., with which he buys his house, which he mortgages to the association till he shall have paid for it in full the sum of 480l.

Moreover, he bargains to pay these 480l. by a monthly contribution of 2l. 16s., or an annual payment of 33l. 12s., which is written up as 336l. in ten years. But on the opposite side he owes the society 9l. 12s. per annum for interest on 240l. lent him, or 96l. in ten years.

The account is made fairly to balance, Dr. 336l., Cr. 336l., or vice versa, whichever you will.

Thus it is made to appear that the man gets a (freehold or) long leasehold house for 336l., exclusive of 4l. a year ground-rent, which in ten years would make a gross sum of 376l., as for the house, without any consideration of interim repairs, painting, and so forth, which, being his own landlord, he must have done, or allow his property to dilapidate fearfully.

The man, however, is not released from his obligation to the association by the payment of 336l. in ten years; he has still 240l. of a bonus to pay, which he surrendered for an immediate sum of similar amount. If he fulfil his contract, he has to pay this off by the continuous contribution, we presume, of 2l. 16s. a month, or 33l. 12s. a year; so that he must continue to pay for seven years and two months longer the same contribution. In other words, if our view of the case be correct, in seventeen years and two months he and the association will cry "quits."

But reasoning simply by the statement of the association, the man pays annually for ten years,

Annual contributions, including interest on loan of 240l.	£33 12 0
Ground-rent	4 0 0
Dilapidations (say)	2 10 0

Total as to practice	£40 2 0
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And for seven years more he pays off 240l. still in arrear.

This, we presume, is not the way to view the question, though it is the light in which the directors wish it to be seen by the public. The public see one item which we must now consider as an integral element in the calculations of the directors—we mean "interest" or the improvement of money. The man pays

4 per cent. per annum, or 9l. 12s., for the use of 240l. The directors receive from him 2l. 16s. a month. We throw out of the question the entrance-fees of 2s. 6d. per share, and postage-charge of 1s. a year, and deal only with the aggregates he pays as for his dwelling.

This payment of 2l. 16s. a month is a temporary annuity which, according to our view of the case, the man is bound to pay the directors for upwards of seventeen years or else have his mortgage foreclosed, and be stripped of his property at the valuation of the surveyor of the association acting for the directors. If he demur to this official's dictum, the solicitor of the directors will refer it to the litigant's own surveyor, or to an umpire, in the event of disagreement between the "professional men" on either side. But all this must be done at the man's cost, for he will have to settle the business with the solicitor, who acts for the association.

Let us, therefore, now see how the case stands by the improvement of money at 5 per cent. on the part of the directors, to whom the man pays monthly 2l. 16s. for ten years. This payment or annuity is stated to be yearly 33l. 12s. Be it so: in ten years the directors will have accumulated 429l. But if we allow him about the present value of 1l. for his loss of time in waiting upon the directors with his subscription, and say that he pays annually 34l. 11s. 2d., he will, or they will, have accumulated in ten years the sum of 441l. Thus the house stands him in the sum of 44l. a year for ten years, without consideration of two items, which, depend upon it, the directors will look after—to wit, ground-rent and dilapidations. With the addition of these items he pays annually 41l. 1s. 2d. for this period. This sum, if the ground-rent and dilapidations be payable also monthly, will amount to 524l. in ten years; and there is no reason why the directors should not exact these extra sums in this simple method, which might be "equally suitable" to the borrower,—

Paying £33 12s. a year, he pays £429	} in ten years.
Ditto 34 11s. 2d. " " 441	
Ditto 41 1s. 2d. " " 524	

Yet he is made to believe that he pays only 336l. in all; whereas

By the first he pays	£93	} in ten years.
By the second " "	105	
By the third " "	188	

more than contemplated under the directors' statement of the case, or, in other words, they gain in that rate; and this last is the true estimate.

Moreover, the man has still to liquidate the bonus which he gave the association:—that is to say, he is in debt to the directors 240l. at the end of ten years, and in seven years and two months more he will have paid this off by an annual charge of 33l. 12s., but more properly by the temporary annuity of 2l. 16s. per month for seven years and two months.

Suppose now the directors as prudent men, well versed in the improvement of money, fructify these periodical payments at the rate of 5 per cent. for seven years and two months; the unfortunate speculator will have paid them, or they will have accumulated the sum of 306l.

But the "Speculator" will have to pay besides the sum of 4l. for ground-rent and 2l. 10s. for repairs and dilapidations, or annually 40l. 2s., which the directors will improve at 5 per cent. compound interest, and realize the sum of 365l. The man, meanwhile, fancying that he has paid in the one case 240l., and in the other 286l., whereas the account stands thus:—

Money paid	£240	Directors' profit	£66.
Ditto improved	306		
Ditto paid	286	Directors' profit	£79.
Ditto improved	365		

Let us next examine how the matter really exists as between the debtor-speculator, and the capitalist directors at the end of seventeen years two months:—

Dr.		Cr.	
To bonus	£240	By annual payments improved at 5 per cent. compound interest for ten years	£524
To loan and interest	336	By ditto for seven years and two months similarly improved	365
To ground-rent for seventeen years	68		
To repairs, &c., for same time	43		
To balance	202		
	£889		£889



The man has now his house, and, if we have taken the proper view of the case, should have besides a balance of 202*l.* to share in with the association. But the prospectus does not take this view of the matter; yet it says, "To the capitalist this association affords additional facilities to realize property." Truly it does; yet not to the speculator. Will the directors be good enough to tell the speculator what portion of these 202*l.* they really will allot to him in the eighteenth year? It is a farce to tell the public that this society can comply with the "Act of Parliament" and close its operations at the end of ten years. It honestly tells the man it will exact 336*l.* in ten years; but to realize the debt of 240*l.* still owing by the speculator, it binds him hand and foot for seven years and two months longer. Verily this "Act of Parliament" gives room enough for a "coach and six to ride through it," if a few men can thus elude its enactments. The preamble of the Act runs thus:—

"Whereas certain societies have been established in different parts of the kingdom, principally amongst the industrious classes, for the purpose of raising by small periodical subscriptions, a fund to assist the members thereof in obtaining a small freehold or leasehold property, and it is expedient to afford encouragement and protection to such societies, and the property obtained therewith; be it therefore enacted by the King's most excellent, &c., and the prospectus tells the world that the association is "no speculation," yet it is to all adventurers who waste their resources in such a bubble. Yet, with a view of encouraging speculators, the prospectus states, that

"In the event of a member dying, his executors or administrators will have as much advantage from and under the rules as the deceased would have had if living; and any member may withdraw from the association, or transfer his share or shares thereof, or interest therein, to any other person or persons, in accordance with the rules and in conformity with the Act 6 & 7 William IV. cap. 32, passed expressly for the encouragement and protection of similar institutions. This Act of itself is sufficient evidence of the favourable opinion entertained by the legislature of these societies, as tending to diffuse more extensively the vested interest in the soil of the country, and benefit a class of persons above those who usually resort to savings' banks; in addition to many other valuable privileges, it exempts members from the expense of re-conveyances, and stamps on transfers, receipts, &c., and protects them from all liability beyond their monthly payments."

This is false, for it gives no "vested interest in the soil of the country" by merely enabling a poor man to encumber himself with a leasehold house; and if it "exempts him from expense of conveyances, &c.," it robs him effectually in an underhand way. Verily, the association takes both skin and fleece from off the flock.

It may, perhaps, be assumed that the Act of Parliament was passed as much to create a particular class of voters for the election of members as to benefit the poor man. For, let us suppose that the leading men, as directors, are of a party, then what is to hinder them operating on the members of the association, and bringing up to the hustings all their registered freeholders or leaseholders to give plumpers for A to the exclusion of B, who is not in the secrets of the association? A partisan might well expend a little money in meeting the calls of the association at the period of an election for a member of Parliament. This is an imaginary case, but realities daily occur which outdo the vagaries of imagination.

Suppose the man is not his own landlord, and pays at the rate of 30*l.* a year of rent, for seventeen years and two months; he pays 515*l.* in all, without the charge of ground-rent and the annoyance of repairs. By his arrangement with the association he pays in all the sum of 687*l.*; therefore he has paid 172*l.*, or above five years and a half more rent for his house than he would were he not his own landlord; for it is plain the sum he pays is  $\frac{9}{10}$  = 22 years' and 9 months' rent.

Suppose he pay only the sum he borrows, the ground-rent, and the repairs, he will pay fourteen years' and nine months' rent, at the rate of 30*l.* a year, before he is free; for it is  $\frac{1}{10}$  = 14 years 9 months.

It is manifest, that the whole depends on the question of the bonus, for, as to the balance, if it become divisible among the association, the speculator's share of it will be very small.

In handing this prospectus to the public, the directors enclose in it "Extracts from the first annual report of the London and Westminster Provident Association and Savings' Fund:—

"Offices, 23, Leadenhall-street, Aug. 7, 1844.  
"The number of members who have joined the association since the establishment amounts to 315, amongst whom 820½ shares have been subscribed for; from the above 32 shares have become forfeited, and 564 shares have been transferred, by which the number of members have been reduced by 43, leaving the association at present to consist of 272 members, holding 788½ shares.

"Up to the present time 102½ shares have been advanced to members upon mortgage, the average bonus for such advance being 63*l.* 0*s.* 10*d.* per share, and the amount of capital paid off 12,270*l.*, in addition to which there are 20½ shares agreed to be advanced, which will secure a bonus of 1282*l.* 1*s.*; the number of shares, therefore, at present to be provided for, is thus reduced to 686½. As this number annually decreases, so the association will approach nearer to its dissolution; the directors, therefore, urge the members to assist them in obtaining this desired end as soon as possible, and with that view, they strongly recommend those who are desirous of purchasing their own residences, or other property for investment, to have their shares advanced to them during the early stages of the association.

"The success that has attended the association up to the present time, arising from the number of shares that have been taken up, induced the directors, at their last meeting, to fix a proportionate premium upon all new shares subscribed for after that period; so that members now joining the association, or requiring an additional number of shares, will have to pay an entrance-fee of 7*l.* per share, excepting those parties who take up their shares, to whom an entrance-fee of only 1*l.* 10*s.* per share will be charged."

Pray, gentlemen, trustees and directors of 23, Leadenhall-street, are you also associated with the "London and Westminster Provident Association and Savings' Fund?" or are these "extracts" stuck in the folds of your prospectus to make the public believe the two associations one? Which? is the "Report" a blind, or do you recognize it as your own bantling? Whichever way, the "Report" presents matter of grave interest, which we must defer until another number of THE BUILDER.

#### A HINT TO PENCIL MANUFACTURERS.

CAST-IRON, it has been found, when subjected to the action of certain substances, assumes the condition and nature of plumbago; a circumstance which lays open an interesting field of inquiry, seeing that the supply of pure Cumberland lead has of late years been greatly on the decrease; and that artists, when complaining of the consequent deterioration which has taken place in cedar pencils, have only the satisfaction of being told that the quantity obtainable of pure plumbago is now so much reduced, that a greater proportion of admixture than before is necessary to render the supply equal to the demand. (Apropos of this source of complaint, some artists of the architectural profession were a few months ago mingling their sorrows on the subject, when one of them, a well-known and much-esteemed veteran of the illustrative department, exclaimed, "Ah, if they would but give me pure 'lumbago' I'd give them any price for it," a sentiment which, however opposed his more inexperienced listeners might be to its literal meaning, they could but subscribe to it in its intended sense: in the laugh which ensued at this *lapsus lingue* its author heartily joined.) The decomposition or corrosion referred to has appeared in numerous cases, and been found to proceed from various causes. A cast-iron gun which had been long immersed in sea-water, was found to be converted, to the depth of an inch, into a substance having apparently all the characteristics and properties of plumbago—being easy to cut, greasy to the feel, and making a

black streak upon paper. The same phenomena presented themselves in a cannon-ball that had lain forty-two years in ground kept constantly moist by sea-water; externally, to a varying depth of about half-an-inch, it was converted in like manner. On the removal of a cannon and cannon-ball from the wreck of a vessel that had been many years under water, and which were both found covered with oysters, the latter only was found externally to have undergone this change.

A transmutation similar to the above has been found to take place in some cast-iron cylinders used by weavers for applying the dressing to cloth, and that so rapidly, as to render it necessary to relinquish the use of them in favour of wooden rollers: the change in this instance was ascribed to the acid produced by the souring of the paste, which was made of wheat or barley flour. It has also been found that cast-iron, left in contact with muriate of lime or of magnesia, becomes reduced from its specific gravity of 7,207 to 2,155, being a near approach to that of plumbago, which is 1,860; and that its analysis under the circumstances gives chiefly plumbago, excepting certain impurities which usually occur in cast-iron. Here, then, are offered means of producing artificial plumbago, which, if the other mode of soaking the cast-iron for half a century in sea-water appear rather inconvenient, should be available, and must at least induce those concerned in the production of such a desideratum as a good drawing-pencil to pursue further the investigation of this important subject.

The facts here embodied are obtained from "Hodgkinson's edition of Tredgold's Essay on Cast-iron," wherein reference is besides made to an article by Mr. Daniell, "On the Mechanical Structure of Iron developed by Solution," in the *Quarterly Journal of Science*, vol. ii. p. 278; also to a Report by Mr. Mallett, "On the Action of Sea and River Water, whether clear or foul, and at various temperatures, upon Cast and Wrought Iron" in the *Transactions of the British Association*, vols. vii. and viii. J. W. N.

#### PROPOSED MUSIC HALL AT MANCHESTER.

THE committee appointed at the general meeting, held in the Town Hall, on this subject, at their first meeting appointed the Mayor of Manchester their chairman, and Mr. Alderman Neild, Mr. William Steuart, and Dr. Lyon, their vice-chairmen for the ensuing year. They also appointed a sub-committee of eleven gentlemen, including the four just named, to prepare a scheme for raising the requisite funds, to be submitted for approval to the general committee. We understand that the sub-committee have met, and have drawn up a scheme, which they have submitted to Mr. Brandt, the barrister, who had kindly undertaken to examine it. He has done so, and returned the scheme to the sub-committee with several suggestions; and we believe the sub-committee will shortly take the subject into consideration, with the suggestions of the learned gentleman, preparatory to laying the scheme before the general committee for approval. We understand that the scheme, which the sub-committee propose to recommend, contemplates the raising of a fund of 30,000*l.*, in 600 shares of 50*l.* each; and no doubt some provision will be made in it for such privileges as are compatible with the interests of the shareholders and the public. As all the gentlemen on the committees of management of our public charities are placed on the general committee, and as the proposed hall offers a large, valuable, and permanent aid to those charities, by affording the means of holding periodical musical festivals on a large scale, we may reasonably expect that the interest which the honorary officers of these charities take in the promotion of their objects, and in the extension of their usefulness, will lead them to take that active part in the proposed measure, and to give that extensive co-operation to its promoters, which alone are wanting to effect so desirable an object. It has been well said that there cannot long be any difficulty about the pecuniary means, if the public of Manchester are only satisfied that the scheme is sufficiently broad and comprehensive to deserve the support of the community.—*Manchester Guardian*.



# A GLANCE AT THE INTERIOR OF THE CHURCHES IN THE DEANERY OF SPARHAM, IN NORFOLK.—No. VIII.

WITH NOTICES OF THEIR ACTUAL CONDITION.  
(Continued from p. 552.)

"I.H.S., the Jesuit's badge in the chancel window, promised (to be defaced) by the minister, Mr. William Pell."<sup>\*</sup>

*Bintry, or Bintree.*—Much has been done to impair what escaped the fanatic zeal of the Puritans, as well by the slow march of unresisted decay, as also by a yet more active cause. There occurs in this church an instance, unhappily by no means rare, of the mischief arising from repairs being intrusted to persons altogether incompetent. The roof, which was originally of remarkably high pitch, has been lowered many feet; so much so, that horizontal tie-beams ought to have been introduced immediately over the wall-plate. The result of neglecting to supply them is seen in a marked deviation from the vertical line in the piers and arches in the nave, where these open on the south aisle and adjoining transept. This last has a covering of flat tiles laid upon most paltry woodwork. The lead over the nave appears in a very decayed state; it rests on the primitive roof mutilated as just shewn. The chancel, at least the larger portion of it, fell to the ground in 1806; it has been rebuilt at half its former size, and with a low roof *ceiled*.

Notwithstanding these dilapidations, the general effect is by no means displeasing. A handsome square tower, with a little spire rising from it, and a spiral stairs somewhat projected at the south-east angle (we were sorry to detect a *boarded parapet*) and a window with decorated tracery of good character in the transept-gable, offer tokens that, recently at least, some here have thought it "sin and shame to see a church ruinous and foully decayed." The interior presents the novel feature of a stone chancel-screen. We will essay to describe it.

The lower portion comprises a pointed doorway inserted within a square compartment, and having its label terminating in corbel heads. It is flanked on either side by two decorated windows, each of two lights, and having the space between pierced with quatrefoils. A bracket intervenes between those on the north side; it was, we imagine, once surmounted by a statue. The distinguishing feature of the upper part is a large aperture over the entrance; this was formerly blocked, but has been opened by the present minister, whose good taste dictated also the restoration of the transept window. The Decalogue was at that time removed from its position on the screen to a place under the east window. Two niches with pointed arches foliated are seen on either side of the aperture. The rood-loft seems to have been reached through a perforation in the south wall. The effect of the whole is much impaired by the lower level of the chancel ceiling within.

The only thing worthy of notice in the chancel is a very massive oaken chest, rudely shaped and hollowed from the solid tree, and thickly banded at right angles by straps of wrought-iron. In the nave before the screen we found a grave-stone despoiled of its brass; on three others the inscriptions are yet extant. A slab in the transept is poorly carved with a death's head and hour-glass; in the nave a mural tablet by Sevier has been lately erected in memory of the late Lord James Townshend. The sculptor has kept tolerably clear of "rostral crowns and naval ornaments, with beautiful festoons of sea-weeds, shells, and coral;"<sup>†</sup> but the style adopted is utterly incongruous with all about it. Besides, we would have the memorials of the dead ever rendered subservient to the edification of the living; and the patrician sailor could have told how "They that go down to the sea in ships, &c."

"Qui mare fluctisonum sulcat, cavisque carinis,  
Admovet externas vaga per commercia gentes,  
Non ignota illi divina potentia, nec quæ  
Monstrat in immenso miracula sæpe profundo."  
BUCHANAN.

The noble font was originally raised above the floor by three steps, but the pavement is now on a level with the first of these. Its octagonal bowl, which is sculptured with flow-

ing tracery, rests on a shaft of like figure supplied with a plinth and a capital both remarkably elegant. We were sorry to find the meetings of bats in its leaded cavity; why should our churches be so generally "defiled by rain and weather, with dung of doves and owls, stases and choughs, and other filthiness?" The font occupies a central position in the nave near the north door, outside which are indications of a large porch having once existed. The nave, at this end of it, would be much improved by taking away an unsightly platform which, although of no great elevation, spoils the fine effect of a lofty tower arch. It would also cause the immediate removal of a mass of rubbish now accumulated there.

The pews, open seats, pulpit, and desks possess few claims to a detailed notice from us; to good taste they have none whatever. Neither do some poppy-heads, finials, thrown by in the transept, speak much in favour of the more ancient furniture. We will not, however, leave the building without inviting the ecclesiologist to observe the square-headed windows in the south aisle, and to admire their delicate tracery—faint, where a sterner duty is not interposed, to have said of ourselves, in the words of the Mantuan,

"gemmas in fronte solebat  
Ponere."

## ARTESIAN WELLS.

TO THE EDITOR OF THE BUILDER.

SIR,—In writing a few remarks under this head for the consideration of the readers of THE BUILDER, I was not aware that I was throwing an explosive mixture into the office of *Punch* or the *Morning Post* (singular conjunction!), or that my *aurum fulminans* would be mistaken by the witty editor or his shadow for a Warner's or a Normanby's destructive power. My object was to shew that partial subsidence of houses often takes place in consequence of the soil being drained after it is built upon; that as clay is deprived of moisture, so it concentrates and settles, and the heavy substantial building settles with it, sometimes partially, as testified by sundry separations or sinkings of the brickwork; at other times uniformly, without displacing any portion of the super-incumbent weight. Partial subsidence is demonstrated by a vast number of buildings on the Bedford and Southampton estates, and other properties in the parishes of St. Pancras and Marylebone, all of which have become prematurely aged by this partial settlement, houses of thirty years' standing exhibiting a state of decay equal to that of houses in the city which were built a hundred years ago on a well-drained and settled soil, and this, too, without reference to inferior materials.

It is remarked by Dr. Fordyce that "clay hardens upon drying, and does not diffuse so readily again in water as sand;" and indurated clay, although it crumbles and softens in water, will not diffuse itself therein. The nodules of clay, termed clay balls, so commonly found resting beneath the London clay, and from which Parker's cement is made, are evidences of this, for it is in this stratum the waters are often deposited, some of which waters are highly mineralized, particularly in the track of the ancient stream through Camden Town and Bagnigge-wells. The tendency of clay is to settle and consolidate, and under lateral pressure its powers of expansion are exceedingly limited; deprived of its moisture, it passes gradually into indurated clay.

The editor of the *Morning Post* tells us that the annual fall of rain in the small county of Middlesex is sufficient for the supply of all England. But he does not add that the greater portion of this supply passes off by drainage, forms our brooks and streams, and contributes to the magnitude of our rivers. He tells us that the chalk beds of surrounding counties afford also inexhaustible supplies of water to the London basin, and consequently that the waters beneath this city are inexhaustible; but he does not prove to us that there is no uninterrupted chain of communication with these subterranean reservoirs. When Messrs. Meux formed their magnificent well at the expense of 7,000*l.* to obtain water, they were obliged to explore the strata by tunnels in every direction, at various depths, before they could gain the requisite supply; dig a similar well in their

immediate neighbourhood, and this supply will immediately and sensibly diminish.

The idea of well-digging being dangerous to the houses, or affecting the sub-soil, is treated with ridicule; let us give facts for sneers. When the New River Company formed the reservoir in the Hampstead-road, they thought to increase the supply of water by a well; they commenced their labours, and did not cease until compelled to do so, in consequence of the houses in the immediate neighbourhood giving unequivocal symptoms of sinking. Messrs. Reid, of Liqueurpond-street, had a well sunk, but after proceeding to some depth, they were compelled to desist, because the foundations of their immense warehouses began to give way; had they continued the work after this warning, the whole pile of buildings would probably have fallen, and its fall would have been announced in the columns of the *Morning Post* under the head of "*Dreadful Catastrophe*," &c. In the latter instance, and probably in the former, the causes of effects produced were only local, but they prove that danger is to be apprehended where large and continuous supplies of water are abstracted from the soil; even though they do not bring up quantities of the earths composing the inner beds, they cause a gradual displacement and consequent change in the disposition, and sometimes in the character of these beds.

In tropical countries, as the moisture is withdrawn from the sub-soil, so the elevated clay-beds on the banks of rivers separate and fall with terrific violence into the stream, and boats on the Ganges are frequently overwhelmed by these avalanches. In dry seasons in America, the earth is rent asunder in all directions, and chasms are formed many feet in width, and extending to vast depths. In the numerous mines of England and Wales, most of the *faults* are occasioned by the sinking in of lower beds through which subterranean waters formerly flowed, partial subsidence extending to the surface soil. Admitting that vast and continuous supplies of water can be abstracted from the bowels of the earth free of impurities, still changes must take place in the disposition of the lower beds, and the settlement of a mass of houses of only six or seven inches will sometimes occasion as great a loss as though it sunk as many feet. The question to be answered is, can a number of artesian wells be dug in the metropolis sufficient to administer to our wants, and without injury to individual properties? I confidently assert that they cannot. The waters are, generally speaking, blended with the strata; in dry seasons sufficient supplies could not be obtained otherwise than by forcing-pumps.

Chelsea, Nov. 19th, 1844.

## ANCIENT ROME AND MODERN LONDON CONTRASTED.

BY H. G. MONTAGUE, ESQ.

(Continued from page 592.)

Again: another most incredible thing is the number of elephants in the army of the Carthaginians, 100 being employed against the Romans in the first Punic War. Now, whether we consider the enormous cost of procuring these animals from the distant regions of the East, the difficulty of subsisting them in the semi-desert regions of Carthage, and the little real service they could possibly render in return for the enormous expense they occasioned, we can come to no other conclusion than that the whole is a fable based upon the histories of Alexander, Darius, or Semiramis, whose conquests extended to the East, where only such an array of these very expensive auxiliaries could exist. Niebuhr remarks that many of the narratives of the history of Rome betray their fabulous nature by the contradictions and impossibilities they involve. The fact is, the greatness and glory of this nation has been grossly exaggerated; the works of Pliny and Dionysius of Halicarnassus are evidently written to gratify the vanity of the Romans, and Polybius is not a whit more to be depended on. Rome, seated on a barren ground, and in an unhealthy air, with a miserable muddy apology for a river running through it—without a good sea-port within any reasonable distance,—without commerce—without manufactures—could not by any possibility have had the population ascribed to

<sup>\*</sup> Will. Dowling's Journal.

<sup>†</sup> Spectator, No. 26.



it. Aristias, Diodorus Siculus, and Menander make Alexandria larger than Rome; the population of this city is stated by Diodorus to be 300,000 souls, and this appears to come very near to the extent of population which could have been conveniently subsisted in Rome. Ancient maps do not make it greater than it is in the present day, nor are there any vestiges of further extension of its walls. It had thirty gates, a very small number for so large a city as it is represented to have been, and wholly inadequate for prompt communication with the provinces. The calculations of Gibbon are any thing but satisfactory. We are told, he says, that when the emperor Claudius exercised the office of censor, he took an account of 6,945,000 citizens, who, with the proportion of women and children, must have amounted to 20,000,000 of souls, and including slaves, have formed a grand total of 120,000,000. Elian, who lived in the time of Alexander Severus, says, ancient Italy contained 1,197 cities; to what extent are we, therefore, to apportion the inhabitants to the city of Rome? The Romans never mentioned more than fourteen regions or wards within the city, neither before nor after the emperors; they reckoned seven great cloaces, or common sewers, which it is believed were built in the time of Tarquinius Priscus. History does not furnish us with any account of public buildings without the walls: the number of bridges does not appear to have been more than seven or eight, the three hills mentioned are at present within the walls; the seats of justice, forum publicum, were all in that part called *Pomerium Urbis*, which was of no further extent than modern Rome; they were in all eighteen or nineteen, one-half of which were market-places, and other meeting places for public affairs; and finally, as a learned writer on this subject says, had it been so great as pretended, it would have included Mount Soracte and other mounts besides the seven, as well as the little hills, mentioned in history, upon which the city was then seated, as it now is; it must have extended as far as the Adriatic, and Mount Appennine must have been in its centre; Oriculum, Tibur, Ostia, and one or two other places had been also a part of it, which are but short journeys from modern Rome. Tusculum, Tullay's country seat, is to this day only as far distant from Rome as of old. There is not the least evidence to support the notion that the walls were of greater extent than they now are, and it is recorded that the augurs always set their faces against any extension of the city. Again: there are no accounts handed down to us of magnificent, or even common temples, baths, &c. without the walls, nor are there the least vestiges to be found of extended walls or public edifices; there were, no doubt, country seats, as there are in the present day, but no villages such as surround London, and are becoming gradually absorbed in it. Honorius, after the plunder of the Goths, repaired the walls, and made them as they were before, but did not extend or diminish them. The *Transiberina Regio* was then walled about as well as the rest, as also the Campo Marzo, where now stands *Urbs Leonina*. Rome must have had its towns as well as other nations, and Pliny tells us that the houses are spread up and down about Rome, adding many towns to the city; and Dionysius also observes that all the places inhabited were without the walls, and it would be in vain for men, considering of them, to inquire into the greatness of the town, and that he would hardly find whence it begins or ends, so near do the suburbs approach and join the city, and make it look as if it were an immense length. This statement applies to all the cities, the leading roads to them being lined with houses and ornamented with country seats.

One great proof that the city of Rome itself was not very populous, is the state of its posts, which were established along the great Roman way; there were stations every five or six miles, with relays of forty horses only, which not only performed all the government work, but were also at the disposal of the nobility. And again: the public roads, so truly celebrated, appear to have been made for show more than for actual service, for even to the present day they exhibit little wear, although vast stores of fruits, grain, wine, and oil were daily conveyed into the city from all parts of the country.

Luxury was confined to the few, and was little beneficial to the community at large; the supplies of their tables were chiefly the produce of the farms, and of slave-labour; their rich estimates were the produce of other lands; the poorer classes were dressed in a simple Bornease, like the Egyptian fellahs; and their food was scarcely so good as that enjoyed by the lazaroni of the present day.

The state of their trade was truly pitiful for such a mighty nation, and was far inferior to that of one of the petty states of Greece; nor had they, in fact, any convenient sea-ports, for Ostia was wholly unworthy the name. Every year, about the time of the summer solstice, a fleet of 120 vessels sailed from Myos-hormus, a port of Egypt in the Red Sea, and, by the periodical assistance of monsoons, they traversed the ocean in about forty days. On their return, the goods were transported on the backs of camels to the Nile, and thence to Alexandria. Silver was their only instrument of commerce, so that the Roman empire was drained of her bullion to the extent of 800,000*l.* per annum. These commodities realized enormous profits.

The splendour of public edifices, although attested by their remains, is little proof of the greatness of a city; they in general speak of barbarous times, when slaves were abundant, and the wealth of nations was apportioned out to a few individuals, whose love of rivalry induced them to rival each other in magnificence. Witness the pyramids and palaces of Egypt and other cities, nay, most of our own finest edifices were built in what we moderns term the dark ages of our forefathers. We are too enlightened now-a-days to do things well, improvements are commenced ere we have time to lay down our plans.

Lampredius tells us that the emperor Helio-gabalus ordered all the cobwebs in the city to be collected, which on being weighed amounted to 10,000 pounds; this proves the Romans to have been a dirty, rather than a numerous people.

The celebrated Roman roads were by the Roman soldiers formed for military purposes, and not for commercial intercourse. On the other hand, the Tiber, a narrow rapid stream, was of little real service to the city, being rather an effectual barrier to its expansion. It was much like one of our canals, horses having to draw the boats from Ostia, which, as there is no mention made of docks, must have been but few, for this river extended very little into the city. When Virgil speaks of it as a gentle river, "*Leni fluit agmine Tiberis*," he speaks of it as a poet, not as a historian; a population such as London possesses would have drunk up as much water as that of the river, and extended to the Roman sea-coast.

Much of the space within the walls was occupied by public buildings; there were 276 granaries, being one to every street, 900 private bathing places, 1,350 great cisterns of water, 1,780 domus, every one of which great houses had within itself a cirque, portico, seats of justice, temples, wells, and several bathing places. It is said that the house of Nero had many porticoes, every one 1,000 paces long: there was a great pond like a sea, in addition to temples and spaces for the augurs, vineyards, pasture-grounds, and woods, with a multitude of cattle and wild beasts of every kind. The amphitheatres and cirques were large; there were also public walks.

The estimates of the present population of London carry it up to 1,900,000 souls. The extent of surface covered by buildings is estimated at about fifteen square miles, or nearly 10,000 acres, with considerably more than 200,000 houses. It is most advantageously disposed on the banks of a magnificent river, over which six beautiful bridges are thrown, and under which a tunnel is formed, rivaling in art any Roman work.

It contains 113 parishes, about 250 churches and chapels of the Established Church, 9 Scottish chapels, 14 Roman Catholic chapels, 18 foreign Protestant churches and chapels, 7 synagogues, and about 200 places of worship for dissenters.

The cathedral church of St. Paul may surely vie with any one of the most magnificent Roman edifices; our domus or palaces, among which may be included a vast number of private houses occupying the streets and squares, are almost beyond count, and the riches they contain in works of art and private fortune are greater than all Rome put together

in the days of its greatest prosperity. London has no fewer than fifty markets, consumes upwards of 1,500,000 sheep and 190,000 bullocks, 25,000 calves and 25,000 pigs, every year, exclusive of vast quantities of bacon and hams. The consumption of wheat may be estimated at 1,200,000 quarters. The annual supply of coals employs 2,700,000 tons of shipping; of her goods 80,000 or 90,000 vessels are employed in administering to her luxuries and wants. Instead of Roman roads, we command time and obliterate space. In addition to many magnificent buildings devoted to public amusements, our magnificent charities, colleges, halls, public schools, and hospitals, are the surprise and admiration of the world. Instead of seven sewers, London is intersected with them in every quarter. Instead of narrow, impassable streets, London boasts of an endless vista of open streets and squares, well drained, well lighted, and well paved. Built after the manner of ancient Rome or Canton, it would cover four times the extent of ground it now occupies. To conclude, it is a city, the head of a nation, from which a nation greater than Rome ever was, has sprung, governing regions where the Roman eagles never went, and myriads of people more than Rome could ever boast—a nation ruling by her arts as well as arms, and enriching as she is enriched by the spoils of all nations.

#### DECISION IN THE COURT OF EXCHEQUER THURSDAY, NOV. 28.

(*Nisi Prius* Sittings before the LORD CHIEF BARON.)  
LICENCES TO ERECT HOARDS AND SCAFFOLDS  
ON THE PUBLIC WAY.  
DEVNEY V. WARNE.

THIS was an action brought by a bricklayer against the surveyor of pavements for the parish of St. Ann, Westminster, to recover damages for removing certain ladders which the plaintiff had erected in repairing a house situate in Porter-street, Newport-market.

Mr. Corrie (with whom was another learned gentleman) appeared for the plaintiff; and Mr. Jervis and Mr. Ogle for the defendant.

It appeared that a Mr. Hay, a licensed victualler, and the occupier of the house, No. 14, Porter-street, employed the plaintiff to colour the outside of this and the adjoining house, which was numbered 15. The plaintiff applied for and obtained licence to set up a ladder for two days on the foot-pavement of the house, No. 14, Porter-street. The house, No. 14, is a corner-house, one side of which fronts Porter-street, and the other side fronts Newport-court. The plaintiff set up two ladders, joined together by a cord or rope, on the pavement in Newport-court, against the house No. 14, Porter-street, and also a ladder against the house No. 15, Porter-street. The defendant, acting in pursuance of his authority as surveyor, cut the ropes which held the ladders together, and took the three ladders to the green-yard. In taking down the ladders, a pail with whitewash in it was broken, and its contents were destroyed. The defendant, by his pleas, justified under the statute 57 Geo. III. removing the ladders, and paid into court 20*s.* as compensation for any injury the plaintiff had sustained by cutting the cord, breaking the bucket, &c.

The defendant's counsel insisted that the ladders were not erected within the terms of the licence, which only authorized the plaintiff to set up one ladder on the pavement in Porter-street, opposite No. 14, instead of which he had erected a ladder on the pavement opposite No. 15, and two ladders joined together on the pavement of Newport-court.

The Lord Chief Baron was of opinion that the licence did not authorize the erection of the ladders in the places in which the plaintiff had set them up. He also expressed a strong opinion that when the 20*s.* was paid into court, the action should have been discontinued.

The jury returned a verdict for the defendant, under his lordship's direction.

[This is a strange case: if the plaintiff, defendant, counsel, judge, and jury had taken the trouble to read the Street-Act, they would have found a surveyor of pavements has only power to grant licence to erect hoards and scaffolds; any other description of licence under such circumstances could alone be legal under a peculiar local Act of Parliament.—Ed.]



## BELL-TURRET OF LEIGH DELAMERE CHURCH, WILTS.



PERSPECTIVE VIEW.

TO THE EDITOR OF THE BUILDER.

SIR,—The beautiful turret which I herewith transmit to you is from the Church of Leigh Delamere, near Chippenham, in Wilts. It is placed over the chancel arch, and its projecting angles are supported by transverse stones corbelled over.

There are several churches in Wiltshire and the neighbouring county of Gloucestershire with these turrets; Mr. Thomas Larkins Walker, architect, gave the measured details of two of them, viz. of Biddestone and Great Chatfield (both in Wilts), in his valuable continuation of Pugin's works, and views of the churches, with notices of them by the Rev. J. L. Peit, will be found in the first number of the *Archæological Journal*. I regret I could not take measurements of this turret when on the spot, but independently of my want of time, the church is in such a condition, that the placing ladders against it would have been attended with injury to the building, and almost certain danger to myself. I think the sketch is, however, sufficiently large and distinct to explain to the professional man the design as well as the construction of the turret. It has generally been described as having five columns at each angle; you will perceive that there are really only three; these are placed, perfectly formed, into circular recesses; the wall between each column being rounded off, to exactly the same diameter as the column, gives this effect of five; the string-moulding, the capital and the base of each column, are bond stones. Above the columns, which are united at each angle of the building by a continuous abacus, finished downwardly by a nebulous ornament, rise lofty arches bearing labels; almost immediately above the points of the arches is placed a string-course, which surrounds the whole turret, which at that part is of a square plan, with its corners cut off: from thence ascends the crowning spire, the plan of which approaches more nearly to the form of a regular octagon, and which has corbelled angles, and the whole is finished by a rude cap-stone surmounted by a metal cock of rude workmanship. Near the summit of the spire each of its thin stone side-panels is perforated with a plain quatrefoil, the four on the canted sides being lower than the four others. The ledges which occur from the transition of the upright work to the pyramidal spire-work, are occupied by four peculiar pieces of stone, finished with globose heads.

The peculiar manner in which this little work is perched upon the gable, with the alternating corbels, and the columns, alternately long and short, is very singular. Within the turret, which is open, may be seen the wheel of the bell, and which, though to some eyes bearing a homely appearance, adds to the picturesqueness of the representation. The turret at Leigh Delamere is the best of the yet discovered examples in Wilts, and I am sure the merit of it as an architectural composition will be fully appreciated by your readers.

One of the examples published by Mr. Walker lately fell down through neglect of repair; and persuasion on the part of the neighbouring gentry not having been effectual in causing its re-erection, it is now preserved in the beautiful terrace garden at Castle Coome. It would be a great pity if the one at Leigh Delamere is suffered to become so dilapidated as to meet a similar fate.—I am, Sir, yours,

C. J. RICHARDSON.

22, Brompton-crescent.

## ON THE ARRANGEMENT AND CONSTRUCTION OF HOUSE DRAINS.

BY MR. JOHN PHILLIPS.

(Continued from p. 594.)

THE trap (Fig. 5, inserted in the last Number) can easily be cleansed at any time by taking up the grating and pouring three or four pails of water forcibly into it; the momentum of the water upon the curved bottom will stir up the sediment, which will be forced into the overflow drain. The common iron bell stench-traps are generally inoperative in consequence of often becoming choked where the bell dips. People submit to the



annoyance of the emitted effluvia and foul vapour from not knowing wherein lies the evil and remedy. They complain of smell arising from the sewer, when it is very often found to arise from the choking and inefficient action of these traps, and the bad construction of common brick traps with dip stones. The stench-trap represented in Fig. 5 it is hoped will prevent these evils; it can be made of various sizes, from 4 to 9 inches diameter; and would be considerably cheaper and much more efficient than those formed of common bricks, the latter being generally constructed very imperfectly. It is to be hoped that some enterprising brick and tile makers will very soon set about preparing the various articles of tubes, stench-traps, and soil-pans herein recommended for the London market. Their efficiency would soon be appreciated, and they would quickly supersede the use of brick drains. I shall feel pleasure, at any time, in affording information as to the formation and construction of these articles to any one, on addressing a note for me to THE BUILDER Office.

For the humbler classes of dwellings it is essential in the construction of cesspools to all common privies, that they be built as small as convenient, in a sound and substantial manner, and perfectly air and water-tight, so as to prevent the noxious stench from escaping into the closet; and also to hinder the contents of the cesspools from permeating the surrounding earth. The bottoms and sides of cesspools should be combined together with an inverted arch, and built with sound, well-burnt, hard stocks. The bricks should be saturated with water and laid in Roman cement. The cross joints should be well flushed up, and the cesspools should have their interior surfaces properly rendered with Roman cement at least three-quarters of an inch thick. A cesspool thus formed would be as one solid mass, and perfectly water-tight.

It is impossible to make cesspools water-tight by building them with common mortar, for mortar becomes friable and rotten when in contact and impregnated with the acids contained in the urine. The carbonate of lime contained in the mortar combining as a base with the acids it may meet with from the urine, a lactate of lime is formed, which, being soluble, is carried away. Therefore, while the lime is being gradually removed, the silica remains unacted upon by the acids in general, and thus we may easily account for the rotten and friable state of the mortar.

An overflow tubular drain should be placed 1 foot 6 inches or 2 feet from the bottom of the cesspool, communicating in a direct inclination with the main sewer. The top of the cesspool may be covered over either with a brick arch, or with a sound Yorkshire paving-stone, at least 3 inches thick, tiling  $4\frac{1}{2}$  inches on the walls, and properly bedded upon them. A cheap, strong, earthenware soil-pan with a funnel could be made in one piece, glazed inside, which, being properly fixed and bedded airtight into a hole cut in the arch or stone, the exact size of the funnel, and continued down and dipped 4 or 5 inches in the water below the overflow drain, would prevent the stench from escaping into the closet. The surface of the water in the immersed funnel would be the only portion of the cesspool exposed, which would be very trifling. All the rain-water from the roofs should be conveyed into the soil-pan by the usual pipe, affording another means for reducing the impurities of the cesspool, and when the soil-pan is closed by a cover, all foul air evaporated from the surface of the water within the funnel would ascend up this pipe. The surface drainage of the yard or area should also be conveyed into the cesspool through a small drain properly trapped, and all the refuse water (and only the water, not vegetable refuse and ashes) that accumulates or can be collected upon the premises should be thrown into the soil-pan as a sink. Equal contents of the cesspool will be displaced and driven into the overflow-drain by an equal amount of refuse water thrown down the soil-pan, which will be carried off into the main sewer much more swiftly by having the calibre of the overflow drain small and in proportion to the extent of the premises. By these means the water, &c., within the cesspool will continually be undergoing a purifying change.

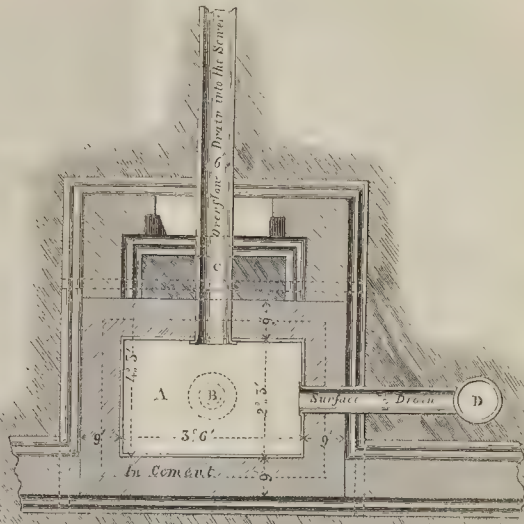


Fig. 6.

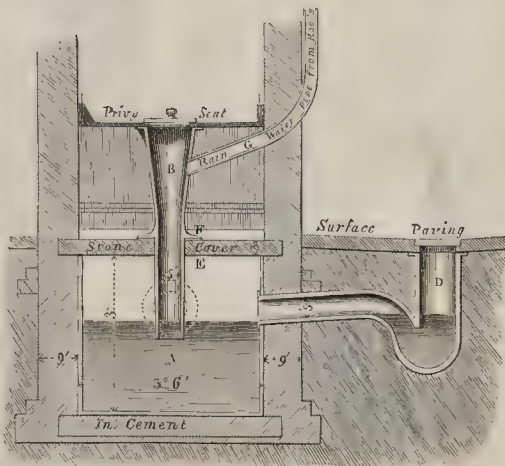


Fig. 7.

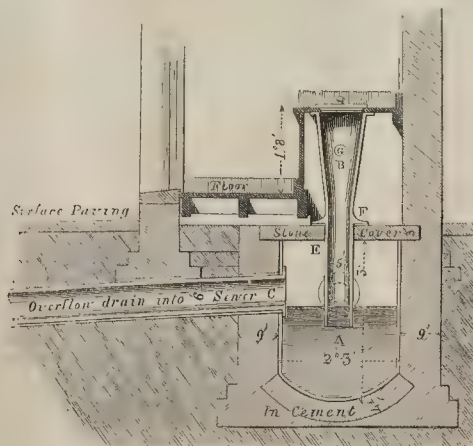


Fig. 8.



The annexed figures, 6, 7, and 8, represent a plan and two sections of a portion of a privy and cesspool in accordance with the preceding observations. A represents the cesspool built and rendered inside with Roman cement; B the soil pan and funnel 5 inches diameter, where it is immersed in the water within the cesspool. A round hole is to be cut through the stone E, the exact size of and to receive the funnel, which has a flange all round it at F, bedded into and on the stone cover. The funnel dipping 4 inches, as before described, into the water below the bottom of the overflow-drain C which is formed of clay tubes 6 inches in diameter, glazed inside. It will be seen that whatever enters the cesspool by the various inlets will be discharged by the drain C in a diluted condition, and the overflow escaping by this drain will be carried into the sewer. D represents a funnel with a trap and drain of clay tubing which convey the surface drainage into the cesspool A. G is a rain-water pipe entering the soil-pan B. The rain-water entering the pan by this pipe, as well as the refuse water thrown into the pan, will have a tendency to keep it clean. A privy thus soundly and properly constructed would be most effectual; the small tubular drain affording an easy transmission to the sewer of all the sullage nearly as fast as engendered, without the least stench emanating therefrom, except what may arise from the evaporation of the insignificant surface exposed within the funnel.

We should recommend in all cases the universal disuse of cesspools and privies, and would substitute proper water-closets in their stead. Every water-closet should be trapped in some way, to prevent the emission of the noxious effluvia. There are many excellent methods of effecting this by the application of soil-pans with traps, which communicate by a lead pipe with main drains. A noisome exhalation is sometimes found to arise from such apparatus, however well made. The emitted stench rises from underneath the seat and flooring, and if a pipe of iron or lead were to be placed somewhere in this locality, and be carried up direct, as high as possible, into the chimney most commonly used, the heat in the chimney would draw off through the pipe the foul air from the water-closet, and all the foul vapour would be carried upwards high into the air with the smoke. A pipe thus fitted to a water-closet would be a very effective appendage, and the means of ventilating and carrying off the exhalations which may arise therein. Nothing can be more annoying and unpleasant than for people to be continually inhaling air loaded with effluvia of the most intolerable and poisonous description. There is no doubt that many diseases among adults may be attributed to this cause, and that young children are thus hurried to a premature grave in consequence, their weak lungs not being of sufficient strength to counteract the sulphuretted hydrogen thus imbibed. The officers of the Courts of Sewers are constantly attending to complaints of foul smells which are found to arise universally from ill-constructed drains without proper stench-traps. By these sources streams of foul vapour are constantly being drawn from the sewers, with which the atmosphere of every room in a house becomes charged; many sewers which would otherwise have their air pent up, are by these means perfectly ventilated. In however nice and clean condition the paper and furniture may be kept, the corrosive acids contained in the foul vapour thus drawn from the sewers and drains are ever covering them, and therefore tend to destroy their brilliancy. The painting also becomes stained and discoloured from the same cause, in a manner which no washing can cleanse.

The pipes which convey the refuse water from kitchen-sinks into the drains are very often the conductors of foul vapour into the houses: such pipes are very frequently found not trapped; the consequence is, that the air of the apartment becomes loaded with noxious effluvia; and, when the sink is not being used, a dish-cloth is sometimes placed over the mouth of the pipe to prevent the emanation of stench.

It is to be hoped that in future, builders generally will pay more attention to, and give their workmen stricter injunctions as to the proper construction of drains, for most assuredly the general health of the whole community at large is somewhat dependant upon such construction. The inefficiency of common

brick drains, their improper forms, and the dilapidated and rotten state in which they are universally found, ought immediately to lead to their re-construction where practicable, by using the cylindrical tubular drains, soil-pans, and stench-traps, recommended in this paper, or by any better means that may be devised. With these, however, escape of deleterious effluvia would be prevented, and consequently the atmosphere would remain pure.

#### INSECURITY OF THE IPSWICH COUNCIL CHAMBER.

*Report of Messrs. J. M. Clark and George Mason.*

THE Estate Committee of the Ipswich Corporation having referred the causes of the insecurity of the Council Chamber to Messrs. J. M. Clark and George Mason, those gentlemen reported that one of the girders in the principal floor had a permanent set of nearly 3 inches. This beam had a bearing of 21 feet between the points of support, and was of the scantling 13 inches by 12 inches; it carried near its centre one of the four columns of the Council Chamber, and, together with another girder of the same dimensions, a large portion of the floor. This was the beam which yielded so much to the pressure on the 9th ult., the remainder of the floor consisted of joists 4½ inches by 3 inches. There was no appearance of any settlement in the surrounding walls. The fracture observable in the plastering was occasioned by the regular settlement of the new work. The sinking of the floor was attributable to the insufficiency of the scantlings of the floor timbers, which were left without trussing. In the opinion of Messrs. Clark and Mason, the following means should be adopted to remedy the existing defects. The girder, immediately beneath the column, should be tied up by a wrought-iron rod 1½ in. in diameter, to a pair of trussed principals inserted between the beams of the roof, resting on the present principals, which should be strengthened to receive them, and on the outside walls, the rod being concealed within the column. The other girder should be trussed with cast and wrought iron. The joists should be removed, and others of a scantling 7 inches by 2½ inches inserted in their place. The present floor-boards should also be removed, and a new 1½ in. batten floor substituted, the old boards to form a gangway in the roof, which was much needed. By these means the floor of the Council Chamber might be rendered perfectly secure.

[As far as we can judge from the description, these recommendations appear judicious: the failure appears to have arisen from the common fault of casting a burthen upon a beam at its weakest part; the cast iron girders at Oldham broke from the same cause.—Ed.]

THE LABOUR MARKET IN SOUTH AUSTRALIA. — Employment for blacksmiths, wheelwrights, bricklayers, and carpenters, is plentiful and well remunerated; and the increased demand for furniture of colonial manufacture is operating favourably for the really good workmen who have not embraced a rural life. The importation of wooden houses has ceased, and it is no longer necessary to bring household furniture of any kind. Domestic servants are extremely scarce, and obtain high wages. The mineral discoveries in various parts of the province, and the mines already in full operation, have furnished employment to all the miners here, who are not too firmly wedded to pastoral and agricultural pursuits to quit them for high wages. Strong inducements are being offered, through accredited agents, to miners in the neighbouring colonies, so that a large accession of mining operatives may be expected; but in all probability far too few for the employ at present afforded, and in sure prospect. But the undeniable advantages which present themselves to mining capitalists are, by this time, known in Britain, and will probably superinduce an influx of new employers, and a body of thrifty miners from the old country. For painters, plasterers, and sawyers, the great increase and improvement of buildings have wrought a most welcome change; but shipwrights (so called) are any thing but such, from the nature of their present employments, there being no ship-building, and few jobs of repair.—*Adelaide Observer*, June 10.

#### LIST OF NEW PATENTS RELATING TO ARCHITECTURE, ENGINEERING, &c., GRANTED FOR ENGLAND.

*Furnished by Mr. A. Prince, of the Office for Patents of Inventions, Lincoln's-Inn Fields.*

[SIX MONTHS FOR ENROLMENT.]

Newman, William, of Birmingham, brass-founder, for a certain improvement or certain improvements in window blinds. November 2.

Bewley, William, of Dublin, gentlemen, for improvements in fastenings for doors, windows, and other places where fastenings are used. November 2.

Jordan, Thomas Brown, of Cottage-road, Pimlico, mathematical divider, for improvements in the manufacture of blocks or surfaces, for surface-printing, stamping, embossing, and moulding. November 2.

Brunton, William, jun., of Pool, near Truro, Cornwall, engineer, for improvements in apparatus for dressing ores. November 2.

Thomas, Joseph, of Finch-lane, publisher, for a new and improved tube. (Being a communication.) November 5.

Geary, Stephen, of Hamilton-place, New-road, architect and engineer, for certain improvements in the machinery, apparatus, and arrangements for the supply and distribution of water for public and private uses, but more particularly in cases of fire. November 7.

Taylor, Henry Borriskill, of Piccadilly, lamp-manufacturer, for improvements in apparatus for transmitting light from lamp and other burners. November 7.

Auld, David, engineer, of Dalmarnock-road, and Auld, Andrew, engineer, of West-street, Tradestown, Glasgow, for an improved method or methods of regulating the pressure and generation of steam in steam-boilers and generators. November 9.

Prosser, William, jun., of Windsor-terrace, Pimlico, gentleman, for improvements in the construction of roads, and in carriages to run thereon. November 9.

Freeman, Mark, of Sutton, Esq., for improvements in working or dressing the surface of stone. November 14.

North, William, of Stangate, slater, for improvements in covering roofs and flats with slate. November 14.

Farrell, Isaac, of Great Brunswick-street, Dublin, architect, for certain improvements in machinery, whereby carriages may be impelled on railways and tramways, by means of stationary engines, or other power, including certain apparatus connected with the carriages to run on the same. November 14.

Watteu, Francis, of Finsbury-square, merchant, for improvements in preventing incrustation in steam-boilers and steam-generators. November 16.

Meudslay, John, of Lambeth, engineer, for certain improvements in steam-engines. November 16.

Reynolds, John William Buckle, of Lymington, Devon, engineer, for improvements in obtaining motive power for working locomotive carriages and other machinery. November 25.

Derr, Ebenezzer May, of Ludgate-hill, gentleman, for improvements in the manufacture of horse-shoe nails. November 25.

Higginson, Francis, of Rochester, lieutenant in Her Majesty's Navy, and Coles, Edward Robert, of Rochester, aforesaid, merchant, for certain improvements in the construction of buildings generally. November 21.

Spencer, John, agent of the Phoenix Iron Works, West Bromwich, Stafford, for improvements in manufacturing or preparing plates of iron or other metal, for roofing and other purposes to which the same may be applicable. November 23.

Baillie, Benjamin, of Henry-street, Middlesex, glazier, for improvements in regulating the ventilation of buildings. November 25.

Millichap, George, of Birmingham, for improvements in the construction of axle-trees. November 25.

Leroy, Narcisse, of Paris, in the kingdom of France, merchant, for improvements in covering the tops of bottles, jars, and other vessels. November 28.



## Correspondence.

## THE DOMESTIC ARRANGEMENT OF SMALL VILLAS.

TO THE EDITOR OF THE BUILDER.

SIR,—There is one branch of building which demands the serious attention of architects at present, and which appears to be overlooked and neglected by most of them: I allude to the internal arrangement of the domestic offices in small villas, cottage-ornées, and the various ornamental residences which are so numerous in the suburbs of the metropolis. In mansions and villas of the first class, this department of building is generally well attended to, and every requisite convenience is afforded to the housekeeper and domestics in the shape of kitchens, still-rooms, stores, pantries, &c. &c., but in villas of a more humble character, where the lady is her own housekeeper, and perhaps not more than two, or at most three, servants are kept, a sacrifice of the domestic convenience is too frequently made in order to add to the appearance and effect of the entrance-hall, staircase, and principal apartments. Some months since I was visiting a lady who had just removed into a very pretty little villa erected for her residence under the superintendence of one of the leading architects of the present day. The site of the building was a beautiful one; a gently rising ground, commanding extensive views from three sides, over one of the most beautiful counties in England. The exterior of the villa was exceedingly pretty, in the Tudor cottage style, with ornamental verge-boards, pendants, &c. The interior, as far as the entrance and the principal rooms went, was also quite in keeping with the character and style of the building; but in the domestic department I found it quite the reverse, and the lady assured me that it was one of the most uncomfortable houses she had lived in, adding, that without detracting from the abilities of the architect, she still thought that had he consulted her taste upon the arrangement of a department which so especially came under her notice, it would not have been so. 1st, There was no back-staircase to the chamber-story, and from the arrangement of the building it was impossible to get one, without building it on the exterior. This was a glaring error, as perhaps nothing else so much contributes to the real comfort of a house as two staircases, one public the other private. 2ndly, The door into the garden, was so placed that, should the kitchen door happen to be open, a person upon entering from the garden could see, and be seen by every one in the kitchen; this was pointed out to me as a very great annoyance. 3rdly, There was no pantry convenient for the use of the dining-room, so that the wine and dessert were obliged either to be brought from a distant part of the house, or to be placed upon the sideboard during dinner; this was certainly a great oversight. 4thly, There was not a single place which the lady could use as a still-room and store. This, she seemed to feel, was the greatest mistake of all, and from the arrangement of the house it was impossible to give her the conveniences which she required without spoiling the dining-room and back lobby. I have mentioned these as the principal defects in the arrangements, though there were several others of minor importance and I have myself so frequently seen other houses of this class similarly inconvenienced, that I am certain it is a common case. My sole reason for bringing it before the public is, to draw the attention of architects to the important fact, that upon the good arrangement of the domestic offices, depends the great comforts of a dwelling-house, and that no additional extent, or effect, in the arrangement of the principal rooms can warrant them in making a sacrifice of them.

In conclusion, I venture to suggest, that were a design shewn and explained to the lady of the house previous to its erection, I have no doubt that many valuable hints would be given by her to the architect, as it is a department so exclusively her own, and therefore she must be the best judge of what is really required for its convenience and comfort. I shall perhaps at some future opportunity resume this subject, and give my own ideas upon it, in the shape of a ground-plan for a small villa residence.

EDWARD MANFRED.

## HOUSE DRAINS.

SIR,—I have no idea who Mr. John Phillips is, who tells us in your last number that he has "ventured to throw together a few thoughts," but I shall be disappointed if his ability and modesty do not obtain more than mere respect.

If Mr. Phillips will permit one or two suggestions by an extensive manufacturer, they would be, first, whether his rule for determining thickness of earthen drain-tubes ought to apply arbitrarily in all cases, seeing that of tiles similar in dimensions some would bear a pressure of cent. per cent. (yea, and possibly five or ten times repeated) more than others? Secondly, whether his method of uniting them at the joints is practicable, and the best which may be devised?

Manufacturers are aware of the risk, when tubes are cut at the ends, both as to twisting and breakage; a weakness from which they are never free after the processes of forming, dressing, and firing are over. Would it not be better to leave the tiles perfect and square at both ends, and make them to fit almost air-tight? Then as regards an over-lap, either form one end of each tube with a raised ring, or let one be supplied separately for each joint. As the tiles would abut upon each other, would not a little good stopping at the ends form the security of the joint, and render it a question of secondary importance what the socket or outer ring were filled up with? Thirdly, as respects glazing the inner surface, would it not be more satisfactory to use a material which either partially glazes over the surface naturally or sufficiently smooth, of proved durability and strength (and there is no lack of such), rather than adopt artificial glaze upon an exceedingly porous, weak, and perishing body?—Your obedient servant,

THOMAS PEAKE.

22, Water-lane, Fleet-street, 3rd Dec., 1844.

[Our correspondent's observations relative to the thickness of pipes are just, and having occurred to us, we stated them to the author. We also made the same objections to their jointing. To be secure the pipes must fit into each other; and to have sufficient strength, must have overlaps of the same thickness at least as the substance of the pipe. If not so inserted at their joints, they would become so deranged, as to create by their irregularity a succession of internal stoppages.—Ed.]

## MARQUETRY.

SIR,—Allow me to inform your "Ellesmere Subscriber from the commencement" that the construction and application of marquetry are fully and accurately described in two communications inserted in the ninth volume of the *Mechanics' Magazine*, No. 242, pp. 169, 170, and 171, the one from Henry Provis, Sherington, Bucks, and the other from your humble servant.—I am, Sir, yours truly,

CHRISTOPHER DAVY.

3, Farnival's-inn, 3rd Dec. 1844.

## MATERIAL FOR BRICKS.

SIR,—Having an immense quantity of solid deposit (which I take to be a mixture of clay and mud) opposite to my villa, on the banks of the Thames, I shall be most happy to bear part of the expense of removing the same, should any speculator be bold enough to enter upon the experiment of trying his hand in converting it into bricks; a suggestion which I really think more worthy of attention than many other schemes now afloat.—I am, Sir, your obedient servant,

Z.

## DRAWING INSTRUMENT.

SIR,—I have taken in *THE BUILDER* some time, and wish to ask you a question, hoping it will be answered. Do you, or any of your correspondents, know any thing about an instrument to draw lines to an inaccessible vanishing point? If so, your answer in next week's *BUILDER* will oblige.

G. N.

[There are: for ordinary purposes. The stock of a drawing square may be made with a circular curved piece of wood attached to it, which may be worked round another piece of wood fixed to the side of the drawing-board, and in its motion round, the blade of the square will produce perspective lines tending to a vanishing point.—Ed.]

\* In foundations, arches, and the like, some bricks easily crush; while there are others,—for instance, such as Mr. Telford used ten millions of in the Harecastle tunnel,—that never fail.

## STAINED GLASS.

SIR,—Will you or any of your readers be so good as to inform me of the best works on stained glass, with their prices, suitable to a person in the glazing business, and to a student in the arrangement of stained glass in windows of different sizes?—You will oblige, yours, &c. &c.,

A CONSTANT READER.

Preston, November 29th, 1844.

## ORNAMENTAL CAST-IRON ROOFINGS AND PROCESS OF GLASS-STAINING.

SIR,—Can you inform me if ornamental cast-iron roofings have been used in any church instead of wooden frame-work of olden time? it appears to me that such material would conduce much to the lightness of a building, economy of purse, and to beauty of structure.

I am anxious to emblazon upon glass some heraldic ornaments. If you or any of your correspondents will furnish me with the process, and also give me an insight into the colours and oils used, I shall be greatly obliged. Having been one of the first readers of your excellent journal, I hope you will insert my questions.—Yours, &c.

AN AMATEUR.

London, Nov. 26th, 1844.

## ARCHITECTURAL COMPETITION.

## THE CHORISTERS' SCHOOL, MAGDALEN COLLEGE, OXFORD.

SIR,—My attention has been this morning directed to the following paragraph of an anonymous letter in your last *BUILDER*, headed "Architectural Competition—The Choristers' School, Magdalen College, Oxford:—

"Mr. Derick, who sends in his designs at least two weeks after the time specified, is appointed to carry out his designs, he being a resident in Oxford, and having access (as any one had who was taken in by a member of the college) to the room where all the drawings already sent in were exhibited."

Now, Sir, these words convey something very like an insinuation, it is therefore only fair to state that up to this very moment Mr. Derick has never had a single glance at any one of the numerous designs entrusted to my care, and laid before the college for its decision, and I may truly say that Mr. Derick had no facility or advantage allowed him which had been refused to any other competitor.

To the erroneous statements in the same anonymous letter, I think it quite unnecessary to trouble you with a contradiction.—I am, Sir, your obedient servant,

J. R. BLOXHAM, the Bursar of Magdalen College.

December 4th, 1844.

## BUILDING COMPETITION AND UNPROFESIONAL JUDGES.

SIR,—Under this head appear, in the last number of your truly excellent and independent publication, a few observations addressed by Mr. James Knight, in reference to the public competition for the proposed foot-bridge over the Old River in the Hackney marshes, wherein he very justly expresses his "astonishment and annoyance" at the unlooked-for decision come to by the board on the evening of their opening the tenders of the several competitors for the work in question. Believe me, if it can at all lessen the feelings of disappointment and surprise experienced either by Mr. Knight himself or his fellow-builders in the affair, at the result of their competition, I can assure them they have in me a most zealous sympathiser, for I do most sincerely declare that my amazement on the announcement of the chairman, when admitted into the room along with (not anterior to them) the several competing parties, that the board had come to the resolution not to have the work done at all, was quite equal to Mr. Knight's; and why they came to such a determination I really am at a loss to conceive, certainly not because they were taken by surprise at the amount of Mr. Knight's tender, for it was under the estimated sum which I had previously supposed the works would amount to, and therefore they must have been prepared for it.

The board were forewarned of the enfeeblement of the season for the performance of such a work in so peculiar a locality; but then it was thought by them not to be impracticable.



But if, on reflection, they considered such a reason a good and sufficient one for postponing its execution, and which perhaps after all is the true cause, they ought to have assigned it in the presence of the parties concerned, and by all of whom I have no doubt it would have been received with a great deal more satisfaction than the one they put forth.

It is but justice to state that the decision in this matter was the act only of a portion of the highway board, and had other members of it been present, perhaps quite a different one would have been the result; even as it was, there were some dissentients among them.—I remain, Sir, yours very faithfully,

SAMUEL FOX, JUN.,

The appointed surveyor to the proposed bridge, Morning-lane, Hackney, Nov. 27.

[There does not appear from the correspondence any valid reason for the non-performance of the work.—ED.]

#### CHURCH-BUILDING INTELLIGENCE, &c.

**Enlargement of St. Mary's Church, Kirkdale.**—The original building was a plain structure in the Gothic style, of brick with stone mouldings, &c., and had accommodation for a congregation of about 960. This has been retained, and additions have been made at each extremity, without destroying the due proportions of the whole. Sixteen feet of length have been added to the east end, by which 266 sittings have been obtained; and an alteration of the west end gives 146 sittings more, so that the church will now accommodate about 1,372 persons. The light and ventilation have also been greatly increased, the latter by the interior of the roof (which was before flat) being carried, in handsome Gothic wood and plaster work, above the principal beams, giving a greater interior elevation, and a readier means of escapement for the heated air, by means of two additional ventilators. The style of the additions is the "decorated Gothic," approaching, in some points, to the "floriated," though not so much so as, with the ornamental addenda to the original part of the structure, to destroy the harmony and consistency of the general pile.—*Liverpool Standard.*

**Nine New Churches.**—The Incorporated Society for the Building of Churches have lately voted grants towards increasing the church accommodation in seventeen parishes, including the erection of nine new churches. The society has recently received a donation from a lady of 1,000*l.*

**Bequest of 6,000*l.* for the purpose of Church Restoration.**—The gentleman alluded to as having bequeathed 6,000*l.* to the Camden Society is the late Mr. Maude, of Middlewood Hall, near Darfield, and nephew of John Maude, Esq., of Moor House, near Wakefield.—*Hull Packet.*

**CHIPPENHAM IMPROVEMENTS.**—A project is on foot for bringing a supply of water into the town of Chippenham, and to the railway station, from an extensive spring at Lockshill, the property of the late J. E. A. Starkey, Esq., of Spyc-park; and in connection with an ornamental fountain in the centre of the old Market-place, to remove the butchers' shambles, and several of the adjacent buildings. Two thousand pounds have been already raised for the former purpose, in shares of 10*l.* each, and several subscriptions are promised towards the accomplishment of the latter object. Mr. J. Provis has been appointed honorary secretary to the committee, and is the projector of the scheme.

**DISCOVERY OF A VAST CATACOMB.**—The Austrian ambassador, M. Prokesch, and Professor Rooz, in exploring the island of Milo, have discovered a vast catacomb, containing at least a thousand tombs cut in the volcanic tufa. The walls of this subterranean cemetery are covered with Greek and Roman inscriptions of from the second to the sixth century. Most of the tombs themselves have been opened and are empty. This was done, no doubt, by the barbarians of the north, who in the middle ages destroyed so many Hellenic monuments, respecting the dwelling-places of the dead as little as those of the living.

#### Miscellaneous.

**THE STATE BED-ROOM AND FURNITURE AT BURLING HOUSE.**—The bedstead is elevated upon a platform two steps from the floor, from which it is raised by a tripod pedestal, upon which there are three lofty carved and gilt columns. Above these is a spacious dome, surmounted by the crest of the noble house of Cecil. In the centre of the cornice is the coronet of an earl in richly burnished gold. The hangings contain 250 yards of beautifully striped coral-coloured velvet, of British manufacture. These, together with the tester, head, &c., are lined with 900 yards of white satin; the whole interspersed with a variety of ornaments in gold. Deep silk fringe coral-coloured trimmings, tassels, &c., give a finished effect to the drapery attached to this superb and costly couch, which from the ground stands upwards of 20 feet in height. The ceiling of the room containing this gorgeous piece of furniture is magnificently painted. It is one of Verrio's best works, and the subject it represents is, "Mars presenting Romulus to Jupiter to be deified." There are also in the same room sixteen other paintings by masters. The apartment is 23 feet 8 inches long, 23 feet wide, and 24 feet high. Three pieces of ancient tapestry adorn this room, each of which is 15 feet square.—The following are the subjects illustrated by them:—"Æolus, god of the winds," "Vulcan at his anvil," and "Neptune with his trident." Latin inscriptions are attached to each of these beautiful pieces of work. The state bed is one of the most gorgeous pieces of workmanship that can be imagined. Adjoining the above room is the state dressing-room, 21 feet long, 13 feet broad, and 16 feet high. This room, now completely renovated, was thoroughly fitted up in 1789, at a cost of 2,100*l.* The ceiling was painted by Verrio, and around the apartment hang paintings by Rubens, Caracci, Poussin, and other masters. A superb suite of silver-gilt dressing plate, formerly belonging to William III., and a coramode, variegated most richly with tortoise-shell ornaments, form a portion of the sumptuous fittings of this ante-room. Next to these, and upon the same floor, is the jewel-closet, a repository of the most rare and valuable articles.

**THE GREAT UTILITY OF THE COCOA-NUT TREE.**—Nearly all the domestic wants of the Singalese can be supplied by the cocoa-nut tree. He can build his house entirely of it. The walls and doors are made of canjans, the leaves platted; the roof is covered with the same; the beams, rafters, &c. are made of the trunk. He needs no nails, as he can use the coir-rope made from the outside husk. If he wants a spout, he hollows the trunk split in two. It also supplies him with many of his household articles. He makes his oil from the kernel; the hard shell supplies him with spoons, and cups, and drinking-vessels, and lamps, and water-buckets; the refuse of the kernels, after the oil is expressed (called *punak*), serves for food for fowls and pigs; the milk from the kernel is used in his food. In short, if a man have a few cocoa-nut trees in his garden he will never starve. Arrack, a strong spirit, resembling whisky, is made from toddy, the juice of the flower, and brooms are made from the ribs (*irita*) of the leaflets.—*Recollections of Ceylon.*

**PROPOSED AVENUE FROM FARRINGTON-STREET TO CHEAPSIDE.**—At a Court of Common Council, held on the 21st ultimo, Mr. John Dixon said, that having seen an advertisement in the papers, stating that the Fleet Prison was to be sold, he wished to know from the chairman of the London-bridge Approaches Committee whether there was any intention upon the part of the City of London to purchase the ground for the purposes of the great improvements which were in progress? when Mr. R. L. Jones said he certainly was of opinion that it would be extremely desirable that the purchase should be made by the corporation, with the view of forming an avenue through the ground into the heart of the City. He had called upon the Commissioners of Woods and Forests, and pressed the necessity of not making sale of the property until the corporation should have had an opportunity of taking the question into consideration and deciding upon it.

**THE COPPER TRADE.**—An article in the *Swansea Journal* directs attention to the great and increasing importance of the copper trade with India. It appears that in "the years 1835-6, 1836-7, and 1837-8, the importation of this article amounted on an average to the value of 2,575,000 rupees (257,500*l.*), but the last of these years had so heavy a proportion as to cause a glut in the market, which was felt to some extent in 1841, when the average of three years was 2,126,000 rupees, or 212,600*l.* The trade then recovered rapidly, the average of 1841-2 and 1843-4 being 3,243,000 rupees, and the proportion of the latter year amounting to no less than 42 lakhs, or 420,000*l.*" The writer goes on to observe, that as "the only use to which copper is as yet turned, is in manufacturing the domestic utensils of the Hindoos, who no sooner emerge from abject poverty, than they hasten to exchange their earthenware for dishes, and water-pots of brass," an increase in the demand for copper shews an improvement in the social condition of the natives, which opens further prospects for British commerce. The writer adds, "that the increase in the copper trade may be set down by some persons as the result of mere temporary speculation; but he adduces the increase in the trade carried on with America in the same article as a proof that our export may be set down as legitimate. We find that the export trade, from reference to the table of exports in metals, iron, and steel has shared in the prosperity which has attended every branch of our commerce in 1844. The excess of the exports in metals (including iron, steel, copper, brass, and tin) over those of 1843 amounts to 730,300*l.*"

**COMPLETION OF AN IMMENSE CHIMNEY AT LIVERPOOL.**—The large chimney at the works of Messrs. William Hill and Sons, manufacturing chemists, Vauxhall-road, is now completed, and is certainly the most lofty, and consequently the most prominent spiral erection in our town, forming, in fact, a conspicuous landmark from the river, as well as the opposite Cheshire shore for many miles round. Friday last was the "rearing day," when the apex of this huge and tapering shaft was surmounted by two British flags, which though large, appeared but the size of handkerchiefs. Throughout the day numbers of parties ascended in a bucket, hoisted by a winch in the interior, to the giddy top, whence they obtained a magnificent view of the town and neighbourhood of Cheshire, the sea to a vast extent, &c. They appeared to the spectators below to be no larger than dolls popping their heads over the top or capital. The height of the shaft is 309 feet, being about 80 feet higher from the ground than the spire of St. George's Church, but springing from land apparently rather lower. It is of a perfectly conical form, and was regularly plumbled by rule as the work proceeded, and not, as is sometimes customary, merely by the eye of the workman. The summer season of three years has been employed in erecting it. It is 40 feet in diameter at the base (on a level with the ground), and 9 feet in diameter at the top, where there is an ornamental cornice and blocking. The first course of bricks in the foundation was seventeen yards in diameter.—*Liverpool Courier.*

**THE DUKE OF DEVONSHIRE'S PRIVATE ROOM AT CHATSWORTH.**—As this room is not shewn to the public, we will give our readers a brief description of it. It is richly furnished, and contains a fine whole-length portrait of his grace in his robes, by Hayter; a whole-length portrait of his grace's mother, the late Duchess of Devonshire, with her infant daughter, the present Countess of Carlisle, on her knee, is an excellent painting. The graceful turn of the head of the principal figure, the happy expression of countenance, the smiling face, and the uplifted out-spread hands of the infant, are exquisitely beautiful, and true to nature. This picture is entirely and essentially all that it professes to be—as mother and child mutually delighting and delighted with each other; it is painted in a full and brilliant tone of colour, and altogether it may be classed amongst the best pictures of Sir Joshua Reynolds; an equestrian portrait of the present Emperor of Russia, and the late Emperor Alexander in a drowski. The furniture, ornaments, &c., of this apartment are of the most magnificent and costly description.—*Doncaster Gazette.*



## CASTING OF ONE THOUSAND 32-POUNDERS.

—Having heard that instructions had been forwarded to the Low Moor Iron Works for the execution of the enormous number of one thousand pieces of ordnance of large calibre, we determined upon learning the particulars on the spot, and in so doing were fortunate enough to be present at the actual casting of them. Each gun is cast perfectly solid, in a clay mould, suspended perpendicularly in a metal casting, and such is the bulk of iron employed, and so great is its power of retaining the heat, that each piece takes nearly a week to cool before it can be further meddled with. For instance, on Monday evening last we could not bear to place the hand on the outer clay-covering of a gun cast on the previous Saturday morning, and several days must elapse before the metal itself can be touched with impunity. The guns are drilled out with powerful machinery, and if the bore, which is gauged with the nicest possible precision, is found to vary a hair's breadth, it is at once sent to the furnace, and melted over again. If, however, the bore is found to be mathematically true, it is polished, also by machinery, till it is as smooth as glass and as glittering as silver. The crown and royal initials are then chiselled out just above the touch-hole, and after receiving a final scrutinizing inspection, the gun is sent by the Manchester and Leeds Railway to Hull, and thence transported in coasters to Woolwich. Here it is subjected to the ordnance test. If it carry its range truly, and without exhibiting any symptom of inferiority of material, and corresponds in all respects with the drawing, it receives the Government impress, and, being freed from the rust which it has most likely acquired in its transit, is pronounced fit for service, and placed in the stores accordingly. If, on the contrary, it should, in the minutest particular, fall below the ordinary standard, one of the trunnions is struck off, so as to render the gun utterly useless, and it is then returned at the cost of the maker.—*Liverpool Journal.*

**NEW MOTIVE POWER.**—M. Selligues, who some short time since reported to the Académie des Sciences a discovery of a motive power which he then thought would be a substitute for steam, and which consists of combining atmospheric air with hydrogen gas, by which an explosion is produced when ignited, has, at a recent meeting of the academy, made another communication, from which it now appears that the detonating power ceases under pressure. This phenomenon has proved an obstacle to the experiments of M. Selligues before the Committee appointed by the Academy. Notwithstanding the difficulties which have interposed themselves, M. Arago has convinced himself of the importance of the discovery, and has reported to the Academy that with so small a quantity as 3 to 5 litres (6 to 10 pints) of hydrogen gas, mixed with atmospheric air, a weight of 1000 kilogrammes (= 2205 lb.) was rapidly raised to the height of 3 feet.

**MONUMENT TO CRABBE, THE POET.**—It is the wish of some of the principal residents in the neighbourhood of Ipswich to erect a monument to the memory of the Rev. George Crabbe, to be fixed in the church of his birthplace, Aldeburgh, and to intrust the erection of the same to Mr. Thomas Thurlow, sculptor, of Saxmundham, believing that many would be gratified by the opportunity of contributing to his genius as a poet, and his character as a man. A subscription has already commenced; among the names most familiar to us we observe those of Samuel Rogers, Esq., Rev. Wm. Harness, Rev. Alex. Dyce, and the Hon. A. Thellusson.

**FOUNDATION WEAKENED BY RAILWAY EXCAVATIONS.**—Last Sunday week, during the performance of Divine service at the church of St. Gervais, at Rouen, a sudden cracking was heard, and most of the congregation, in alarm, left the church. It is supposed that the foundation has been weakened by some of the excavations of the Rouen and Havre Railroad near the spot.—*Galignani.*

**BRITISH ARCHEOLOGICAL ASSOCIATION.**—At a full meeting of this association, held last Saturday, it was resolved that the second annual meeting should be held at Winchester, in the summer of 1845.

## THE METROPOLITAN IMPROVEMENTS.—At

the east end, the new street is completely marked out from Spitalfields' Church to the London Docks, the vaults for the buildings on either side, between High-street, White-chapel, and Spitalfields' Church, being erected, and a sewer above 1,200 feet in length having been formed. In Cranbourne-street, formerly Cranbourne-alley, several first rate edifices are being erected which will be finished in a few months, and south of Sidney-alley, where the opening will be, to form the line from Coventry-street, the houses are also nearly finished. Along the line between Oxford-street and Holborn, the gas-pipes are all laid down, and the water-pipes are being now placed in the ground. At the lower end of Plumtree-street three large houses are being built in the Elizabethan style, with red bricks and stone, under the direction of Mr. Pennethorn, the government architect, as designs after which others are to be erected in that neighbourhood. Nearly adjoining these, a French Protestant church, with school attached, will be raised, the ground being excavated for that object. During the last few days about a dozen houses have been cleared away to form the line into Broad-street from Great St. Andrew's-street, which has much improved that locality. In Belton-street, Christ Church, which is in the parish of St. Giles, and which is formed of Kentish rags and bricks, approaches completion.

**BETTER SUPPLY OF PURE WATER IN LONDON.**—Mr. H. Phillips, the common councilman, in the court of which he is a member, has moved, that it be referred to a committee to consider the best means of securing to all classes of the citizens of London a pure, abundant, and forcible supply of water, at a reasonable charge, and that they report thereon. After some observations upon the monopoly of the New River Company, the subject was referred to the Commissioners of Sewers. Upon the motion of the same gentleman, it was referred to the same committee to consider and report to the court the best means of providing for the poor a better supply of pure water in different parts of the city than is at present afforded to them.

**VICTORIA-PARK.**—The workmen have commenced laying down the oak posts and railings on the boundary adjacent to the Grove-road. The line of road has been struck out for the new iron ornamental bridge, which is to cross the Regent's canal at Bonner's-hall, and a circle has also been made for a handsome carriage-drive to the chief entrance from Bethnal-green. The improvements on the Old Ford-road, which partly runs through the site of the park, have been nearly completed.

**MODEL COTTAGES FOR LABOURERS.**—Twenty cottages are in progress of erection by the Society for Improving the Condition of the Labouring classes, on the estate of Lord Calthorpe, near the Gray's-inn-road, London. They will each be inhabited by one deserving labourer's family, and will be fitted up with the greatest regard to the comfort and cleanliness of the occupier. The main object of the society in the erection of these cottages is that they may serve as a model for such buildings to the aristocracy who may visit the metropolis.

**EXTRAORDINARY FIR TREE.**—Lately was dug from a field belonging to Mr. W. Cuddall, of Crowle, an English fir tree of the extraordinary length of ninety-three feet, its girth in the middle being sixty-eight inches. It was discovered buried in the peat by Mr. P. Isle, who is in the habit of searching for wood in the immense subterranean forest which exists around Crowle.

**THE NEW DOCK AT HULL.**—We understand the intended site of the new dock has been definitely fixed on the east side of the present Outfall, and that several very important improvements are contemplated. A meeting of the dock company was to have been held yesterday, for the purpose of receiving Mr. Rendel's report, &c.—*Eastern Counties Herald.*

**MODEL HOSPITAL IN PARIS.**—A large model hospital, to be called the Hôpital Louis Philippe, is about to be built by the municipality of Paris, near the station of the Northern Railroad, on the ground situated at the northern extremity of the rues du Faubourg, St. Denis, and St. Martin.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS.—The first ordinary meeting of the

Royal Institute of British Architects took place on Monday evening last at the rooms of the society, in Grosvenor-street, Mr. Papworth in the chair. After some routine business, including the election of a new fellow, a list of donations was read, consisting chiefly of books and prints. The chairman said he was desired by the council to state that they were well aware that there existed a considerable amount of talent and information among the junior members of the institute, who were only withheld by modesty from imparting that information to others, and that they were desirous of giving these persons every opportunity of so doing whenever they chose to come forward. A paper was read by the secretary on the painted decorations of the early Italian churches.

**ACCIDENT AT NORTHLEACH PRISON.**—On Wednesday the new wing of this building, recently erected, fell in with a tremendous crash, owing to the buttments giving way in consequence of the heavy fall of rain. Very fortunately no person sustained any injury by the accident, the workmen having left a few minutes before.—*Cheltenham Chronicle.*

**FIRES IN LONDON.**—From the records in possession of the London Fire Brigade, it appears that no fewer than 800 fires have occurred in the present year; but that they have not been of so extensive a character as in former years. The number of lives lost, however, is, we regret to say, much greater than the average.

## Tenders.

TENDERS delivered this day for alterations, &c., at Dr. Riding's, Euston-square.—Henry Baker, Esq., 11, Upper Gower-street, Architect.

Messrs. Piper .....	£298
Mr. Winsland .....	897
Messrs. Cubitt .....	890
Messrs. Pearce and Guerrier .....	889

The above Tenders were opened in the presence of the Builders.

TENDERS for alterations and finishing Four Houses in Sussex-gardens, Bayswater.—R. P. Browne, Esq., Architect, Clement's-lane, City.

Ashby .....	£6,473
Haward and Nixon .....	6,340
Haynes and Co. ....	6,324
Piper and Sons .....	6,114
Trego .....	5,775
King and Co., Islington .....	5,678
Winsland .....	5,384

## NOTICES OF CONTRACTS.

For the making of Sluices, Bridges, Excavations, and other works in the New Cut from the Sixteen-foot River to the Ban Brink.—George Game Day, Clerk to the Middle Level Drainage Commissioners, St. Ives. Plans and Specifications are being prepared.

For Paving and Repairing certain Carriage and Footways in the district of Knightsbridge, for one year from Christmas-day next, and also for Lighting the same district with Gas for the like period.—James Rogers, 22, Manchester-buildings, Westminster. December 9.

For building an Infirmary at the County Gaol and House of Correction, at Ipswich, Suffolk.—Mr. John Whiting, County Surveyor, Ipswich, or Mr. John H. Borton, Clerk of the Peace, Bury St. Edmunds. December 10.

For erection of a Warehouse upon the south side of the Old Dock in the town of Kingston-upon-Hull.—W. H. Huffam, Secretary, Dock-office, Kingston-upon-Hull. Dec. 10.

For the Works necessary in arching the public Sewer, and taking up a portion of the old Sewer, in length about 185 feet, in Mile-end Old Town. Also for building a barrelled Drain at the back of the Tyssen Arms, Dalston, in length about 505 feet.—John William Unwin, Clerk to the Commissioners of Sewers for the Tower Hamlets. December 10.

For the erection of a new Barrack Establishment at Bristol.—C. J. Selwyn, Major and Commanding Royal Engineer, Exeter. December 11.

For Lighting the Southampton Paving Trust with Naphtha or other strong Light for the period of eight months from the 1st of February next.—John Arnell, 10, Edmund-street, Hampstead-road. December 11.



For making a Survey and Valuation of Property in the town of Kingston-upon-Hull, for the better rating of the same to the relief of the poor.—John Moxon, Workhouse, Hull. December 12.

For the Repair and Re-paving of Beoley Church, in the county of Worcester.—Mr. Woolleston, Beoley, near Redditch; or Barney Eginton, Esq., Architect, Worcester. December 12.

For Building a Sewer in Hoxton Old Town, being a length of about 576 feet.—Messrs. Stable and Lush, Office of Sewers, Hatton Garden. December 13.

For Building the proposed Lock-up Cells and Turnkey's Residence, at Wooden Box, Hartshorn, Derbyshire.—John Mason, County Surveyor; or Mr. Dewes, Solicitor, Ashby-de-la-Zouch. December 17.

For the Construction of Locomotive Engines and Tenders for the Manchester, Bury, and Rosendale Railway.—Mr. C. E. Cawley, Engineer, Railway Office, Bury.—December 21.

For the supply of First, Second, and Third-class Carriages to the Manchester, Bury, and Rosendale Railway.—James Smithells, Secretary, Railway Office, Bury.—December 21.

For the supply of 6,000 tons of Iron Rails, each rail to be 16 feet in length, and weighing 55 lb. per yard.—H. Parker, Secretary to the Great North of England Railway Company, Darlington. Dec. 23.

For making a Sewer in the Town of Cambridge, to be cylindrical and 2 feet diameter in the clear, length about 385 yards, average depth about 9 feet.—Frederick Randall, Clerk to the Commissioners, Cambridge. Dec. 26.

For the execution of Works necessary for the completion of the whole of the Railway from Shorham to Chichester, being a distance of about 22½ miles.—Frederick Otley, Secretary, Brighton and Chichester Railway Office, 4, Dean-street, Tooley-street. December 31.

For the supply of 11,000 feet of nine-inch cast-iron Pipes for a new line of Aqueduct to be laid in the Island of Malta.—Vin. Casolini, Collector of Land Revenue, Office of Land Revenue and Public Works, Valletta, Malta. March 31, 1845.

#### COMPETITIONS.

THE Committee of the Association recently formed in the Metropolis for the Construction of Baths and Wash-houses for the Labouring Classes, are desirous of obtaining Plans and Estimates for the Erection and Fitting-up of the First Establishment. The general basis of the plan can be seen at the Office, No. 3, Crosby-square. The author of the plan considered the best by the Committee will be selected to execute the work.

Plans for an Agricultural College to be erected at Cirencester, to accommodate 200 pupils and 6 tutors. The style is left to the taste of the architect. A Premium of 10 Guineas to the author of the most approved plan.—Robert J. Brown, Esq., Hon. Sec. Cirencester. January 1.

#### TO CORRESPONDENTS.

The delineations of the Font at West Drayton, being now engraved, will appear in our next.

"A Subscriber and Builder."—The party from whom the mistake emanates.

"Thomas Wilkinson" has been mis-informed: our papers are sold, not given away. The other part of his letter will be attended to.

"Wm. W. Hemsley."—His request cannot be complied with.

"A. X., Cambridge."—Taylor's, Laxton's, or Skyring's.

Communications have been received from "A Subscriber," on Drains; "Charles Newnham," on the New Metropolitan Buildings Act; "C.," on the Hardy Testimonial; "An Architect," on Public Competition; "W. E. Hickson," on Window Duties; "No Builder," on petitioning Parliament to repeal the Window-tax, or to exchange it for a House-tax; "Thomas McAnaspie," on the Importance of having Disputes between Masters and Workmen arranged by Arbitration; "A Well-wisher and constant Subscriber," on the Restoration of St. Mary's Church, Bury St. Edmund's, just completed; "T.," on Architectural Competitions.

"J. Picard's" machine will appear in our next. He will oblige us by transmitting to us a hand-sketch of the window in question, that we may see whether we have it in our portfolio. The work on Perspective is out of print; we think it was originally published at about two guineas. A second-hand copy we have been told was lately sold for seven shillings, which we greatly doubt.

#### BOOKS RECEIVED DURING THE WEEK.

Conversationslexicon für Bildende Kunst.—Erster Band, Leipzig, 1844. Williams and Norton.

#### MEETINGS OF SCIENTIFIC BODIES

This day and during the ensuing week.

SATURDAY, December 7.—*Asiatic*, 14, Grafton-street, 2 P.M.; *Westminster Medical*, 32, Sackville-street, 8 P.M.

MONDAY, 9.—*Geographical*, 3, Waterloo-place, 8½ P.M.; *Medical*, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 10.—*Medical and Chirurgical*, 53, Berners-street, 8 P.M.; *Zoological*, Hanover-square, 8½ P.M.

WEDNESDAY, 11.—*Society of Arts*, Adelphi, 8 P.M.; *Graphic*, Thatched-house Tavern, 8 P.M.; *Microscopical*, 21, Regent-street, 8 P.M.; *Pharmaceutical*, 17, Bloomsbury-square, 9 P.M.; *Ethnological*, 27 A, Sackville-street, 8 P.M.

THURSDAY, 12.—*Royal*, Somerset-house, 8 P.M.; *Antiquarian*, Somerset-house, 8 P.M.; *Royal Society of Literature*, 4, St. Martin's-place, 4 P.M.; *Medico-Botanical*, 32, Sackville-street, 8 P.M.

FRIDAY, 13.—*Astronomical*, Somerset-house, 8 P.M.; *Philological*, 49, Pall Mall, 8 P.M.

SATURDAY, 14.—*Royal Botanic*, Regent's-park, 4 P.M.; *Westminster Medical*, 32, Sackville-street, 8 P.M.

#### ERRATUM.

In answer to a Correspondent, in No. 94, we stated that Mr. Brunel, instead of his father Sir Isambard, was a Frenchman. We have received a note pointing out this error, and mentioning, in addition, "that Lady Brunel is of English extraction, being, as I believe, the daughter of Mr. Kingdom, the late Accountant-General for Stores, at Somerset-house."

#### ADVERTISEMENTS.

**ROYAL POLYTECHNIC INSTITUTION.**—The PROTEOSCOPE, a new apparatus for exhibiting OPAQUE OBJECTS in Nature and Art, showing continued novelties. The PHYSICSCOPE, HYDRO-ELECTRIC MACHINE, DIVING-BELL and DIVER, DISSOLVING VIEWS, &c. &c. Dr. RYAN'S LECTURE daily, and in the Evenings of Monday, Wednesday, and Friday. Professor Bachhoffner's varied Lectures abound in interesting Experiments. Admission, 1s.; Schools, half-price. A new edition of the CATALOGUE, containing 300 additional Works of Art, &c. since the last revival, is just published, price 1s.

**POLONCEAU'S BITUMEN PAVEMENT.**—For paving Footwalks, Terraces, Garden walks, Stables, Coach Houses, Granaries, Corn Stores, and Salt Warehouses. For the exclusion of damp and Vermin in Basements it is particularly adapted, and for Roofing Dwelling Houses, Porticos, Balconies, and Sheds. Price 3s. 6d. per square yard.

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TO ARCHITECTS, BUILDERS, AND PAINTERS IN FRESKO.

#### MARTIN'S PATENT GEMENT.

STEVENSON and SON beg respectfully to announce that this beautiful cement has now arrived at a degree of excellence far surpassing their most sanguine expectations. For all internal work it possesses a great superiority over every article hitherto in use; it is now being used extensively by Government in the British Museum and other public buildings. It does not throw out any salt, but other public buildings. It is admirably adapted for fresco painting, having been used for many of the price frescos lately exhibiting in Westminster Hall. It will bear an intense heat without cracking, and for hardness, durability, and economy, cannot be equalled. 185, Drury-lane, London.

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CEMENT.—This Cement has now been tested during six years, and in no case, where properly applied, has it failed to answer the purposes for which it is recommended. While most Cements trust for durability to a surface hardness, it is a distinguishing feature of Keene's Cement that it is alike hard through its entire thickness, and it is mainly owing to the rapidity of this indurating process that work executed in it can be painted in a shorter time than any other Water Cement.

It is now in extensive use at the British Museum, at the Royal Exchange, and many other public and private Works, where it takes the place of wood for skirtings, and private Works, panel mouldings, and of stone for the paving of halls, staircases, &c., for each of which purposes it is economical and efficient.

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The Patentees and only Manufacturers are J. B. WHITE and SONS, MILLBANK-STREET, WESTMINSTER.

TO ARCHITECTS, ENGINEERS, CONTRACTORS, BUILDERS, MASON, AND PLASTERERS, MERCHANTS, SHIPPERS, AND THE PUBLIC IN GENERAL.

**JOHNS and CO'S PATENT STUCCO CEMENT.**—The following are the positive advantages possessed by this Invention over every Cement hitherto introduced.—It will endure in any Climate. It will never vegetate nor turn green, nor otherwise discolour. It will never crack, blister, nor peel off. It will form a complete Stone casing to any Building covered with it. It so closely resembles real Stone that it is impossible to detect it. It never requires either to be painted or coloured. It will keep fresh and good in the case in any Climate for any number of years. It is the only Cement that can be depended upon for export. It is the only Cement that can be used with confidence by the Sea-side. It may be used in the hottest or coldest Climates at any season. It will adhere to any substance, even to wood, iron, or glass. It will carry a larger Proportion of Sand than any other Cement. It matures by age, and becomes perfect when other Cements begin to perial. It may be worked through the Winter, as frost has no effect upon it. It may be used on the Inner Walls of new Houses, which may be painted directly. Roofs laid or pointed with this Cement will remain undamaged by the severest Storms. Any Plasterer may apply it, the Instructions for use being very clear and distinct. The first cost of this material does not exceed that of the cheapest Cement now in use; but with all the above-named extraordinary and valuable advantages, nothing can approach it in point of economy.

Architects and Builders who have used this Cement have declared that it requires only to be known, to be universally preferred.

Specimens may be seen, and a Prospectus fully describing the Cement and its mode of application, together with a volume of Testimonials from every part of the Kingdom, may be obtained on application to MANN and CO., SOLE AGENTS for the Patentees, 5, Maiden-lane, Queen-street, Cheapside, London: of whom also may be had.

**JOHNS and CO'S PATENT STONE-COLOUR STUCCO PAINT**, expressly intended for Painting over exterior Walls of Houses that have been covered with Roman or other Cements, and which have become dirty and discoloured. It is in every way better suited for this purpose than White Lead Paint, which will frequently come off in flakes, being in direct competition with Cement; whereas MESSRS. JOHNS and CO'S PATENT PAINT having an affinity for Stucco, binds itself with it, stopping the suction, and rendering the wall proof against weather, and in the finish producing a pure stone-like effect, producible by no other Paint whatever. It is cheap in its application, and may be used by any Painter, in any climate, even in the most exposed Marine situations.

#### SEYSSSEL ASPHALTE COMPANY.

"CLARIDGE'S PATENT."

**THIS ASPHALTE** is a Bituminous Limestone, obtained from an inexhaustible Mine at Pyramont, in the Jura Mountains.

Previously to its introduction into this country, in 1838, the Material had been used for many years in France, and from its great utility was extensively patronised by the Government of that Country.

Among the various uses to which it can be applied, the following may be mentioned: For Foot-Pavements in public squares, and elsewhere; in the Carriage Approach to Mansions, Garden walks, and Terraces; the flooring of Kitchens and other basement offices; also of Coach Houses and Stables, Dog Kennels, Cow Houses, Piggeries, Poultry Houses, Gun Rooms, and Maltings. For Roofing, Covering of Railroads and other Arches, the Lining of underground Cellars near Rivers to prevent the ingress of the Tides; also in Covering the ground-line of Walls, to prevent damp rising (this application of the Asphalt of Seyssel is particularly recommended by the Commissioners on the Fine Arts), thereby rendering the basement stories in the worst situations both dry and warm. It is an excellent Cement, as applied to Docks, Breakwaters, or Walls built for resistance to the encroachments of the Sea. For lining of Tanks, Fish-Ponds, and other Hydraulic purposes.

J. FARELL, Secretary, Seyssel Asphalt Company's Works, "Claridge's Patent," Stangate Depot, London.

COMMISSIONERS OF FINE ARTS' REPORT ON THE

USE OF PREVENTING DAMP IN WALLS.

THE DIRECTOR OF THE SEYSSSEL ASPHALTE COMPANY have much pleasure in recommending to the notice of Architects, Builders, and others, the application of THE SEYSSSEL ASPHALTE, the only effectual means of preventing DAMP rising in WALLS.

The following account of its application is extracted from "The Appendix to the Commissioners of Fine Arts' Report," page 18.

In 1839 I superintended the construction of a house of three stories on the Lac d'Engelien. The foundation of the building is constantly in water, about 194 inches below the level of the ground-floor. The entire horizontal surface of the external and internal walls was covered at the level of the internal ground-floor, with a layer of Seyssel Asphalt, less than half an inch thick, over which coarse sand was spread.

Since the above data no trace of damp has shown itself round the walls of the lower story, which are for the most part painted in oil of a grey stone colour. It is well known that the least moisture produces round spots, darker or lighter on walls painted. Yet the pavement of the floor, resting on the soil itself, is only about 23 inches above the external surface of the soil, and only 194, at the utmost, above that of the sheet of water.

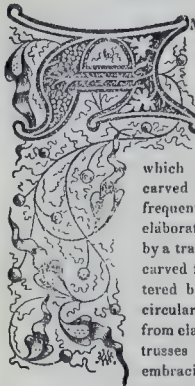
The layer of Asphalt having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been seen remarked at the base of the door-posts.



# The Builder.

No. XXVII.

SATURDAY, DECEMBER 14, 1844.



**M**ONG the ancient carved doorways still remaining in the metropolis, are many of the shell-pattern, which usually consist of carved jambs and lintels, frequently containing an elaborate door surmounted by a transom and a curious carved fan-light, and sheltered by a far-projecting circular pediment, rising from elaborately decorated trusses or consoles, and embracing beneath the curvature and projection

of the pediment aspherical semi-dome, the whole concave surface of which is fashioned as a shell: frequently, however, armorial charges, cyphers, and other decorations, are there placed with a freedom of fancy which has no bounds. Choice specimens of this description of doorways are still to be found in Abchurch-yard, Lawrence Pountney-lane, and many obscure places in the city of London; in fact, he who will take the trouble to go up almost any avenue, the most obscure within the ancient part of the city, will be well rewarded by discoveries to him and to the greater part of the world entirely new, and of which little, if any thing, is to be found in print or manuscript. The writings by which these freeholds and tenures are holden, while they are singularly exact in the enumeration of "posts, pales, and wydraughts," of which some of them have none, mention not a word of their carvings, and their other beauties; so that the tenants in possession may dispose of the whole to the nearest dealer in old building-materials, and no difference be by the writings discoverable. Rood-lane, Mark-lane, Mincing-lane, Tower-street, Crutched-friars, and Lendenhall-street, are perhaps the richest in ancient beauties: almost every gateway, court, and outlet from these affords a display of the kind: they are most particularly to be found in these localities where the London merchants during more than a century immediately after the fire of London were wont to reside, and bestow a part of their great riches upon their united places of residence and business; many of these civic haunts are now either destroyed or are vulgarised by modern alterations or by sheer ignorance. Still, however, remains many an ancient mansion-house with its decorated front, its quaint, rich doorway ascended by a noble flight of steps, its more ample outer gateway, and its office-buildings disposed around the court.

Among these buildings still remain some doorways of the kind which we are at present describing. In St. Martin's-lane, Westminster, still exists a fine and very original specimen; in St. James's-walk, behind Clerkenwell Church, is another, though inferior; and in the nook of Clerkenwell-close, opposite a small public-house, bearing the sign of "The

Jolly Coopers," existed a noble specimen of the same sort, belonging to a house which fell down through age and neglect, but occupied by the then parish clerk, ancient Penry, a notable character of the neighbourhood, and who so from thence ejected took shelter for many years in Bishop Burnet's house in St. John's-square,\* from whose immense nasal pyramid (a rival of the tomb of Caius Cestus) though baseless, the elected parochial amen came with thunder enough for a parish of its then forty thousand souls.

Kensington, Fulham, Chelsea, Paddington, Hampstead, Highgate, Islington, Hoxton, Hackney, Bethnal-green, Mile-end, White-chapel, Goodman's-fields, Wapping, Aldgate, and some of the close parts of Southwark, Bermondsey, Rotherhithe, Deptford, Greenwich, and other suburbs of the metropolis, contain many peculiar and worthy specimens, which should be delineated before the reckless hand of the improver supercedes them with his coarse and vulgar work in pine or plaster, ignorantly designed and ignorantly applied. And while we are upon this subject, we must not forget to notice that Walthamstow contains not a few specimens of fine character, execution, and preservation. And we earnestly advise those who have leisure and inclination to make a doorway pilgrimage; the collection to be thus obtained would repay the trouble: and it should be remembered that these form a widely varied class of architecture, which rose and fell within a century, having previously no prototype, and leaving no like successor; and even the most dry matter-of-fact person will admit the beauty of fancy which they exhibit, whether it have outbreak in door-jambs, as in Serle-street, Lincoln's-inn; or in consoles, as opposite the House of Correction, Coldbath-fields, or in Red Lion-street, Clerkenwell; whether it appear in shelters, as in Queen-square, Westminster, and in Well-street, Hackney; or in friezes and lintels, as in St. John's Church, and St. John's Chapel, already mentioned, or in fanlights, as at Walthamstow.

There is, however, another and quite different class, worthy of observation—doorways of gauged-work in red brick; of these the Temple, Fleet-street, contains many fine specimens, some of them in such preservation as to appear fabricated but yesterday, these are principally in King's-bench-walk and Hare-court. But wherever such are to be found, they should be most carefully delineated, and their several jointings should be marked: and, lest we forget the subject, it will be well for us to remember that among the many towns and villages which contain specimens of fine ancient brick-work, may be mentioned Farnham, in Surrey, where is to be seen a mansion fronted with gauged brick-work, in the form of cornice-mouldings, bolection architraves, and other decorations of very superior execution.

But the metropolis itself is peculiarly rich in this description of work, of which, though their number has of late been greatly reduced; Hanover-square, St. Martin's-lane, Lincoln's-inn-fields, Great Queen-street, Winchester-street, and innumerable other places within the city of London, as also Kensington, and other suburbs, bear proud testimony, and shew how worthy a thing it would be to encourage this honourable style of building, in which a man needs hardly spend in fifty years a farthing on the mural part and external

decorations of his house; and instead of swamping his income by contagious intercourse with the white-washer and other nasty men, be able liberally to patronize the mason, the skilled joiner, and every other artificer of meritorious cunning, whose right hand is worth reliance upon. This was the kind of work which used to be emphatically termed TRADE, and which was understood to include fine material, fine workmanship, and the exercise of the artificer's deepest skill; though the term is now most frequently applied to the sale of the largest mere quantity, good or bad, under puffs which, if any one can be found weak enough or dishonest enough to give them utterance in any serious publications, are immediately, to the injury of mankind, put forth as authority.

beplea.

## ELECTION OF SURVEYORS TO THE METROPOLITAN DISTRICTS WITHIN THE COUNTY OF KENT.

WOOLWICH . . . . . Mr. George Aitchison.  
LEWISHAM . . . . . Mr. Badger.  
GREENWICH . . . . . Mr. Brown.  
CHARLTON, KID- } Mr. Collis.  
BROOK, and LEE }  
DEPTFORD . . . . . Mr. Martyr.

At a meeting of the District-Surveyors' Association, held on the 5th instant, at the Freemasons' Tavern, forms for the District-Surveyors' returns under the new Act were produced; and Mr. Baker (District-Surveyor of St. Pancras) having, through ill-health, resigned the office of secretary to the association, Mr. G. Pownall (District-Surveyor of St. Giles's, and St. George's, Bloomsbury), was appointed during the next year in his stead. A subscription (limited to one guinea each) for a testimonial of respect to Mr. Baker was opened, which immediately amounted to eighteen guineas and a half.

## THE WINDOW-TAX, OR DUTIES ON LIGHT AND VENTILATION.

(From the Westminster Review.)

The window-tax, or duties upon light and ventilation, may be briefly described as the tax which to multitudes of human beings shuts out the sun, and compels them to breathe in darkened rooms a poisoned air. The following is an extract from the evidence printed by the Health of Towns Commissioners,\* with their first report:—

"The window-duties, as now assessed, operate as a premium upon defective construction. The legislature now says to the builder—Plan your houses with as few openings as possible; let every house be ill-ventilated by shutting out the light and air, and as a reward for your ingenuity you shall be subject to a less amount of taxation than your neighbours. The board is of course aware that windows are now charged by a scale; the tax increasing at an average rate of about 8s. 3d. for every window, whether large or small. Hence the number of windows in a house becomes to builders of second and third class houses a very serious consideration. Supposing a house to contain twelve rooms, if, to make these rooms cheerful and pleasant, I have put two windows in each room, and thereby ensured a current of air passing from front to back, the window-tax for that house amounts to 7l. 5s. 9d.; but if I have put but one window to each room, the

\* The bishop's marble monument, taken from the former church, now graces the south-west porch of the present church of St. James', Clerkenwell.

\* See the evidence of Mr. W. E. Hickson, Esq., page 238 of the 3vo. edition, Vol. II.



window-tax is but 2l. 4s. 9d., shewing a difference of 5l. 1s. per annum; and I need scarcely say, that a difference of only 10s. per annum is quite enough to influence builders of cheap houses in trying to save such a sum. But the same considerations affect the building of even first-class houses. I have been offered a rent of 210l. per annum for a house unbuild, on condition that the plan should be altered so as to reduce the amount of the window-tax for which the house would otherwise be liable. The consequence is, that in the majority of new houses one large window, of the largest size allowed,\* is made to serve the purpose of two windows; and privies, closets, passages, cellars, roofs, the very places where mephitic vapours are most apt to lodge, are now left almost entirely without ventilation. An opening only a foot square, even if intended merely to admit the air, and not glazed against the weather, makes the house liable for an additional 8s. 3d. per annum.

"Houses having less than eight windows are exempt; but the window-tax is not therefore inoperative as regards the working classes of towns. In London the poor do not live in cottages, but several families occupy lodgings in the same house, and that, perhaps, a house built with the maximum of untaxed windows allowed by the law. One more window would possibly let a little sunshine into a sick room, but the landlord says "No, the house would then have eight windows, and I should be liable to a tax of 16s. 6d. per annum." If the commissioners would examine personally the houses in which the poor live in the close courts and alleys of the metropolis, they would be surprised at the number of dark staircases and filthy holes, which, although on upper floors, are quite as ill ventilated and unfavourable to health as the cellars of Liverpool. And the permanent cause of this state of things is the option given to builders and lodging-house keepers of saving money in taxation by shutting out air and light."

The cause suggests the remedy. The legislature have only to modify the mode of assessment in such a manner that the option referred to shall be taken away,—that the windows charged for shall be in proportion to the space inclosed or the number of rooms, and the power of evasion would cease. The occupant of a house who now blocks out the light from twelve windows to save 5l. 1s. per annum, could not or would not pull down or destroy twelve rooms to effect the object.

This simple mode of improving the healthfulness of the inferior class of habitations in great towns was pressed upon the attention of the Earl of Lincoln when the new Building-Act was under discussion. The Earl of Lincoln declined to interfere with the province of the Chancellor of the Exchequer, and two applications made to Mr. Goulburn failed to convince him that the subject was one of the slightest moment.†

The reader will perhaps be of a different opinion if he will procure the two volumes of evidence published by the Health of Towns Commission (perhaps the most valuable work that ever emanated from a government board), and read there the testimony of Dr. Arnott, Dr. Guy, and Mr. Toynbee, surgeon of St. George's Dispensary, on the influence of defective ventilation as a cause of disease.

Their evidence (which every one should peruse who consults his own health or the health of his family) establishes the important fact that tubercular consumption, the disease which has been called the scourge of the English climate, is not traceable to climate, but chiefly to the impurities of air breathed by those who live by day in crowded workshops, or in ill-drained neighbourhoods, or sleep by night in close, ill-ventilated bed-rooms; and that fever and scrofula, where they prevail the most extensively, are to be referred less to low diet than to the same cause. Life or death may be inhaled by the lungs, according to the properties of the gases present in the atmosphere, or the minute morbid particles held in suspension at the time of inspiration. Hence "the pestilence which walketh in darkness."

Dr. Southwood Smith and Mr. Toynbee,

\* This is especially the case with staircases; the walls are weakened by a narrow window 12 feet in length, instead of two or more smaller windows with a bond of brickwork between them.

† For a detailed account of the first interview with Mr. Goulburn, see THE BUILDER, No. 65, published last May.

accompanied by a highly-respectable deputation, waited upon the Chancellor of the Exchequer on the 22nd of May, to explain these facts; and to urge that as one means of improving the ventilation of habitations, the window-duties might be so modified (not repealed) that there should no longer be the disposition or the power, on the part of occupiers or builders, to dispense with window openings to avoid taxation.

The deputation were received with courtesy, but, greatly to their disappointment, Mr. Goulburn intimated (in the politest possible terms) his entire disbelief in the statements of the professional gentlemen before him. "The window-duties," he said, "did not affect the cottager; and he had seen numerous instances of scrofula in his own neighbourhood among the families of the agricultural peasantry."

Doubtless he had seen them; but those who take more pains than a Chancellor of the Exchequer to learn how the families of the peasantry live, know that Mr. Goulburn's fact does not at all affect the theory he disputed, but rather confirms it.

A labourer, if he have two bed-rooms, will invariably, to make his 10s. per week 11s., let one of them to a single man. In the one room left are the beds of the labourer, his wife, and all the young children. Having no money to buy fuel, the family close up the chimney, if there be one, carefully paste over every crevice of the door or window to keep out the cold, and the fresh air being thus excluded, the atmosphere in a few hours becomes so vitiated by repeated inspirations that every breath carries with it the seeds of disease.

The tender nursing of the aristocracy often perishes from the same cause; is killed by misdirected kindness. It is known that a canary-bird in a cage, placed at night within the closed curtains of a tent-bed in which two persons are sleeping, will be found dead in the morning. We yet place childhood in similar situations, in which every breath inspired is nearly as fatal to health as if it contained the fumes of arsenic.

Granted that neither of these cases affected by the window-duties, is it not obvious, that whenever air and light are blocked out to avoid the window-duties, the same process is repeated, and that the process is death?

The Chancellor of the Exchequer, however, entrenched behind Mr. Wickham, the Chairman of Stamps and Taxes, who was present at the interview, had another answer to the deputation, which at the time admitted of no reply. Mr. Wickham stated that the deputation were in error upon a material point, and that houses might be ventilated by perforated plates of zinc, which would not be liable to duty, although placed in external walls.

We pray the reader to note this as an instance of those hasty and often wholly unwarranted assertions, common to official men, by which great measures of public improvement are often defeated for the mere object of getting a minister out of a temporary dilemma.

A correspondence ensued between Mr. Biers, the President of the Carpenters' Society, and the Board of Stamps and Taxes, in which Mr. Pressly, the secretary, stated, by order of the board, that perforated plates of zinc would be chargeable, "if so perforated as to afford light, but not if so as to serve the purpose of ventilation only."

The allusion here, it is supposed, is to some kind of zig-zag opening which should admit the air by a winding course, and prevent the light passing through in a direct line; but such a contrivance although practicable in a thick castle-wall, is obviously not so in the thin walls of a third-rate house. In reply to further inquiries from Mr. Biers, how perforations were to be made that would admit air, and yet exclude light, the Board declined to give any information.

A mistake had evidently been committed by Mr. Wickham, and one of such serious moment that it was deemed sufficient to lay it before the Chancellor of the Exchequer, to ensure the adoption of at least some partial and really practicable mode of relief. The case was stated by Mr. H. Gally Knight, on the part of the Metropolitan Improvement Society, in a letter which concluded with the following inquiries:—

"1. Whether her Majesty's government will introduce any measure corresponding in principle with the draft of the bill left with the

Chancellor of the Exchequer, of the 27th April alluded to, for fixing a maximum to the existing window-duties beyond which new openings might be made for light and ventilation without subjecting the occupants to additional charges?

"And should the Chancellor of the Exchequer not be prepared with any such measure, whether, 2. Government will pass a short bill to exempt from taxation, upon sanatory grounds, all unglazed openings in basement stories and closets of every description, that the evils complained of from defective ventilation may in some degree be palliated, if not wholly removed?

"Either measure might be so framed as to be attended with little or no loss to the revenue, and the former especially would be gratefully received by the public as a most valuable boon."

Reply of the Chancellor of the Exchequer.

"Downing-street, June 26, 1844.

"My dear Sir,—I have received the memorandum which you have enclosed to me from the Metropolitan Improvement Society. I can have no difficulty in declining to sanction either of the alterations of the law relative to the window-tax which they have submitted to me, it being evident that either of them, if acceded to, would enable parties to have windows without the payment of the tax.

"There has been no mistake, as the parties suppose, on the part of Mr. Wickham, in stating that openings for ventilation might be made which would not be chargeable as windows, and I cannot think it at all inconsistent with such a statement to decline expressing beforehand a general opinion as to whether certain openings, when made, would or would not be considered as windows, and as such liable to charge.—Yours ever, my dear Sir, most truly, HENRY GOULBURN.

"H. Gally Knight, Esq., M.P."

From the tone of the above, one might fairly infer that to desire the untaxed enjoyment of light and air, to any extent, however small, is a moral offence in the eyes of a Chancellor of the Exchequer; and that the Health of Towns Commissioners deserve to be put in the stocks. The letter would also appear intended to teach the public that it is wrong to seek such a clear explanation of the law as would guard them against its infraction; and that a government board is quite justifiable in "declining to give any opinion beforehand;" but we will confine ourselves to the sentence in which Mr. Goulburn denies the mistake of Mr. Wickham, and repeats the statement, that openings may be made for ventilation which would not be chargeable as windows.

Unaccountable as it may seem, the Chancellor of the Exchequer and Mr. Wickham are both in error on this material point, so pertinaciously maintained; and the proof is so striking, that we doubt not we shall be able in a few words to demonstrate the fact.

In the first place, there is no special provision in any one of the Acts relating to the assessed taxes for excepting openings of any kind (zig-zag openings nor any other) made for purposes of ventilation in dwelling-houses, from the duties chargeable on windows.

In the second, the 38th Geo. III., chap. 40 expressly provides, that all openings in external walls not chargeable as windows or lights shall be stopped up with brick or stone, or the materials of which the walls are composed. Under this Act a gentleman at Croydon, who wished to rid himself of mice, was lately surcharged for a small hole in his cellar, made to admit a cat; and there is no exception in favour of perforated plates of zinc in any general Act.

In the third place, both these facts were admitted by the legislature this very last session, in the passing of a local Act for the protection of property in the borough of Liverpool from fire (7 & 8 Victoria, chap. 51). In this local Act a provision was introduced (clause 10) for allowing circular ventilating apertures of not more than 7 inches in diameter, "provided such aperture, if made in a direct line, is protected by a grating of cast-iron, the interstices of which shall not exceed one-quarter of an inch in width."

This, then, is the state of the law;—a circular aperture 7 inches wide, protected by an iron grating, may now be made in a cellar at Liverpool for the escape of foul air, but if made in a cellar in London, it is chargeable as an additional "window or light."



This trifling concession to the sanitary interests of the people of Liverpool, obtained through the interest of private parties, was, as we have seen, *formally refused to the public*.

But ventilation cannot be perfect without the influence of the sun's rays, to rarefy the air and produce a current, and we cannot have darkness and gloom without dirt and filth. The sanitary properties of light, apart from the question of ventilation, form another important consideration.

The public are familiar with the fact that light is essential to vegetation—that the fruits of the earth will not ripen without the rays of the sun, and that their influence is sensibly felt in an exhilaration of the animal spirits. But it is now beginning to be understood by medical practitioners, that a deficiency of light is as injurious to the health of animals as it is to the growth of plants, and is a check to the full and perfect development of all organic structures, vegetable or animal. Upon this head some important testimony was given by a distinguished surgeon, Mr. Ward, to the Health of Towns Commissioners.

"Dupuytren (I think) relates the case of a lady whose maladies had baffled the skill of several eminent practitioners. This lady resided in a dark room (into which the sun never shone) in one of the narrow streets of Paris. After a careful examination, Dupuytren was led to refer her complaints to the absence of light, and recommended her removal to a more cheerful situation. This change was followed by the most beneficial results; all her complaints vanished. Sir James Wyllie has given a remarkable instance of the influence of light. He states that the cases of disease on the dark side of an extensive barracks at St. Petersburg, have been uniformly, for many years, in the proportion of three to one to those on the side exposed to strong light. The experiments of Dr. Edwards are conclusive. He has shewn that if tadpoles are nourished with proper food, and exposed to the constantly renewed contact of water (so that their beneficial respiration may be maintained), but are entirely deprived of light, their growth continues, but their metamorphosis into the condition of air-breathing animals is arrested, and they remain in the form of large tadpoles. Dr. Edwards also observes, that persons who live in caves and cellars, or in very dark and narrow streets, are apt to produce deformed children; and that men who work in mines are liable to disease and deformity beyond what the simple closeness of the air would be likely to produce."

(To be continued.)

#### THE ART OF BRICKMAKING.

(Continued from page 529.)

WITHIN the period of the wars of Edward I. and II., wall-tiles, which before were made of uncertain dimensions, were then made after the Flemish manner, and often used in building walls. The lower part of these walls, about 2 feet above ground, were generally made of rag-stones, laid in the common manner; but their upper parts were faced with brick on the outside, and on the inside with soft stone, clunch, or any materials the country afforded; others were faced with brick on each side, half a brick thick, and the space between was filled with rough stones and mortar. About this time it was customary to chequer the fronts of brick and stone buildings with black flints. In 1530 Hans Holbein built a gate opposite the Banqueting-house, Whitehall, in this manner, and ornamented the fronts with busts in circular recesses, with mouldings round them of baked clay in proper colours, and glazed in the manner of delf ware. The brick buildings of this age may be distinguished by being chequered with glazed bricks of a colour darker than the rest of the face-work, which was generally of bricks of a deep red, hard and tolerably well burnt. In the reign of Charles I. brick buildings were well executed under the direction of Inigo Jones. The rate of wages of bricklayers in 1610 set down and assessed at Okeham, Rutlandshire, was, for a bricklayer from Easter to Michaelmas, 5d. per diem, with meat, or 9d. without; after Michaelmas, 4d. with meat, and 8d. without; a bricklayer's apprentice, before Michaelmas, 3d. with meat, and 7d. without; after Michaelmas, 2d. with meat, and 6d. without: a tiler or

slater earned from 4d. to 5d. with meat, and from 8d. to 10d. without.

In the present century the art of brick-making is very little attended to for the common buildings of London and other large cities. Houses in the neighbourhood of London are seldom reared with a view to durability; raised on speculation, and let on lease for a certain term of years, which seldom exceeds 99 years, it is supposed to be the interest of the builder to construct a house so that it shall last the term of the lease, or, as is oftener the case, it is built for sale, without any reference to its durability. Again, in this brick-building age, competition leads to furnishing bricks at as cheap a rate as possible, without the least reference to their durable qualities. The evils of the system prevail over the advantages of occasionally rebuilding at the same cheap rate, for they very often entail upon the householder so large and continuous an outlay as to render the property all but valueless and unmarketable. Since the extensive introduction of stucco these ephemeral structures have become more abundant.

The best material for making bricks is undoubtedly loam, a term usually applied to a natural mixture of sand and clay, this is a yellowish, or reddish-coloured, fatty earth, and generally produces a red brick, much harder and compacter than any other kinds of common brick. Marl, which is a natural mixture of chalk or lime and clay in variable proportions, is perhaps the next best material for common bricks, but the less lime it contains the more suitable it is to the brick-maker, for a mixture of silica, lime, and alumina, is very fusible, and consequently bricks when burned, if great care be not taken, are apt to melt and run into each other.

It is presumed that the best mixture for making common bricks is three parts of clay and one part of limestone or chalk in powder; but previous to this mixture being used, it ought to be first ascertained what the nature of the clay is, for under this general term we find an endless variety in composition and character. Where durability is the object, excess of silica is undoubtedly advantageous, as being better calculated to resist atmospheric action, less absorbent, and giving greater density; alumina ought to be less abundant than in potter's clay, for aluminous earths, however dense their structure after burning, have great absorbing powers, and consequently are sensibly affected by a moist, cold climate; lime is also a powerful absorbent, and should the chief constituents be alumina and lime or chalk, it is very questionable, even when aided by incipient fusion, whether it form a durable brick. All clays contain silica in various proportions, which, with alumina, form the bases and chief ingredients of these earths; all contain some portion of lime, which being neutralized by mixture with the other earths, will not effervesce with acids; the latter, when the clay beds are from natural causes deprived of their moisture, very often separates from the other mixtures, and is found intersecting undurated clay in veins and net-like tracery. In burning it acts as a flux to the former, it is therefore an essential ingredient when partial vitrification is required. Bergman examined several clays made in the neighbourhood of Upsal, and made bricks, which he baked with various degrees of heat, suffered them to cool, immersed them in water for a considerable time, and then exposed them to the open air for three years. They were formed of clay and sand. The hardest were those into the composition of which a fourth part of sand had entered. Those which had been exposed to the fire for the shortest time, were almost totally destroyed, and crumbled down by the action of the air; such as had been thoroughly burned had suffered less damage, and in those which had been formed of clay alone, and were half vitrified by the heat, no change whatever was produced. Here then we have decisive evidence that silica should be in excess, as tending to produce that glassy appearance or semi-vitrification so essential to its durability, and this was the kind of bricks so much used in chequer-work, as noticed above. Where the vitreous crust may be deemed necessary, Bergman recommends the projection of a due quantity of salt into the furnace, which would produce the effect in the same manner as is seen in the fabrication of stone-ware.

It is of considerable importance to examine clay previous to working it up in bricks, which Bergman advises may be done as follows:—Nitrous acid poured upon unburned clay detects the presence of lime by producing an effervescence. In the next place a lump of clay of a given weight is to be diffused in water by agitation. The sand will subside, and the clay will remain suspended. Other washings of the residue will carry off some clay, and, by due management in this way, the sand or quartzose matter may be had separate. Nitrous acid by digestion will take up the lime from a part of the clay previously weighed, and this may be precipitated by volatile alkali. The clay, the sand, and the lime, may thus be well enough ascertained by weight, so as to indicate the quantity of sand or other material requisite to be added, in order to form that compound, which, from other experiments, may have been found best adapted to produce good tiles and bricks.

In Dr. Percival's Essays we have the following experiment of the effects of brick on water: two or three pieces of common brick were steeped four days in a basin-full of distilled water; the water was then decanted off and examined by various chemical tests. It was immiscible with soap, struck a lively green with syrup of violets, was rendered slightly lutescent by the volatile alkali, and quite milky by the fixed alkali and a solution of saccharine saturni. "This experiment," he observes, "affords a striking proof of the impropriety of lining wells with bricks, which cannot fail of rendering the water hard and unwholesome."

As a preliminary to the manufacturing process, the clay should be dug up in autumn, spread over as large a surface as possible, and in this state lie during the whole of the winter exposed to the frost; in this state it greedily absorbs atmospheric air, which, penetrating and dividing the particles of the earth, facilitates the subsequent operations of mixing and tempering. During this time the earth should be repeatedly turned and worked with the spade. In the spring the clay is broken in pieces and thrown into shallow pits, where it is watered and suffered to remain soaking for several days; it is then tempered, and upon the due performance of this process depends in a great measure the quality of the brick, for unless the several ingredients be intimately united, we cannot hope for an uniform material. So important is this part of the process, that it has been recommended to dry and pulverize the clay, and then mix; but this process would involve large additional expense. By well beating the clay, M. Gallow succeeded in making a brick of much greater strength and density. On placing one of these bricks with the centre on a sharp edge, and loading the two ends, the bricks formed with the well-tempered earth were broken with a weight at each end of 65 lb., or 130 lb. in all, while others were broken with 35 lb. at each end, or 70 lb. in the whole.

Fire-bricks made from Stourbridge clay mixed with a quantity of old fire-bricks, or crucibles, or glass pots, reduced previously to powder, contain an excess of silica over alumina. ARGILL.

#### TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLLSON.

(Continued from p. 583.)

151. *The Grindstone Oak* in the Holt, mentioned by White of Selborne, which has been deemed the largest in this island, measured at 5 feet from the ground full 36 feet in circumference; it was computed to contain in 14 feet of length, 1,000 feet of timber. *The Buck's Horn Oak*, another great tree in the same place, is stated to be not yet entirely dead.

152. *Goff's Oak* stands on Cheshunt-common, about five miles beyond Enfield, through Bull's Cross, and about the same distance from the railroad station at Waltham. The tradition is that it was planted in 1066 by Sir Thomas Godfrey or Goff, who came over with William the Conqueror. The girth is 20 feet at 3 feet from the ground; the trunk is hollow, and several persons can stand in the cavity.

153. *The Golyms Oak* stood about four miles from Newport, Monmouthshire. When



standing it overspread 452 square yards; the main trunk measured 9½ feet in diameter; it contained 2,426 feet of timber; five men were employed twenty days in stripping and cutting it down, and a pair of sawyers were constantly occupied 138 days in its conversion: a stone 6 inches in diameter was found in the body of the timber. The cubical contents of this tree so nearly correspond with those of the *Great Risco Oak*, near Newport (2411), described in No. 93 of *THE BUILDER*, that we are disposed to think they are one and the same tree.

154. *The Winfarthing Oak*, which is asserted to have been at the time of the Conquest an old tree, is still existing.

155. *The Greendole Oak* we find described as being pierced by a road, over which it forms a triumphal arch, higher by several inches than the poets' postern at Westminster Abbey.

156. *Wallace's Oak* in Torwood, Stirling-shire, measured in the trunk in 1771, 22 feet in circumference; it is now completely gone: in it the hero generally slept when his army rendezvoused in the Torwood, during his war with Edward.

157. *Wallace's Oak* at Elderslie, Renfrewshire, wherein, when it was in full leaf, he and a large party of his followers hid themselves from the English, is still a noble tree, covering 19 poles of ground, and girthed 21 feet at the ground.

158. *The King of the Wood*, on the estate of Fernyhurst, near Jedburgh, is a beautiful tall straight tree, girthed 18 feet above the roots, and 1¼ at 1½ feet from the ground; it is 80 feet high, and tapers gradually for nearly three-fourths of its height.

159. *The Kepping or Trysting Tree*, growing near the preceding, is of a more spreading and picturesque character; it is upwards of 70 feet high, and covers an area of 90 feet in diameter: it girths 22 feet above the roots, whence it soon parts into two branches, girthed respectively 14 and 11½ feet. These two trees are considered to be remnants of the great forest of Jedwood.

160. *Cowper's Oak*, near Olney, Bucks (but in Northamptonshire, on the Earl of Northampton's estate), so called from the poet's having frequently written under it, would accommodate in its hollow trunk a party of perhaps a dozen.

161. At Magdalen College, Oxford, close by the gate at the end of the Water-walk, there grew an oak to which William of Wainflete expressly referred when ordering his college to be founded "near the great oak." Gilpin considered that it could hardly merit that distinction if less than 500 years old, and it was therefore probably a sapling when Alfred the Great founded the university in 836; its height was 71 feet, its girth 2¼ feet, its contents 751 feet; its branches extended to a radius of 16 yards on every side, and under it 3,000 men could have sheltered themselves with ease. On the 30th of June, 1788 or 1789, it fell to the ground; from its remains a chair has been made for the president of the college.

162. In the New Forest, Hants, survived, till about the middle of last century, the oak against which glanced in 1100 the arrow of Sir Walter Tyrrel which killed William Rufus; it was of exceeding large dimensions, and was, probably, at the period of its final decay, 900 years old. To preserve the memory of its site, the late Lord Delaware caused a monumental stone to be erected thereon, bearing appropriate inscriptions.

163. In Windsor Great Park, near Cranbourne-lodge, there are two magnificent oaks, one just within the park paling, and about 300 yards from the lodge, the other at the point of the road leading up to, and nearer it. The former at 6 feet from the ground measures 38 feet round, the latter at 4 feet from the ground 36 feet.

164. In Hampton-court-park, near the old stables, is perhaps the oldest oak in England; it measures 33 feet round.

165. In Amphill-Park, Bedfordshire, is an oak which girths at its base upwards of 40, and at its centre nearly 30 feet; it is hollow, and would admit four or five persons to stand upright in it; it is evidently very aged: on a plate affixed to it is a poetic inscription.

166. In the Lower Charente, in France, about six miles W.S.W. of Saintes, on the road to Cozes, and in the court-yard of a modern mansion, stands a very remarkable example. See *BUILDER* No. 64.

167. In the *North American Review*, a writer remarks that the largest oak he has seen in that country is about 27 feet in circumference at the smallest part; he computes its age at not less than 500 years, so that it must have been a majestic tree when Columbus discovered the western world.

168. Dr. Plott, in his "History of Staffordshire," mentions one standing at Ryecote which would overshadow by its boughs 4,374 men.

169. In Loch Lomond, on Inch (or island of) Mar, is one remarkable for its fine expanse of head; in 1786 it girthed 18 feet 1 inch.

170. At Earl Cowper's, Penshanger, Herts, there was growing in 1820 a fine healthy tree girthed nearly 18 feet at 5 feet from the ground, and exceeding 75 feet in height.

171. At Lochwood, Annandale, not less than 900 feet above the level of the sea, one of a number of oaks of similar size girthed 15 feet at 6 feet above the root.

172. At Blairquosh, Strathblane, Stirling-shire, one girthed 15 feet at 4 feet from the ground; its spread was 90 feet in diameter.

173. At Yester, the Marquis of Tweeddale's, Haddingtonshire, one girthed at 1 foot from the ground about 15½ feet, and at 6 feet about 14.

174. In Sherborne-park, the Earl of Digby's, in the autumn of 1843, a limb which contained upwards of five tons of sound timber dropped from an oak; yet its loss was scarcely noticed—so magnificent are the venerable trees there.

175. In Sherwood Forest, in felling and sawing up, within the last few years, some of the old oak trees, the letters K1 and a crown were distinctly visible in the centre of them; indicating that they were saplings in the reign of King John, and had these characters then cut in their exterior layer of wood.

176. In Bushy-park there are some hexes, or ever-green oaks, of very large size.

177. In Cobham-park oaks of the following large dimensions were girthed at 3 feet from their roots:—

14 ft. 7 ins.	17 ft. 3 ins.
15 " 7 "	20 " 7 "
16 " 3 "	21 " 7 "
16 " 5½ "	25 " 5½ "

178. Early in the last century, the solid trunk of a gigantic oak was found beneath the level of Hatfield Chase, Yorkshire, which measured 120 feet in length, and whose circumference was 36 feet at the largest part, 30 feet in the middle, and 18 feet where the trunk was broken off; at a moderate calculation it was conjectured it might have been 240 feet in height.

179. In Loch Douchfour, in deepening the line of the Caledonian Canal, amongst some large masses of oak which were brought up from under a 16-foot bed of gravel at the bottom of the lake, one fragment measured 37 feet round, and contained the estimated cubic quantity of 220 feet, though evidently but a small portion of the original tree; the wood was black as ebony, hard, and perfectly fresh.

180. A remarkable instance of durability when buried in the ground, was afforded by a canoe found at a depth of 8 feet from the surface, in cutting drains through the fens of Lincolnshire, and which was hollowed out of an oak tree, of remarkably fine free-grained timber. Piles too were dug from the foundation of old Savoy-palace, London, built six centuries and a half before, and found to be in a state of perfect soundness.

181. The inner roof of the chapel of St. Nicholas, King's Lynn, Norfolk, was constructed upwards of four centuries and a half ago. The roof of Westminster Hall is about 450 years old. The rich carvings which ornamented the ceiling of the king's room in Stirling Castle, 300 years old, are still in good preservation. The staircase in Moreton-hall, Cheshire, winds round the trunk of an immense oak tree; the building is about 290 years old. The celebrated table in Dudley Castle is formed of a single plank, longer than the wooden bridge that crosses the lake in the Regent's-park, London.

182.—SWEET, or SPANISH CHESNUT.—*The Totsworth Chesnut* is the oldest example in England: it stands in a garden at Totsworth, Gloucestershire, belonging to Lord Ducie; and is mentioned as a famous tree in the time of King John (born 1199, died 1216), who held a Parliament under it, and at which period some say it was a boundary-tree, while others say the reign of Stephen (born 1105,

died 1154); tradition, however, carries it back to the days of the Saxon King, Egbert, who reigned from 799 to 837; and this much appears certain, that when used as a boundary mark, it must have attained some age, since saplings were not employed for that purpose. It is 19 yards in circumference; in 1788 it continued to produce fruit in considerable quantities, and of good flavour, though small.

183. *The Great Chesnut*. Bose mentions one near Lancaster, 30 feet round, which has borne this title for 600 years.

184. In Bushy-park, near the Queen's house, is a very fine one, said to have been planted by Charles II.

185. At Buckland there exists a remarkably fine specimen.

186. Of its durability, the roofs of King's College, Cambridge, and Notre Dame at Paris are cited as examples. Rondelet, however, doubts the latter, and says Buffon and D'Aubenton thought it a species of oak. Piles were found under old Savoy-palace, London, in a state of perfect soundness.

187. *ELM*.—*The Trysting Tree* at the Friars, near the old castle of Roxburgh, Teviotdale, where, in 1547, the Protector Somerset was met by the lairds of Cessford and Fennythir, with a number of the Scottish gentry, to swear homage to the young King of England, Edward VI., was, in 1796, found to measure 30 feet in girth. Its ruin still remains.

188. *King Charles's Swing*, in Hampton-court-park, is likely to become a stupendous tree. Two great limbs spring up from the trunk, which latter at 8½ feet from the ground measures 38 feet round; each limb is 40 feet high.

189. Near the last-mentioned there is another elm, estimated as containing 796 feet of timber; its trunk is 4½ feet in height and 18 feet in circumference.

190. *The Giants*.—In the same park there are the remains of two elms known by this name, which must have been of enormous size; the trunk of one of them measures 28 feet in circumference.

191. Evelyn in his "Silva" informs us of a wych elm which grew in the park of Sir Walter Baggot, Staffordshire, which was 17 feet in diameter at the base, and extended, when felled, 120 feet. It was estimated to contain 97 tons of timber.

192. Decandolle mentions a specimen which grew near the town of Morges, in Switzerland, measuring 17½ feet in diameter, and estimated at 335 years old; he informs us that it grew on the average 3½ lines yearly (that is, 7½ths of an inch), beginning with 6, and diminishing to 2½ths.

193. White, in his "History of Selborne," mentions a broad-leaved elm, or wych hazel, which, though it had lost a considerable leading branch in the storm of 1703, was, when felled, too bulky for a carriage, and contained eight loads of timber.

194. At Brignolle, near Toulon, is one under which a dance was performed before Charles IX. of France in 1564. Chancellor Michel de l'Hôpital of that period speaks of it as an object worthy the attention of travellers.

195. *The Queen's Elm*.—At the north-west angle of Richmond Green may be seen the trunk of an ancient one, so called from having, it is said, been a favourite tree of Queen Elizabeth.

196. In St. James's Park, one of those near the entrance of the passage leading into Spring Gardens was planted by the Duke of Gloucester, brother to Charles I. As that unfortunate monarch was walking with his guards from St. James's to Whitehall, on the morning of his execution, he turned to one of his attendants, and mentioned the circumstance.

197. As a proof of the durability of elm when constantly wet, mention may be made that it was used chiefly for the piles on which Old London-bridge was founded, and these, though upwards of 600 years old, were found sufficiently sound to build upon again. Piles of it were also found under the old Savoy Palace perfectly sound.\*

*Erratum in No. 94*.—In description of Hornbeam, 5th line, for "southward," read "northward."

\* [But we believe these and other piles, on exposure to the air, almost immediately decayed.—Ed.]



## MINERALOGY.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR  
OF NATURAL PHILOSOPHY.

(Continued from p. 580.)

The uses of gypsum are various; in the Canaries it is used by way of remedy for their wine, and about Malaga a large quantity is tunned up with the juice of the grapes; this custom is most probably derived from the ancients, for we learn by different passages in the Greek writers on husbandry that it was used as a clarifier. They threw gypsum into their new wine, stirred it often around, then let it stand for some time, and when it had settled, poured off the clear liquor. It would appear, however, that gypsum caused the spirituous part to evaporate, that the wine acquired a certain sharpness which it afterwards lost, but the good effects of the gypsum were lasting. This custom is very little followed at the present day. It is sometimes found an admirable remedy for renovating beer when pricked. As a manure it is invaluable, and the most surprising evidences are given of its renovating and invigorating powers. It is found to answer best in sandy or gravelly soils. From 7,000 to 10,000 tons used to be shipped annually from Nova Scotia to New York, Pennsylvania, and other parts of the United States; and, according to the reports given, its effects were wonderful, particularly on grass. The crops of corn and Indian corn were more than doubled by its use instead of stable manure. Its effects have been great when employed in the proportion of one bushel to the acre annually. It is, however, so varying in its nature, that great care should be taken in choosing it for agricultural purposes, being variably saturated with sulphuric acid, and sometimes containing metalline substances inimical to its use, either in manuring lands, or in refining wine or beer; for the two latter purposes in particular, when used, the greatest care ought to be taken to ascertain that it is a pure sulphate.

If chalk, marble, limestone, spar, or any other species of calcareous earth, containing fixed air, be exposed to continued ignition, they give out carbonic acid gas and water, to the amount of nearly one-half of their weight. The remainder, consisting chiefly of lime, has a strong tendency to combination, and attracts water very powerfully. The addition of water to lime produces a very considerable heat, attended with noise and agitation of the parts, which break asunder, and a phosphoric light is seen if the experiment be made in the dark. Water dissolves about one seven-hundredth part of its weight of lime, and is then called lime-water. This solution has an acrid taste, and turns syrup of violets to a green colour. If lime-water be exposed to the open air, the lime attracts carbonic acid gas, and is by that means converted into chalk; which, not being soluble in water, forms a crust on the surface, that, when of thickness, breaks and falls to the bottom, and in this way in time the whole of the lime will be separated.

Mortar has a degree of adhesion and ductility much less than clay. When dry, it is more or less friable, like chalk. A mixture of sand or broken earthen vessels greatly increases its firmness. If dry quick lime be mixed with mortar, it gradually absorbs the superfluous water, and the mass becomes solid in very short time; this latter fact ought to be borne in mind by builders.

**CALCAREOUS EARTHS.**—The vast importance of the earths in the harmony of nature, and the many difficulties placed in the way of truly comprehending their nature and the uses to which by nature as by art they are applied, lead me to give them more than an ordinary consideration, and to point out the absolute necessity which exists that the lover of science should begin by observation of vital phenomena.

Earths are defined as bodies simple, with respect to the present powers of chemical analysis, brittle, incombustible, infusible by the heat of furnaces, not soluble in many hundred times their weight of water, and destitute of that opaque brilliancy which characterizes metals; taken substantively, they are called silice, lime, clay, barytes, and magnesia, soda, &c. Of these silice and lime take the precedence in the order of events manifest in the organic, fossil, and mineral kingdoms. From the earliest dawn of natural

philosophy up to the present epoch, fossil and mineral bodies, and stratified and amorphous masses, have been considered without reference to organic existences and vital phenomena; but, since geology has turned its attention to the phenomena of fossil and mineral beds, the close connection of organic and inorganic matter has been observed, a new field of observation has been opened to view, embracing the varied and eventful history of past ages, in which the remains of animals and vegetables, no longer existing on the earth, have united their aggregate remains to form hill and mountain masses, and many of the previously inexplicable phenomena of fossil and mineral bodies.

As animal and vegetable bodies are the primitive fountains from whence the earths are derived, and time and a perpetual succession of generations add to the quantities of those earths, so the earths in return become the source and origin of organic existences, the bases on which they exist, and the sources from whence they derive their varying capacities and powers; thus, by this reciprocity of action, a positive and continuous increase takes place generally and locally,—generally, as applied to the whole planetary body; locally, as measured out by periods of disturbance and repose, of generation and decay. The one general law governs the production of all the earths.

Vegetable mould is the product of decomposition of vegetable bodies; proofs of its origin are continually before our eyes, and are open to all men who choose to experiment thereon, or to watch the progress of forming earth on the rock or chiselled stone, as mosses or lichens perpetuate their generations. It is a product peculiar to vegetables not to be imitated by art, nor yet to be distinctly understood by chemical analysis. Lime or animal earth is as distinctly marked in its origin as it is by its peculiar qualities; and as vegetable mould is characteristic of land vegetation and atmospheric and aqueous action, so lime is equally characteristic of oceanic animals, and of the vital processes by which it is elaborated: both are produced by the same laws, but by modified and variable action; both are subservient to the one great end, the increase of this planetary body, the difference being, the one is elaborated in the medium in which man, the intelligent power, is disposed, and therefore appeals directly to the cognizance of the senses; the other is disposed in a denser medium removed from immediate observation, and comes not therefore so directly within the scope of our discoveries.

That lime is elaborated by animals within the ocean is a fact admitted, and not in the least invalidated by the readily ascertainable circumstance, that it also received into both animal and vegetable systems of *terra firma* by absorption from the soil, or as a constituent of the animal food: the lesser fact is demonstrable by experiment, and, being proved, is an admitted truth; but the greater fact is the gathering of observation as well as individual experiment, a truth of induction passing through a chain of reasoning which none but the philosophic observer can follow, and which, not being generally received, is still a disputed truth.

The reasons we have for believing that lime is elaborated by animals, as vegetable matter is elaborated by vegetables, are wise and powerful, although they may not be found convincing by men wedded to previous opinions. It is observed that as polypi, mollusca, and crustacea approach and are disposed within the broad tropical belt, so they secrete the greater abundance of lime; and as they advance towards the polar circle, so many species become partly or wholly divested of this earth. That stony coral formations are peculiar to the middle regions, and are governed in their increase of species and general quantities by latitude, dip, and inclination, and the absence of disturbing and destroying causes: that in tropical seas they cover areas of many thousand square miles, constituting hill and mountain chains and groups; whereas in temperate regions there are but few calcareous species, and within the polar seas none: that the whole bed of the ocean in these regions, independent of disturbing causes, is chiefly composed of calcareous matter like a fine chalk generated by the digestive processes of the living occupants, or by the partial or entire decomposition of these various tribes, of hill and mountain chain, of coral rock building in every variety,

of mollusca, crustacea, and finny inhabitants of the deep; the whole being interspersed with beds of coral and other sand, and beds of animals and vegetables as is the earth on which we tread, whose allotted duties, in like manner, are to contribute in life and in death to the material on which they are disposed.

(To be continued.)

## SOCIETY OF ARTS.

DECEMBER 11th.—W. Hughes Hughes, Esq., V.P. in the chair.

M. Lassus, architect to the French Government, was elected a corresponding member.

The Secretary read a paper "On Mr. J. P. Chatten's Improved Dead Eyes." A model and diagrams to illustrate which were placed before the meeting.

The next paper read by the secretary was "On the Kamptulicon Life-boat," by Lieut. G. Waller, R.N.

The third paper read was "On the Hydraulic Ram," by Mr. Freeman Roe; a model and diagram accompanying the communication.

Several specimens of the earthenware, and other manufactures of the Mexicans, were placed on the table and partly described by Dr. Thompson. This subject will be brought forward in a more interesting form after Christmas.

## SOCIETY OF MASTER CARPENTERS.

On Wednesday evening last, a meeting of this society was held at the Freemasons' Tavern, Great Queen-street, Mr. Biers, the president, took the chair, and was supported by the vice-president, Mr. Sparks. The minutes of the previous evening having been read and confirmed, and the usual business of the society transacted, it was determined that a special general meeting be convened for the 23rd inst., for the purpose of taking into consideration a petition to Parliament to abolish the window-duties, or to so modify them as to lead to a better system of ventilation. Among the members present, were—Mr. Stevens, Mr. Higgs, Mr. W. Hutchins, Mr. Cubitt, Mr. Burstall, Mr. Davey of Stanmore, Mr. Outthwaite, and Mr. Lover. From the great interest taken in the forthcoming question by the society, and by the trade generally, as well as by the public at large, a numerous attendance is expected next Monday week.

## HEALTH OF TOWNS.

On Wednesday last a numerous and highly influential meeting took place at Exeter Hall, for the purpose of forming an association to promote legislative and other measures for the improvement of the health of towns. The Marquis of Normanby occupied the chair; and among those on the platform were the Earl of Shelburne; Sir R. H. Inglis, Bart; Sir W. Clay, Bart.; Mr. Sheil, M.P.; Mr. Ewart, M.P.; Mr. Hawes, M.P.; Dr. Southwood Smith, &c. The meeting was addressed by the noble chairman at considerable length on the paramount importance of the objects they had in view, and the following resolutions were introduced by their respective proposers and seconders in neat and effective speeches:—

1st. That the want of proper sewerage, drainage, and cleansing of towns was the cause of sickness, suffering, and a high rate of mortality, as well as of the moral and physical deterioration of the people.

2nd. That an association be formed for the purpose of improving the condition of the dwellings of the poor in towns.

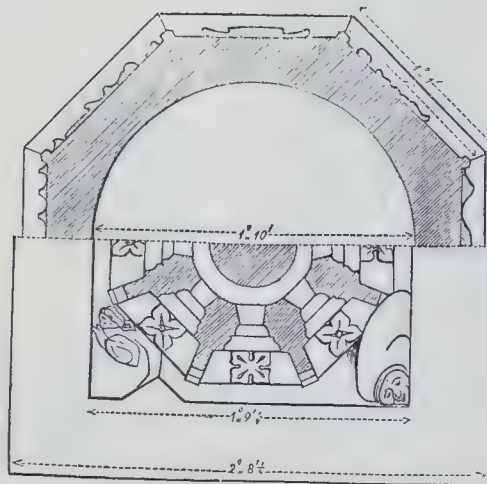
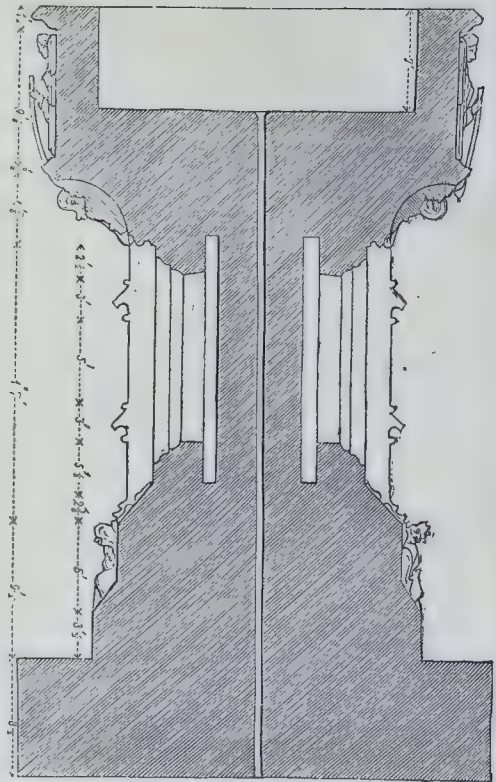
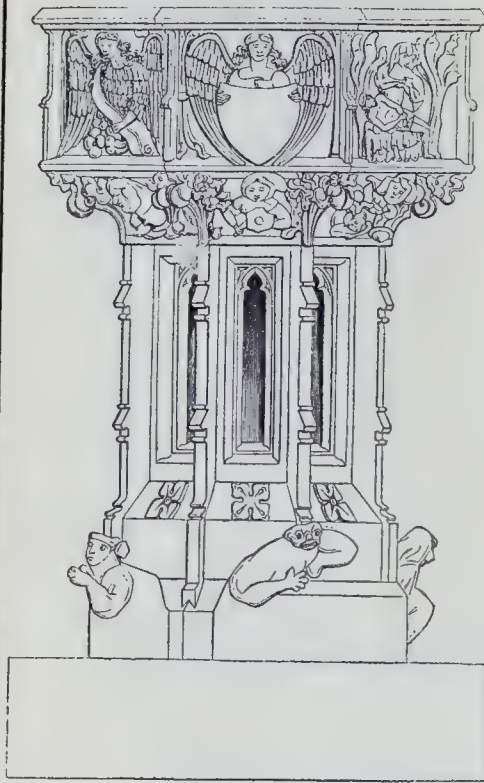
3rd. That a subscription be opened to carry out the objects of the proposed society.

4th. That the condition of burying-grounds be considered.

Dr. Southwood Smith then read a petition, which he had drawn up for the purpose of being presented to both Houses of Parliament. It set forth the present condition of the poor in respect of their dwellings, the various means by which they might be improved, and prayed for legislative interference. The presentation of the petition was entrusted to the Marquis of Normanby and Lord Ashley.



FONT IN WEST DRAYTON CHURCH, MIDDLESEX.



(The upper part shewing the basin, the lower part shewing the base and shaft.)

Scale  $\frac{1}{2}$ " = 3' 0"

FONT IN WEST DRAYTON CHURCH.

TO THE EDITOR OF THE BUILDER.

SIR,—Among the many advantages arising from the great improvement in travelling made during the last few years, not the least is the great facility given for penetrating into some of the nooks and corners of England hitherto unknown or unthought of. Nearly every village of our country still possesses its ancient church, and it must be poor indeed if it did not contain something worthy of notice; and in very many cases subjects worthy of illustration are to be found, as in the church of West Drayton, which is about ten minutes' walk from the station of the Great Western railway, very prettily situated, and, with its ivy-laden tower, presenting altogether a very picturesque appearance, though of no extraordinary architectural beauty. The interior of the church is a good plain specimen of the ecclesiastical architecture of the fourteenth century; it has its timber roof supported on stone corbels: there is a water-drain of early date and good design: in the chancel as remaining some fair specimens of brasses and throughout it has suffered less from the application of paint and whitewash than most of our village churches. But the object perhaps most worthy of attention in the church is the subject of the present illustration. This font may be fairly considered one of the best remaining in the kingdom, and it is much to be regretted that it was not included in the very beautiful collection lately published by Mr. Van Vorst. Its general plan is an octagon with an irregular base raised on one step, and having grotesque figures ranged around it; whom or what they are intended to represent must be left to the reader's imagination or to the learned in allegory to determine. The pedestal is very beautifully designed; it consists of





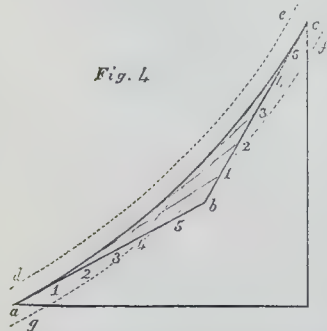


cylinder. A spiral line, is a line drawn upon the surface of the cylinder at any angle of inclination which might be required, and the development of a spiral line upon a plain surface would represent the hypotenuse of a right-angled triangle. Thus let  $ABC$  (Fig. 3) represent the base of a semi-cylinder, and the figure  $DEFG$  its elevation. The development of the cylindric surface upon the line  $ACB$  will be a parallelogram whose base line  $HI$  is equal in length to the circle  $ACB$ , and whose height  $HK$  is equal to the height  $EG$  of the cylinder. In the development, the hypotenusal line  $HL$  will form the development of the spiral line  $FE$  upon the surface of the cylinder. The projection of a spiral line upon the elevational surface of the cylinder may be performed by dividing the circle  $ACB$  into any number of equal parts as indicated by the points  $a a a$ , &c. Having transferred these divisions to the base line  $HI$  of the development as shewn by the points  $b b b$ , &c., draw the vertical lines  $bf$ ,  $bf$ , &c., cutting the development of the spiral line  $KI$  in the points  $fff$ , &c. upon the elevational surface of the cylinder, and from the points  $a a a$ , &c., on the plan of its base, draw the vertical lines  $ag$ ,  $ag$ , &c., intersecting the horizontal lines  $fg$ ,  $fg$ , &c., in the points  $g g$ , and through which trace the line  $FE$ , which is the projection of the spiral line winding round the surface of the cylinder as developed by the line  $HL$ .

11. On reverting again to the hollow cylinder, which we have already mentioned, as formed of wood, upon both surfaces of which we shall suppose the student to have marked off the araises of the upper and the lower surfaces of the quadrilateral solid, it will be observed that any straight line taken at right angles to the axial line of the cylinder will coincide with any radiating line upon the upper or the lower surfaces of the solid respectively; but as the inner and the outer araises of these inclined surfaces are ranging at different angles of inclination, it therefore follows that the mean inclination of either the upper or the lower surface between their respective araises is in a central line between the two araises respectively, and the true development of this line would be the hypotenuse of a triangle in the developed surface of a cylinder whose radius is equal to the distance from the centre of the cylinder to the central line of the quadrilateral solid.

12. If, however, as is generally the case, where this quadrilateral solid, which constitutes the handrail round the cylindric ends of the well-hole, is joined by the straight portions of the rail connected with the flyers, and which are ranging at an angle of inclination different from that round the cylinder. The junction of the inclinations of both will to avoid deformity, require to be eased off by a curved line.

13. The simple and beautiful outline of the parabolic curve is the best adapted to this purpose; it is already well known, from its having been in use for more than a century. Our article, however, requires us here to enter into its detail. Let the lines  $a b$  and  $b c$  (Fig. 4) represent



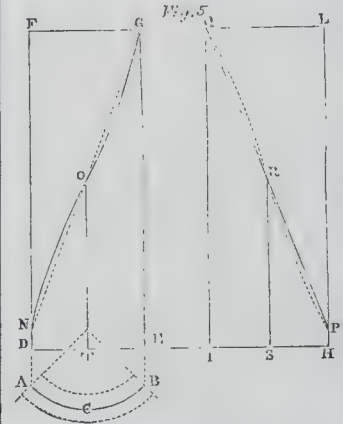
sent the intersection of the two inclined surfaces of the rail; let  $a$  and  $c$  represent the points at which the curve is to commence; divide the lines  $a b$  and  $b c$  each into any number of equal parts 1 2 3 4, &c.; which being done, draw lines from the points marked 1 2 3, &c. in the lines  $a b$  to the corresponding points

1 2 3, &c. in the line  $b c$ ; and from the intersection of these lines the curve may be adjusted by the hand to the greatest accuracy. The dotted lines  $d e$  and  $f g$  represent the upper and lower araises of the rail, from the different curvatures of which it will be observed that the upper and the lower surfaces of the rail are not in the same angle of inclination; therefore, the mean between both surfaces, as shewn by the line  $a c$ , will be the correct inclination of the rail.

14. We are, therefore, not only as regards the diameter of our cylinder, on the surface of which we shall conceive our line of heights to be placed, but also in the development of the line of heights, to confine ourselves to those dimensions which pertain to the centre of the rail only.

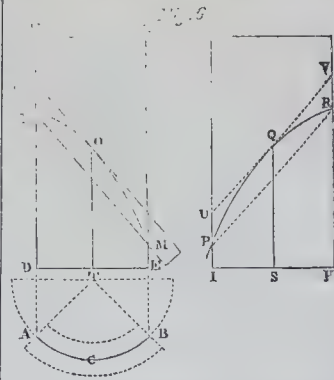
15. By the line of heights is meant the inclination of the handrail, as laid down upon the developed surface of the cylinder. Its use is to enable us to ascertain the correct height or position of our cutting-plane in the cylinder, as we shall hereafter treat more at large.

16. If we divide the length of our quadrilateral solid into parts not exceeding one-fourth of a revolution round the cylinder, we shall find that the proximity between the line or aris produced by winding the development of the line of heights round the surface of the cylinder, and that produced on the same surface by the intersection of a cutting-plane made to pass through any three points approximating nearest to the general line of heights, is such as will enable us to ascertain with certainty in what position the plane of our face-mould should cut through the cylinder. Thus, let the circle  $ACB$  (Fig. 5) represent a portion of the base



of a cylinder, and the lines  $DEFG$  its elevation; also let the parallelogram  $HIJK$  represent the development of the cylindric surface, and the line  $PQ$  the line of heights; suppose then that the lower portion of the development of the cylindric surface up to the line  $PQ$  is wrapped round the cylinder, we should find the perpendicular heights  $HP$ ,  $RS$ , and  $IQ$  in the development to coincide with the perpendicular heights  $DN$ ,  $TO$ , and  $EG$  on the cylindric surface respectively; but the straight line  $PRQ$  would produce the spiral line on the elevation of the surface of the cylinder. And, moreover, as the cutting-plane for our face-mould would, in passing through the cylinder, as shewn by the dotted line  $NOG$ , cannot in this case be made to pass through the entire spiral line, it is sufficient for our purpose if it be made to pass through the nearest approximating points,  $NOG$ , as shewn in the diagram.

17. Again, if, as in Fig. 6, where the line of heights  $PQR$  in the development is represented on the surface of the cylinder by the curved spiral line  $NO M$ , our cutting plane in such a case would not only be required to pass through the straight line  $N M$ , but its direction from thence should also be made to pass the point  $O$  on the cylindric surface. This intermediate point  $O$  is first to be determined on the development by drawing the tangent line  $UV$  parallel to the line  $P R$ , but touching the curved line of heights in the point  $Q$ , which



being transferred to the surface of the cylinder, as seen in the point  $O$ , we have then obtained three points,  $N O M$ , on the surface of the cylinder through which our section is to pass. The theory for determining the relative position of this plane, with a vertical plane passing through the axial line of the entire cylinder, so as to obtain the contour of the face-mould, and the bevils for its application to the surfaces of the plank, depends on the properties of the trihedral and its solid angles, which we shall next enter upon previous to our delineation of the various details connected with this branch of science.

(To be continued.)

#### SLIP OF CHALK AT EAST CLIFF, DOVER.

EVERY observer of the cliffs of Dover will behold the same weather-beaten face that terrified the army of Caesar, with very little alteration, in this locality, till you come some fifty or seventy yards beyond the Jetty. The same flints, had they eyes, would have seen the glorious lord of day rise for the last 2,000 years. The builder of certain premises on the cliff, from an error in judgment, and following the example of others, continued the line of buildings, not observing or regarding the mound of loose chalk thrown down when the moat round the castle was enlarged; and, finding the foot or bottom in his way, removed it. Consequently, the late heavy and incessant rains, lodging on the top or table, so saturated it, that the part above slipped, and filled up the space which he had made, and on which a part of the building stood. I have been an accurate observer of the cliffs for half a century. There never has been, properly so called, a fall of the cliffs in that time, but virtual slips have been occasioned by the sea washing away the bottom, or by some excavations of man at the foot; otherwise the cliff cannot slip (or fall, if you please), but from one or other of these joint causes. I call the attention of the scientific, or my contemporary observers, as well to the present slip as to the different ones along the railroad—the great one at Shakespeare's Cliff in 1800, or thereabout, and the one on the 12th of November, 1810, when the pig that survived for months under the ruins was buried. Here not only was the foot of the cliff cut away, but a piece of ordnance was placed immediately above, the plane and mounds of which retained the rains, and occasioned the slip. It will be found universally that a greater quantity of earth or loose soil is found at the top of all slips of chalk that retain the rains, which, by the joint action of gravity and the attraction of the sun, descend on inclined planes which they form; and if that inclined plane reaches the face of the cliff before it gets to the base, there, and there only, can a slip of our far-famed cliffs happen. I consider all the houses in the locality of East Cliff, facing the sea, as safe as Snargate-street; for it would require a great projectile force to send from the apex of the cliffs any portion thereof. The nine tons of gunpowder, used at the great blast at Round-down, did not project farther. I am informed that a Government survey has been made, and that it is their intention to remove the objectionable points, and then every part of that locality will be safe.—*Dover Chronicle*.



## STEAM-BOAT PIERS AND THAMES EMBANKMENT.

Last week Mr. Deputy Hicks moved the Court of Common Council to agree to the report made by the Navigation Committee on the subject of the existing steam-boat piers between London-bridge and Chelsea. The report stated that the committee had directed a survey to be made by Mr. Walker, the civil engineer, by Mr. Leech, the clerk of the City works, and by the water-bailiff, and that those gentlemen had certified that those piers were in general unsafe, and impeded the navigation of the river. They were for the most part as unsafe as had been that at Blackfriars-bridge at the time the recent fatal accident happened. The committee also stated that they had been furnished with a plan on which those piers ought to be constructed, the expense of erecting each of which would be about 1,750*l*. The committee added that they had caused notices to be served upon the owners and proprietors of the present piers, calling upon them to construct them on the plan furnished, and according to the regulations of the committee, or that they would be removed. If the notice were not complied with, the licences granted to private individuals to erect piers would be withdrawn.

Mr. R. L. Jones hoped the court would not agree to this report. There were in perspective two great measures which approached consummation, which the recommendations of this report, if carried into effect, would interfere with. He alluded to the projected embankment from Blackfriars-bridge to Westminster, and again from Westminster-bridge to Chelsea. To the first proposition (to effect which the bill was actually printed) this court had assented, provided the government carried the plan into execution at its own expense; and he submitted, that pending the matter, parties ought not to be permitted or encouraged to erect these landing-places along the very line the embankment was proposed to be carried. The government ought not to be interfered with in the matter. He also contended that neither the committee nor the court had the power to grant licences for the erection of these piers. The right to the soil of the river was a question now pending between the Crown and the corporation in the Court of Chancery. The report of the Navigation Committee was ultimately agreed to by a large majority, only three hands being held up against it.

## IMPORTANT TO SURVEYORS OF HIGHWAYS.

THE decision in the following case which was tried, on the 27th ult., in the Queen's Bench, will, we hope, operate as a caution to surveyors of the highways to abandon the practice, so prevalent, of leaving heaps of materials for mending the roads, and of scrapings of mud from the roads, in such situations as to endanger travellers. It will show the public that the practice is illegal and may be prevented.

DAVIS v. CURLING.

This was an action against the surveyor of the highways of the parish of Tottenham, to recover damages for the consequences of an accident which had been occasioned, as was alleged, by his neglect. The plaintiff on the 1st January, 1843, drove from Lambeth to Tottenham in a one-horse chaise, accompanied by his wife, to the house of a Mr. Newcome, where he remained to supper. On his return home his gig was upset in Marshmore, in consequence of driving over a heap of gravel, the gig being broken to pieces, and Davies and his wife both seriously injured. The former was confined to bed for three weeks, and was for six weeks disabled from attending to business. It appeared that on each side of the lane there was a track of greensward, on which it is customary to place heaps of gravel for the repair of the road, where they are left until they are required. The heap in question extended from the greensward into the road. Several of the plaintiff's witnesses swore positively to this fact, and also stated that they had, before the accident occurred, frequently drawn the attention of the defendant's servants to the dangerous state of the particular gravel heap which had occasioned the accident.

Mr. Justice Wightman, in summing up, left these questions to the jury—First, were they satisfied that the defendant ever knew that the gravel was in the place where it was? Secondly, if he did so know it, was it negligence and want of due care on his part to leave it there? Thirdly, if they answered the other two questions in the affirmative, were they satisfied that the accident had been occasioned by such negligence?

The jury returned with a verdict for the plaintiff, answering each of these questions in the affirmative, and assessing the damages at 35*l*.

## Correspondence.

## ARTESIAN WELLS.

TO THE EDITOR OF THE BUILDER.

SIR,—It has been publicly announced in the London journals that an artesian well was to be formed in the rear of the National Gallery, in order to furnish water for the fountains in Trafalgar-square. Naturally inquisitive on this subject, I have occasionally visited the chosen site, and watched, at a respectful distance, the progress of the work. I say at a respectful distance, Sir, for there has hitherto been an attempt to mystify proceedings, and the organ of communicativeness appears to have been as chary of the required supply of information, as the chalk beds have evidently been of their supply of water. All the information I can obtain is, that they have sunk the well 300 feet, dipping into the chalk; all that I can see is, an expensive edifice, raised before they were quite certain it would be wanted; and, by the aid of a powerful engine, they have been able to pump up water enough to fill the huge cisterns crowning the new building; and they are now vigorously attacking the subterranean reservoirs in front of the National Gallery, with the intent, I presume, of draining the first well, and thus forming a kind of canal navigation beneath that venerable building. We are not to have an artesian well at all, but the fountains are to play by the aid of steam: they had better have come to terms with one of the water companies. So much for the plea of economy. Perhaps some of your readers will throw a further light on the subject.

Since my former communication a rather curious exemplification of the effects of drainage by main sewers has been thrust upon my attention. Large avenues of trees at Bow have lately perished in consequence of sewers being formed in their immediate neighbourhood; the cause and the effect are equally palpable to the resident inhabitants, although singularly against the draining mania of the day: perhaps "Jenkins' Geology" will explain this.

M.

## GOTHIC ARCHITECTURE.

## GOTHIC TEARS.

SIR,—I am ready to admit that the island where I have had my origin has had the reputation of producing every thing which is barbarous, and that I shall hardly be believed when I claim of the present age any thing which may gain say the deeply-imbibed belief that no art could emanate from such a remote part of Scandinavia. Yet let my public cry be heard by the builder; and let my almost unheeded remains at Wisby call attention to my claims. Why should the University of Christiania publish, at the expense of government, the architectural remains of the Cathedral of Drenthien (beautiful though they are) and my much earlier efforts in the fourteen ecclesiastic buildings in the city above-mentioned be neglected? Are they too ruinous? Not so. Are the materials, the workmanship, the magnitude and elevation of the edifices contemptible? The reverse. Let not then fashion, ignorance, or prejudice do me injustice. Examine my claims, and pronounce whether the church of All Saints was built in 1030; of the Holy Ghost and St. Lawrence in 1046; St. Drotten in 1086; St. Catherine, with its fane and arches, in 1160; and have any thing to constitute a claim to containing the first pointed arches in Europe.

Perhaps, Sir, I ought to console myself in recollecting that the late Sir John Soane was called the modern Goth, because he made use of a most beautiful order of architecture at the Bank of England in an admirable

manner, but which the author of the appellation had not taste to comprehend.—I am, Sir, your barbarous servant,  
From the Island of Gothland, in the Baltic,  
September 30, 1844.

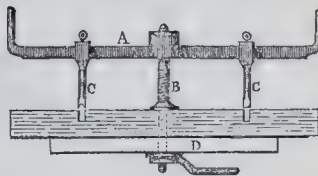
## DRAWING INSTRUMENT.

SIR,—In answer to "G. N." of last week, I would say the instrument alluded to is called a Centrolmeud, invented by Mr. P. Nicholson, and was improved on by the late Mr. A. Nicholson; it is in form like a T square, with the stock forming an obtuse angle instead of a right line, working round two pins found at certain points, which will draw lines to any vanishing point, 50, 100, or 200 yards off. It is an instrument very little known, but should you wish a further explanation, I will give it.—I remain, Sir, yours, J. W. W., Jun.

44, Stanhope-street, Hampstead-road,  
Dec. 9, 1844.

## MACHINE FOR CUTTING TRACERY.

SIR,—Having some time ago seen an account of tracery being cut by machinery for a new church in London (I think Camberwell), I quite expected some of your correspondents in London would have given us in the country a description of it; but being disappointed, I take the liberty of offering to the notice of your readers, by your permission, one I constructed some time ago for the same purpose.



The annexed sketch shows the method of piercing the plank, A, the cross-bar with handles at the ends. The socket in the centre is dished out at top to receive oil for supplying the screw B, the thread of which should be very fine, which, with the socket in the bar, are steel, hardened to resist the wear by friction. C C, two cutters, one forked, and about 2/3 the longer than the other, which is chisel-pointed and bent, to throw out what is cut by the other. The plank D will be necessary to steady the plank and apparatus when nearly cut through.

If you think this worth inserting in your columns, I will send you the method adopted in chamerifying after being cut.—Yours respectfully,  
JAMES PICKARD.

Newport, 1844.

## DOMESTIC DRAINAGE.

SIR,—A copy of your valuable journal, containing an article headed "On the Arrangement and Construction of House Drains," by Mr. J. Phillips, was kindly forwarded to me from London by a gentleman high in office, who takes much interest in all matters relating to health of towns and sanitary improvements. I consider the article to be a well-written and valuable contribution, calculated to effect great public benefit, and I have no desire to detract from the merits of its author, but I cannot resist requesting that you will do me the favour, I might almost say the justice, to insert in your periodical, at your earliest convenience, this note, together with my letter to the Commissioners on Health of Towns, on *Tubular Sewering*, which appears in the Appendix of their first Report, and which, although it does not contain all the suggestions that I had the honour to submit to the commission on 17th June, 1843 (these, however, will be found in the body of my evidence), nevertheless contain sufficient to shew Mr. Phillips that he need have been at no loss for information on the subject of *tubular sewerage*.—He says, "As I have found much difficulty in procuring information upon many points which require elucidation, I have ventured as a practical man to throw together a few thoughts, being anxious to add my mite to the general stock of knowledge upon this subject." Now, Sir, I think no one can peruse either my evidence or the letter referred to without at once ad-



mitting that I had, at all events, completely anticipated Mr. Phillips; but whether he has added much original or valuable matter to the subject as such had been previously detailed before "the Royal Commission on Health of Towns," by myself, in Croydon-house, on 17th June, 1843, and afterwards by J. Butler Williams, Esq., on 21st March, 1844, I leave it to competent and impartial inquirers to decide.—I am, &c.,

WILLIAM DYER GUTHRIE,  
A.M., F.R.C.S.L., &c.

3, Downie-place, Edinburgh.

[Mr. Guthrie's letter reached us rather too late in the week to allow of our inserting in the present number his communication on Tubular Sewering. It will appear in our next.]

SIR,—Excuse me for mentioning that in the "Penny Cyclopaedia," vol. xxi. p. 319, Fig. 4, under the article "Sewer," there is a description by Mr. Cuff of a drain, which appears to be much more adapted for the purpose intended than that described in your journal of last week; because amongst other features, the solid matter, entering with the water, is collected, and does not escape into the main drain.

I have no sort of interest in any way of forming sewers, but it struck me that it was right to mention the above for the mutual benefit of your numerous readers.—I am, Sir, your humble servant,

Dec. 5th, 1844.

A SUBSCRIBER.

#### ARCHITECTURAL COMPETITION.

SIR,—In THE BUILDER of November 23rd, you inserted a letter of mine relative to "Architectural Competition," which your correspondent "Scrutator," in last week's number, wishing to find fault with, says, that "it is pure nonsense to talk of an impartial architect," to select the best design in competition, and that it would hardly be supposed that Sir Robert Smirke, if placed in such a position, would select a design which "would clash with his professional reputation at the British Museum." (Some say that the new buildings should be taken down, instead of the old, with its painted ceilings, inlaid floors, &c., &c.) Now, Sir Robert Smirke, however bigotted he may be to pagan architecture, when called upon to give his opinion of the best design for the Cemetery Chapels at Nunhead, laid aside his prejudices, and decided upon one of pointed style, allowed, I think, by every one, to be the best design out of the sixty-five sets of drawings he had to make a selection from.

So that I think we may safely say that Sir Robert Smirke is an "impartial architect," and not the reverse as your correspondent suspects. In the advertisement of the "Baths and Wash-houses for the Poor," "Scrutator" thinks it "looks very suspicious" to have the name and address written on the corner of the drawings. I do not see why he should object to this, for if there is to be any jobbing in this affair, it will be done just as well with a private mark as with the name and address of the architect on the designs. If a "Committee-man" should happen to have a relation or friend who intends to "send in," he will find out his design by instinct without troubling himself to look at the corner. Hoping you will insert this, I am, Sir,

Your obedient servant,

London, Dec. 4, 1844.

[We think no competition should be entered into without the names are all openly exhibited; as long as matters are conducted otherwise, the private assassination in the dark of true design, construction and integrity will still be perpetrated.—Ed.]

#### HARDY TESTIMONIAL.

SIR,—Knowing from past, I might say painful, experience the corruptness of the present system of architectural competition, it is with much pleasure I have noticed of late in your valuable periodical several letters calling attention to the subject, and offering various suggestions for its amelioration. Among your correspondents, I find one who says (in No. 93), "All architects who compete should know the class of men before whom they are to exhibit their talents; and perhaps exposure would in a few cases influence an honest decision."

And again, "Let the profession coalesce, and form some wholesome rules to guide themselves in transactions of this nature." This view of the subject so perfectly accorded with my own, that I determined for the future (having put my own construction on the former part of the quotation) to do my utmost to expose any chicanery in architectural competition that should come under my notice.

Agreeably to such determination, I shall briefly as possible relate the particulars of a case that I unhesitatingly designate as grossly corrupt, and alike disgraceful to the committee and unfair to the competitors. Some weeks back I submitted a design (in common, I believe, with many others) for a monument proposed to be erected to the late Admiral Sir Thomas Hardy. The design was forwarded to the honorary secretary for the honourable committee—for they are "all honourable men." In due time my drawings were returned, and I thought no more of the matter, till last week I happened to be looking over the *Illustrated London News*, when I was no less surprised than disgusted to learn by a paragraph in that publication the astounding fact that the monument now erecting to Sir Thomas Hardy was from a design of Henry Dyke Ackland, Esq., of Killerton, an unprofessional gentleman and a member of that committee appointed to decide on the merits of the different designs previously submitted to them.

The following extracts from the paragraph will, however, best explain this barefaced transaction—"Designs were solicited from the most eminent architects, and numbers were sent in for the decision of the committee. The choice fell on the plan of Arthur Henry Dyke Ackland, Esq., of Killerton, Devonshire. This gentleman is a magistrate of the county of Devon, son of Sir Thomas Dyke Ackland, Bart., M.P. for the county, and brother of Thomas Dyke Ackland, Esq., M.P. for West Somersetshire. Although an independent gentleman, and no architect by profession, he is most ardently attached to architectural pursuits; and although he was on the Hardy Committee himself, yet, on having sent in the design anonymously, and it being selected by the committee without the least knowledge of the designer, he left the committee, hoping they would put the superintendence of the structure into the hands of those who had sent in other good designs for competition. This, however, met with difficulty, and that of Mr. Ackland, with the aid of an experienced builder, Mr. Goddard, of Bridport, has been proceeded with most favourably and expeditiously.

Now, Sir, may I ask, did you ever meet with a more disgraceful case, or one more strongly militating against all preconceived rules of fair and honourable competition?

A pretty story that of Mr. Ackland's extreme sense of delicacy. What flimsy nonsense is this? Let me ask Mr. Ackland one question; what part did he, could he act on the committee?

With regard to Mr. Ackland's design, the commentator above quoted, after saying it is *without pretension*, continues, by way of definition, to say, it is every thing that it should be, and that a more appropriate emblem to a naval warrior could not have been selected.

I can hardly offer an opinion on this part of the subject, only having seen the small sketch given in the *Illustrated News*; and, if I may judge from that, so far from subscribing to the panegyric bestowed on it by our worthy critic, I think I never beheld a more shaft-like, common-place affair; and must confess myself at a loss to discover the slightest monumental (not to say naval) feeling in it, or the least affinity to the subject to be commemorated.

Let me recommend, in conclusion, that Mr. Ackland inscribe on the base the epitaph of his great prototype:

"Si monumentum requiris circumspecte."

*Circumspecte* might be translated, look aloft.\*

I am, Sir, yours obediently,

London, Dec. 5th, 1844.

R.

#### COMPETITION AND CONTRACTS FOR STONE.

SIR,—In your valuable paper you have frequently exposed the methods which committees, &c. employ to enable them to get the

cream of some fifty or sixty designs by offering a paltry premium to architects, although there is little doubt but they have settled to whom it is to be given before the competition is advertised; but previous to seeing the advertisement which I inclose, I had no idea that the same means would be used to obtain a supply of materials for erecting a whole building, for if each quarryman in Yorkshire send a ton (value about 25s.), there will not be much more required. I suppose, in like manner, the timber and brick merchants and others must contribute their portions, delivered on the ground free of expense, and then it will be a cheap building forsooth. Yorkshiremen are greenish (?); but if they are to be imposed on in this manner, they are more so than I took them for, and will soon be fit inmates of the proposed building. A little of your advice might be of service to them.—Yours, &c.,

Dec. 11, 1844. PAY AND DE FAID.

The advertisement referred to appeared in the *Leeds Intelligencer*, and is as follows:—

"TO STONE MERCHANTS, CONTRACTORS, AND OTHERS.—The Committee of Justices of the Peace appointed for the North and East-Ridings of Yorkshire, for the building of a Pauper Lunatic Asylum for the said Ridings, are ready to receive specimens of rough, flat-bedded walling stone, suitable for foundations and rough walls, varying from three to nine inches in thickness. Sealed Tenders for supplying the same to be delivered to Mr. John Holtby, Solicitor, Low Ousegate, York, the Clerk to the Committee, on or before the 18th of December instant, and a duplicate copy to be sent to Messrs. Scott and Moffatt, 20, Spring-gardens, London, the Architects. Specimens containing not less than One Ton Weight or Cube Yard, to be delivered Free of Expense, before the above date, on the Building Site at Clifton, near York. The architects will be glad to see Specimens of Stone suited for the general walling. Any further information may be obtained from the Architects. York, December, 1844."

#### Miscellaneous.

ARCHITECTURAL IMPROVEMENTS, PERTH.—The terminus of the Scottish central line of railway is proposed to be on that part of the town's property lying between the Waterworks and Princes-street, now occupied by Messrs. Flepburn and Grahams, as wood and coal yards. The situation will be very convenient, and ornamental to the city, occupying, as the buildings probably will, the whole extent of the ground facing the South Inch from the Edinburgh road to the river, as the terminus will also be that of the Strathmore Railway, as well as of the Dundee and Perth, provided the line by the Carse throughout be adopted. The latter, after passing Kinfauns, crosses the Willowgate near its mouth, and runs up Moncreiffe Island to the top, where it would cross the Tay immediately opposite to the joint terminus.

THE NEW GRAVING-DOCK AT ALEXANDRIA.—This dock is rapidly approaching completion, after ten years of labour, and after several millions of dollars having been spent upon it. The public may not be aware this has been cut out of artificial rock, formed of lime, pulverised brick, and pozzolani, raised on piles driven closely together to a depth of 30 feet in the sand. The chief cause of difficulty and delay arose, in the first instance, from the operations having to be conducted under water by means of diving apparatus at a depth of five fathoms (there being here no ebb or flow of tide of any consequence); and, in the second place, from the difficulty of giving sufficient stability to the formation, so as to enable it to resist the enormous pressure from below when excavated. Its length is 260 feet and breadth 60.

DISINFECTION OF SEWERS, CRESSOPES, &c.—M. Siret finds that a mixture of coppers, charcoal, and gypsum, in the following proportions, if thrown into a sewer or cesspool, will purify it to a remarkable degree:—sulphate of iron (green coppers), 200 lb.; sulphate of zinc (white coppers), 25 lb.; vegetable charcoal (common or wood charcoal), 10 lb.; sulphate of lime (gypsum), 265 lb.

Messrs. Bowers and Murray, of Liverpool, are the successful competitors (from among fourteen in number) for the excavation of the Railway Dock at Hull. It is expected that the dock will be ready for business in the spring of 1846.

\* [Perhaps our readers will remember the verger's translation which appeared in the newspapers a few years ago—Sir! come! spy! see!—Ed.]



**IRON HOUSES.**—The late frightful earthquakes in the West Indies, in which the brick and stone buildings of whole towns have been levelled with the ground, and the wooden ones consumed by the fires which usually burst out after the overthrow of the other buildings, have drawn the attention of many persons residing in districts subject to those awful visitations to the advantages of houses constructed of iron, which have been found to stand the shocks of the severest earthquakes uninjured, and which are, of course, proof against such conflagrations as that which swept away at Point-a-Pitre, in Guadeloupe, all that the earthquake had spared. Mr. W. Laycock, of Liverpool, who recently built an iron palace for one of the chiefs of the African coast, has just completed an iron cottage for the use of two maiden ladies, residing in the island of St. Lucia. It consists of three rooms, each 9 feet high—viz. one room 20 feet by 14 feet, and two rooms 12 feet by 10 feet. There are six large jealousy windows and two small ones over the front and back doors; these and the floor are the only parts made of wood. There is an inside ceiling of iron in panels, and the roof is in a wrought-iron frame and covered with galvanized plates of iron. The walls are formed of double plates of iron, with a thin stratum of air between them, an arrangement which will prevent the passing of the solar heat into the interior of the building, at least through the walls, and keep the interior delightfully cool. The weight of the building is 14 tons, and the cost rather more than 200*l*.

**THE PROPOSED GRAND PROMENADE, OR AVENUE AROUND HULL.**—This magnificent project has been received with a degree of favour and support that promises highly for its accomplishment at no distant day. The object is to lay out a grand promenade or avenue, extending from the Humber on the west, in a regular course round the town of Hull to the Humber on the east, having a carriage-way of seventy feet in width, with two footpaths of about forty feet wide each, and to be separated by rows of ornamental trees. To accomplish this grand design, it is proposed to purchase ground, 150 yards wide, along the whole line; and to dispose of the fifty yards in width, remaining on each side of the promenade, for building purposes. The financial part of the plan is stated to be promising. The expenditure required for land, draining, tunnelling, planting, &c., is estimated at about 50,000*l*; and the proceeds from the sale of building-ground is calculated in the end to realize nearly twice that amount, leaving a profit to the shareholders of cent. per cent.

**FALL OF A NEW BUILDING, SCAFFOLDING, &c.**—An accident happened lately at the new school-room, in the course of erection at Halstead, near the new church (Trinity), where the steeple fell on the 10th of July last. Several persons were employed carrying up an end of the building, when it suddenly gave way, and fell with a tremendous crash, carrying with it in its fall the scaffolding, &c.; the workmen experienced a most providential escape. The weight of the ruins was calculated at twenty tons. One of the bricklayers, whose escape when the steeple fell was truly providential, was at work at the school-room, and again experienced the same protecting care.—*Bury Post*.

**NEW THEATRE AT TAUNTON.**—The contemplated site for this building is the premises in Paul-street, lately occupied as livery stables by Mr. Hatchwell. The situation is the only spot left unbuild upon in the town. It is intended that the undertaking shall be carried out by shares, a great many of which have already been applied for. Should the scheme be successful, we hope the structure will be such as to do honour to the taste of the age, and a credit to the town and neighbourhood.—*Somerset Gazette*.

**PERKIN'S METHOD OF HEATING THE AIR IN BUILDINGS, &c.**—Angier March Perkins, of Harpur-street, who had patents granted to him for the above purpose in 1831 and 1832, intends to petition for a prolongation of the respective terms of sole using and vending the same. A notice has appeared in the *London Gazette* to this effect, and application will be made to the Privy Council on the 11th of January next, to fix a day for the hearing of the matters contained in the said petition.

**CABINET FIRE ENGINE.**—An ingenious and useful description of engine, for the suppression of fires occurring suddenly in dwelling-houses, &c., has lately been invented, which, from its compactness, its extraordinary power, and the facility with which it can be brought to bear in cases of emergency, is deserving of public notice. In outward appearance the engine in question resembles a small cabinet or ornamental chest of drawers upon casters. Upon removing the mahogany top, however, a complete powerful fire-engine is discovered worked by a folding handle, and ready fitted with a hose long enough to reach from the first floor to the garret, or to the basement of a large house, and also furnished with pipes and all necessary apparatus, so contrived as to be available at a moment's notice, and when not in use to be easily stowed away upon the partition which divides the water from the external covering of the cabinet. The reservoir of this engine contains nearly a hogshead of water; and the whole affair, which may be easily worked with merely the strength of one woman, another directing the stream of water, does not occupy a space exceeding four feet square. It admits of being made and fitted up in any ornamental shape which may be desirable, and may be kept ready charged within a room or in any passage or corridor, where it would assume the appearance of rather a handsome piece of furniture, and from whence it can be wheeled in a minute, and in another minute be distributing such a stream of water as would effectually drown any incipient fire whatever. As a proof of its powers a small engine, not exceeding three feet square, and worked by a lad, threw a powerful stream of water completely over the house of the inventor, Mr. Merewether, of Long-acre.

**DISCOVERY OF ROMAN BUILDINGS, &c.**—There was lately discovered in a field near Lilleyhorn, Gloucestershire, an extensive range of Roman chambers, whose communications with each other were distinctly marked, and which in part exhibited the supports and bases of tessellated floors. They were bounded on one side by a wall of great thickness, but the limits of the whole have not yet been ascertained. There were various sorts of ancient brick-work, &c., and there were picked up many fragments of red and coloured glazed pottery, having various figures on them, antique glass, many little implements, &c., numerous coins in good preservation were also found, from the reigns of Valerian to Allectus inclusive, comprehending the Roman British empire.—*Gloucester Chronicle*.

**IMPROVEMENTS AT CLEETHORPES, LINCOLNSHIRE.**—Great improvements are now going on at this favourite watering-place. Upon the lands lately set out and sold for building-ground, a great number of workmen are employed. The row of houses now being built near the High Cliff, at the Upper Thorpe, will command an extensive view of the German Ocean, and the opposite coast of Holderness. Building operations have also commenced on the property of the Rev. Mr. Mantell, of Louth, situate between the Upper and Lower Thorpes, and a street is formed, of the width of fifty feet, on both sides of which houses are to be built, for the accommodation of families of the first respectability.

**A LARGE ORDER FOR BRICKS.**—We learn that the Birkenhead Warehousing Company have engaged by contract the partners of a celebrated brickmaking firm of the south of England (who, we believe, made the bricks for the Eastern Counties Railway) for the supply against the next summer of 50,000,000 bricks, for the building of their warehouses on the southern margin of Wallasey Pool; and that within the last week 300 operative brickmakers have been sent from Kent to Birkenhead, and have already commenced operations there.—*Liverpool Paper*.

**GAS.**—A new gas company has been started at Liverpool, under the title of the "Liverpool Guardian Gas Company." The company proposes to fix the maximum selling price of gas at 4*s*. 6*d*. per 1,000 cubic feet, and to limit the maximum dividend to 7*l*. 10*s*. per cent. on the capital. It is in contemplation to form a new gas company in Hull, the profits of which are to be devoted to the general improvement of the town. A similar plan has been in operation for some time in Manchester, and works, we are told, exceedingly well.

**LIGHTHOUSE ON THE GOODWIN SANDS.**—Mr. Bush has at length established in his caisson upwards of 20 feet of the iron shaft or column on the summit of which the lighthouse will be placed. It is now above high-water mark, and there is nothing to prevent its being finished and ready to be illuminated by the 1st of January next. This shaft penetrates through the various iron chambers of the caisson, and is firmly sustained in its perpendicular position by two iron plumber blocks of great strength. It is also further secured by iron stays or braces, which are bolted to the outer part of the caisson, and attached to the top, as well as the centre of the column. The new light is proposed to have an elevation of 33 feet above high-water mark, and to be approached by a light, iron spiral stair, winding round the exterior of the column, within an octagon of about 10 feet diameter, surmounted by a plate-glass lantern. It appears that the caisson, which is 30 feet in diameter, has remained undisturbed in the same position in which it was sunk, when occurred the untoward accident of the American bark being driven against it, shortly after Mr. Bush had partially fixed it, which completely frustrated his original plan of making the superstructure of solid masonry. The caisson is, however, to be filled up with blocks of stone and concrete; the naval authorities of Deal have reported to the Admiralty that they expect mainland will be formed, the caisson forming a nucleus for accomplishing this most desirable object.

**MANCHESTER IMPROVEMENTS.**—The committee have laid before the public the outline of their scheme for giving to the people of Manchester the means of recreation by the opening of parks and walks. They propose the formation of four places of recreation, of about thirty acres each; that a gymnasium, on a large scale, be erected in each, free of charge; that, where possible, spaces be obtained for ball-alley, quoits, skittles, archery, and other active sports, and available to players at a charge merely to cover the implements of play that may be used; that each park contain one or more fountains of pure water; that numerous seats be erected in proper situations for general accommodation; that buildings be erected where tea, coffee, and other refreshments may be obtained, but where no intoxicating liquors of any kind shall be allowed; that such parks be open to the public on all days of the week; and that the gymnasium, ball-alley, quoit, skittle, or archery grounds shall be closed on Sundays. The committee add that they have every reason to expect that public baths, wash-houses, &c., free, or at a merely nominal charge, will be erected simultaneously with the promotion of the parks and play-grounds.—*Manchester Times*.

**MACHINES FOR DRYING CLOTHES.**—Machines for this purpose are used in the large cotton-print works in the neighbourhood of Manchester. These machines, which are generally made of copper, somewhat resemble a large or deep washing-tub, with the sides perforated all over with holes about the size of those in a common cullender. The goods to be dried are placed in this machine, which is then made to revolve with great rapidity, causing the contents to fly to the sides, against which they are pressed by the centrifugal force, and the moisture they contain is thus sent off through the holes, leaving the cotton or whatever it may be in a few seconds nearly dry.

**THE IRON TRADE.**—The men in Stourbridge district, instead of wanting work, have now more than they are inclined to execute. This and similar cases are the result of the improved condition of the iron trade, in every branch of which, with the exception of ualing, the greatest activity prevails: employment is plentiful, the men are getting better wages, and, consequently, many of them are disposed to do less work. We believe there is not an iron work in this district now standing; and the price of iron, of almost every description, has advanced since the last quarter-day, and has still a tendency upwards.—*Worcester paper*.

**NEW COLLEGE AT GLASGOW.**—Nineteen individuals, ten of whom are resident in Glasgow, have subscribed towards the building of the projected college, in connection with the Free church, the sum of 19,000*l*.



**THE TOPOSCOPE, A NEW INSTRUMENT TO DETERMINE DURING THE NIGHT THE TRUE POSITION OF A FIRE.**—A curious instrument, the invention of M. Schwilgué (the mechanist of the far-famed clock of Strasburg Cathedral), is about to be established on the platform of the same edifice; its object being to determine, during the night, the true position of lighted objects in the distance, false impressions on the subject being often of disastrous effect, as, for example, in the case of conflagration. The apparatus in question, to which the inventor has given the name of *toposcope*, is composed, according to the description, of two graduated circles, with subdivisions marked by an infinity of numbers. These circles, by their rotary movement in inverse directions, furnish a multitude of numerical combinations. A telescope, moving with the upper circle, is fitted to the apparatus; and, on directing this to the place of the disaster, the instrument itself furnishes, in measured numbers, its distance from Strasburg Cathedral.

**ST. JAMES'S PALACE.**—To increase the accommodation requisite on state occasions, and to complete the suite of apartments appropriated to drawing-rooms and levees, the Queen has been pleased to give instructions to the Office of Works, and workmen are now busily occupied in the embellishment and restoration of two more of the state rooms at this ancient palace. The first is situated at the top of the grand staircase, and was formerly called "Queen Charlotte's Guard-room;" the windows of this apartment look into the Colonnade. The other is a spacious noble saloon, looking into the Ambassadors' Court, and was anciently called the Ball-room. It was most magnificently fitted up by George IV., in the style of Louis Quatorze, as a gorgeous Banqueting-room. When finished the state-rooms at St. James's Palace will be the most complete in Europe, and be at all times ready for every ceremonial which the Queen may be called on to give in support of the honour and dignity of the British throne.

**GIOVANNI BATTISTA, THE ARCHITECT AND MONK.**—The celebrated monk of Mount Carmel, Giovanni Battista, has arrived in Berlin, in order to raise a fund for enlarging his establishment, which is similar to the one on Great St. Bernard. This individual, who was originally an architect, obtained many years ago the permission of the Sultan Mahmoud to rebuild the monastery which the Turks had destroyed, for fear it should be turned into a fortress by the French. Having obtained this permission, Battista made twelve journeys throughout Europe, in order to collect the necessary funds for reconstructing the convent. He is now in his 60th year. He intends to add an hospital to the charitable asylum.

**GRIMSBY NEW DOCK.**—A public meeting of the Grimsby Dock Company was held, pursuant to notice, at the Queen's Head Inn, in Grimsby, on the 29th ult., to receive the plan and report of J. M. Rendel, Esq., the engineer of the intended new railway dock and works at this port, the Right Hon. C. T. D'Eyncourt in the chair. The plan was unanimously adopted by the meeting. To meet the expenditure in completing these works and other purposes, a capital of 320,000*l.* is proposed, and the dock company has agreed to raise the same by shares of 100*l.* each.

**TAX ON AIR, LIGHT, AND PRUDENCE.**—A hundred years hence it will perhaps be scarcely believed that a government existed in the nineteenth century which prevented, by taxation, the light of heaven from entering our dwellings, and the free air from ventilating and cleansing them; and which also prohibited, by impost, the possessors of property from insuring it against destruction by fire.—*Edinburgh Review* for October, 1844.

**SOFTENING OF WATER FOR DOMESTIC USE.**—It is calculated that the softening of the London water for domestic use by the precipitation of its lime would effect a saving of 200,000*l.* a year in soap alone.

**NEW HOSPITAL FOR CONSUMPTION AT BROMPTON.**—These works are proceeding rapidly; and it is expected that, in a few months, the western wing will be roofed in, and the interior ready to receive patients.

**NEW EXETER CHANGE.**—This building is now complete, and thrown open to the public. It is lighted by the bade light.

**QUEEN ELIZABETH'S HOSPITAL, BRISTOL.**—The new school-building belonging to this charity is, or rather will be, for it is but just commenced, another edifice somewhat similar to the Bristol Guildhall in regard to its style of architecture, but of very different character, far less ornate—indeed, rather plain—but very far more extensive, since the total length of its front will be 400 feet. Its site is a sloping field of about four acres, on the side of Brandon-hill, between Bristol and Clifton; and the building will stand about twenty-eight feet above the level of the road, raised upon a terrace extending along the main front, and to which there will be an ascent by a flight of forty steps in the centre. The architects employed are Messrs. Foster and Son, of Bristol.—*Companion to the Almanack.*

**THE CARTOONS IN DANGER.**—A correspondent of the *Times* sounds a note of warning respecting the risk to which the cartoons are exposed, which cannot be too soon attended to. The buildings in which such treasures of art are preserved should be placed beyond the chance or the possibility of fire.—"Some days since, a person passing through the gallery in which they are placed observed a dense smoke to pervade the apartment, proceeding apparently from the wainscotted partition behind the cartoons. An alarm was given, the wain-cot was torn down, and it was discovered that a beam in the wall, communicating with the flue of a copper chimney, was, if not in a state of flame, so much ignited as to have endangered the Palace, if it had not been discovered in that opportune manner."

**CONSTRUCTION OF ICE-HOUSES.**—Ice has become a great article of export in America. 60,000 tons are annually sent from Boston to southern parts, the East and West Indies, &c. The ice-houses near the lakes and ponds are immense wooden buildings, holding 10,000 to 20,000 tons each; some of them, indeed, cover half an acre of ground. They are built with double walls—that is, with an inner wall round, two feet from the outer one; and the space between is filled with sawdust—a non-conductor, making a solid wall, impervious to heat and air, and of 10 feet in thickness.—*Madras Athenæum.*

**NEW SCHOOLS AT DUKINFIELD.**—These schools are rapidly approaching towards a state of completion. The style of architecture chosen by the architect, Mr. Shellard, of Manchester, is the Tudor English. The schools are being built partly from funds granted by the National Society and the Board of Privy Council, and partly by donations raised by the late incumbent, the Rev. Joseph Taylor. They are calculated to contain upwards of 600 children, and there is a house erected for the master and mistress.

**NEW THEATRE AT MANCHESTER.**—The corner stone of the Theatre Royal, Manchester, was laid on Monday last, by Mr. John Knowles, the proprietor, and holder of the letters patent.

### Tenders.

**TENDERS** delivered Dec. 7, 1844, for building a Public-house, to be called the Three Tuns, in New-street, Fetter-lane, for Messrs. Meux and Co., brewers. The quantities were delivered to each contractor.—Samuel Beazley, Esq., Architect.

Mr. Nicholls .....	£1,687
Mr. Brown .....	1,650
Mr. Winsland .....	1,517
Mr. Unwin .....	1,520
Mr. Reynolds .....	1,500
Mr. Williams .....	1,497
Mr. Gerry .....	1,433
Mr. Soden .....	1,410
Mr. Parkyn .....	1,387
Mr. Bodger .....	1,284

The above were *not* opened in the contractors' presence; and Mr. Bodger's tender was accepted.

**TENDERS** delivered Dec. 6, 1844, for the erection of Dwelling-houses, situated at Star-corner, Bermondsey, for G. Drew, Esq.—G. Porter, Esq., Architect.

Messrs. Locke and Nesham .....	£3,539
Mr. Wilson .....	3,194
Mr. Wisland .....	2,486
Mr. Paul .....	3,339
Messrs. R. and D. Young .....	3,396
Mr. Gerry .....	3,386
Mr. Jay .....	3,312

### NOTICES OF CONTRACTS.

For 1,200 Tons of Wrought-iron Rails.—George King, 62, Moorgate-street. Dec. 16.

For Building the proposed Lock-up Cells and Turnkey's Residence, at Wooden Box, Hartshorn, Derbyshire.—John Mason, County Surveyor; or Mr. Dewes, Solicitor, Ashby-de-la-Zouch. December 17.

For the performance of the following works in Harwich Harbour and the neighbouring Coast from January 1, 1845, to December 31, 1847. Carpenters, Masons, Bricklayers, Plasterers, Slaters, Plumbers, Painters, Glaziers, and Smiths.—The Commanding Royal Engineer, Harwich. December 17. For the performance of the like works, with the addition of Paviers, and for the like period, in the Ipswich Station.—Same address and date as above.

For the supply of about 20,000 one year old Wood, to be Ash, Hazel, Oak, or Hornbeam.—Messrs. Dawson and Son, 74, Cannon-street.

For performing the Carpenter's, Bricklayer's, Plumbers', Painters', Glaziers', and Slaters' Works at the St. Marylebone Workhouse for the year ensuing.—Thomas Thorne, at the Workhouse. Dec. 18.

For the several works required in the erection and completion of two Wings to the New Gaol, Leeds; Residence for Schoolmasters and Matrons; Entrance Building and Chapel; Out Offices; and Court Walls.—Messrs. Parkin and Backhouse, Architects, 10, Albion-street, Leeds. Dec. 18.

For the erection of a Church at Eccleshill, near Bradford, Yorkshire.—Mr. Rawsthorne, Architect, North-parade, Bradford. Dec. 19.

For the construction of Locomotive Engines and Tenders for the Manchester, Bury, and Rossendale Railway.—Mr. C. E. Cavley, Engineer, Railway Office, Bury.—December 21.

For the supply of First, Second, and Third-class Carriages to the Manchester, Bury, and Rossendale Railway.—James Smithells, Secretary, Railway Office, Bury.—December 21.

For the supply of 6,000 tons of Iron Rails, each rail to be 16 feet in length, and weighing 55 lb. per yard.—H. Parker, Secretary to the Great North of England Railway Company, Darlington. Dec. 23.

For making a Sewer in the Town of Cambridge, to be cylindrical, and 2 feet diameter in the clear, length about 365 yards, average depth about 9 feet.—Frederick Randall, Clerk to the Commissioners, Cambridge. Dec. 26.

For the execution of Works necessary for the completion of the whole of the Railway from Shoreham to Chichester, being a distance of about 22½ miles.—Frederick Otley, Secretary, Brighton and Chichester Railway Office, 4, Dean-street, Tooley-street. December 31.

For the erection of an Organ in the City Hall of Glasgow, cost not to exceed 1,500*l.*—Mr. G. W. Muir, Glasgow. January 1.

For Four Locomotive Engines and Tenders.—George King, 62, Moorgate-street, January 8.

For a Survey Plan and Valuation of the Township of Kibworth, in Rotherham Yorkshire.—Mr. George Taylor or Mr. Richard Rhodes, Overseers of the Poor. January 8.

For completing the Railway from Bishopstoke to Salisbury.—Alfred Morgan, Secretary, Nine Elms Station, Vauxhall. January 10.

For the supply of 11,000 feet of nine-inch cast-iron Pipes for a new line of Aqueduct to be laid in the Island of Malta.—Vin. Casolani, Collector of Land Revenue, Office of Land Revenue and Public Works, Valletta, Malta. March 31, 1845.

### COMPETITIONS.

THE Committee of the Association recently formed in the Metropolis for the Construction of Baths and Wash-houses for the Labouring Classes, are desirous of obtaining Plans and Estimates for the Erection and Fitting-up of the First Establishment. The general basis of the plan can be seen at the Office, No. 3, Crosby-square. The author of the plan considered the best by the Committee will be selected to execute the work.

Plans for an Agricultural College to be erected at Cirencester, to accommodate 200 pupils and 6 tutors. The style is left to the taste of the architect. A Premium of 10 Guineas to the author of the most approved plan.—Robert J. Brown, Esq., Hon. Sec. Cirencester. January 1.

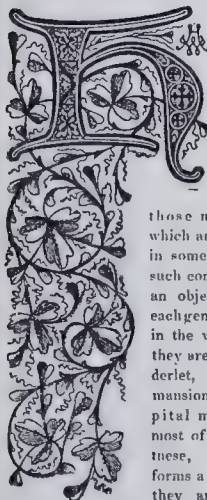
Plans and estimates are required for a Pauper Lunatic Asylum for the County of Somerset; the building to accommodate 300 patients, and to contain two Stories. The Committee of Visiting Magistrates wish it to be of a plain, cheerful character, but will not further fetter the architect by suggesting any particular arrangement as to the interior, its ventilation, warming, or otherwise. The ground selected contains 36 acres.—The Clerk of the Peace, Taunton. A Premium of 100*l.* will be adjudged for the best plan, and 50*l.* for the next best.



# The Builder.

No. XXVIII.

SATURDAY, DECEMBER 21, 1844.



HAVING discussed at some length the more minute beauties of London and its environs, we must now make a few observations relative to those mansion-houses

which anciently did, and, in some cases, still form such conspicuous suburban objects. These are each generally designated, in the writings by which they are held or are underlet, as "the capital mansion-house," and capital mansion-houses most of them were. In these, red brickwork forms a constituent part; they are replete with

carvings, both within and without; around their eaves is mostly to be found a carved caken Corinthian modillion cornice, which, while many stone edifices of the neighbourhood have gone to decay, still remains sound, having escaped rot and fire. The fronts of such mansion-houses usually contain quaint carvings in brickwork, stone, or wood, and frequently all these materials combined. There are many fine specimens of window-dressings still extant, to be found amid this description of buildings; their doorways were almost invariably beautiful, and sometimes their chimneys were magnificent. Such mansions usually contained court-yards, or at least halls paved with marble, with such excellence of workmanship as no jointing to be discoverable except from diversity of colour; and around their courts frequently exist covered colonnades. Floors of marquetry, superbly carved chimney-pieces, curious rich plastering, and carved doors and window shutters formed some of their most prominent features. Most of these houses were built by the rich merchants of London between the early parts respectively of the reigns of Charles II. and George II.; after then, house architecture grew more formal, and exhibiting less invention, it gradually lost its carvings. The doorways and windows were generally mere copies from one and the same source, and becoming, as it was termed, more regular, they ceased to be so interesting. Perhaps more than half this description of fine dwellings have ceased to be occupied by the class that built them, and are now occupied, at moderated rents, as schools and private lunatic asylums. All the outskirts and villages of London, in fact all the towns of England, contain many such houses, and they are to be found in all the places where fine doorways are to be met with; they generally had lofty apartments and an unnecessary abundance of window-shutters; not unfrequently one superb staircase of oak or mahogany; and where they were grouped architecturally with their office-buildings, often presented a splendid appearance. This class of mansions has given way to the modern plain villa, with its roof decorated with zinc guttering, and its chimneys

with zinc tubes. Waltham-stow, Enfield, Camberwell, and Greenwich contain fine specimens. The magnificent pride of the iron-work, wrought and beaten into the forms of leaves, flowers, and armorial charges and cyphers, in the gates leading up to these mansions is incomparable; in fact, the collection of the patterns of such ancient iron-work would be a good undertaking. Where such mansions still remain, we think they should be carefully upheld, and if any slight alterations should be required to suit them to modern ideas of comfort, such might be effected without direct mutilation. But we think something like this description of building ought to be restored, the principal component materials of which might be of white brick, stone, and red brick; those unaccustomed to the endeavour, know not what can be produced in brickwork alone.

b.

## ELECTION OF SURVEYOR TO THE DISTRICT OF ROTHERHITHE AND HATCHAM.

(December 16, 1844.)

	No. of Votes.
Elected—George Allen .....	27
Henry Clutton .....	16

## THE LATE ACCIDENTS AT OLDHAM AND NORTHCLEACH.

THE Queen has been pleased to appoint Sir Henry Thomas De la Beche, Knt., and Thomas Cubitt, Esq., to be her Majesty's Commissioners for inquiring into the causes of the falling of a cotton mill, at Oldham, and as to the failure of part of the prison at Northleach.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE second ordinary general meeting of the season was held on Monday evening last, Mr. Papworth in the chair. Several valuable donations were announced to have been received, and were laid on the table. James Walker, Esq., F.R.S., was elected an honorary member of the institute, and Mr. John Whitehead, jun., of Maidstone, was elected an associate.

A model and drawings were exhibited illustrative of the removal of the lighthouse at Sunderland, by Mr. Murray; and an abstract of a paper that had been presented to the Institution of Civil Engineers on the subject was read by one of the honorary secretaries. This extraordinary work was undertaken in consequence of the necessity that arose for lengthening the pier. A wooden cradle was fixed underneath the building, which weighs three hundred and thirty tons, and it was then moved on a temporary wooden railway a distance of seven hundred and seventy feet. The work was the more difficult in consequence of an angle round which the lighthouse had to be moved, and it had to be elevated nearly two feet above the level it previously occupied. The far greater part of the distance was accomplished in thirteen hours, after all the preparations had been completed. The lighthouse did not deviate in the least from the perpendicular during the removal, and the gas lights were kept burning all the time. The thanks of the meeting were voted to Charles Manby, Esq., secretary to the Institution of Civil Engineers, for communicating the abstract, and sending the models and drawings.

A very interesting paper, describing some remarkable tombs in the Valley of Jehoshaphat, near Jerusalem, was read by Mr. J. J. Scoles. The tombs more particularly noticed were the pillar of Absalom and the tomb of Zechariah. The latter is cut entirely out of the solid rock. It consists of a square base, decorated with Ionic columns, and has a pyramid on the top. The whole mass is supposed to be solid; it is the height of the surrounding rock from which it has been excavated, and is separated from it by a space of ten feet. The pillar of Absalom is near to the tomb, and is also partially cut out of the rock, but on the solid square base there is erected a conical top, the interior of which is hollow. Near to these ancient monuments is the cemetery within which the apostles are supposed to have retired during Christ's agony on the mount. Absalom's pillar and Zechariah's tomb have

given rise to much speculation respecting the periods of their erection. Some travellers have ascribed them to the periods in which the individuals whose names they bear lived, but Mr. Scoles is of opinion that they are of much more recent dates, and from the mixed styles of architecture they exhibit, he conceives them to have been constructed by the Romans about the time of Augustus: being situated in the deep valley of Jehoshaphat, that they have escaped destruction during the many sieges Jerusalem has endured. At the entrance of the cemetery there are four columns, and the interior consists of many chambers excavated in the rock. The paper was received with much applause, and the thanks of the meeting were cordially given to Mr. Scoles for his description of these interesting monuments. The meeting then adjourned till the 13th of January.

## ROYAL ACADEMY OF ARTS.

On Tuesday, the 10th inst., being the seventy-sixth anniversary of the foundation of the Royal Academy of Arts, a general assembly of the Academicians was held at their apartments in Trafalgar-square, when the following among numerous other premiums were awarded:—

To Mr. George Low, for the best drawings of the Church of St. Mary, Woolnoth, the silver medal.

To Mr. William Wood Deane, for the next best drawings of the Church of St. Mary, Woolnoth, the silver medal.

Sir M. A. Shee, the President, complimented the students generally, on the ability and diligence displayed; such indeed was the merit of the copies in painting and in architectural drawing, that two medals instead of one had been awarded in each class; but he regretted to add that in the other classes a proper zeal had not been manifested.

## BUILDING SOCIETIES.

### LETTER III.

BY WILLOUGHBY WILTON.

To begin, where we left off in our last letter, with the "First Annual Report of the London and Westminster Provident Association and Savings' Fund," in order not to mislead our readers, or be misled by DATA, we shall again repeat the synopsis of this report, on which it is our purpose to discourse.

"The number of members who have joined the association since its establishment amounts to 315, amongst whom, 820½ shares have been subscribed for; from the above, 32 shares have become forfeited, and 56½ shares have been transferred, by which the number of members have been reduced by 43, leaving the association at present to consist of 272 members, holding 788½ shares."

From this it appears that some members have forfeited their shares; or, in other words, whatever moneys they might have paid thereon. These unfortunate speculators would not have lost their money had it been deposited in a Savings' Bank: but on the contrary would have received it back with interest after the rate of more than 3½ per cent. per annum: for at the time this society published its report, the interest on deposits in the Savings' Banks had not been reduced by the Legislature. However, such is the force of circumstances upon improvident or misdirected members of your building societies.

Again, "56½ shares have been transferred," which shows either the inability of the members holding them to continue their subscriptions, or an acquisition of good sense which had dictated a wiser course of proceeding, and some more profitable and safer channel of investment. Perhaps they had learned to follow the precept, "Thou shalt not follow a multitude to do evil." Exodus xxiii., 2.

There lies no mean between these hypothetical inferences: either may be right, both will scarcely be wrong.

But, still, with a reduction of 43 members, the association consisted of 272 members holding 788½ shares, or 2,880 shares a piece at the time the report was promulgated.

"Up to the present time 102½ shares have been advanced to members upon mortgage,



the average bonus for such advance being 63*l.* 10*s.* 10*d.* per share, and the amount of capital paid off 12,270*l.*—in addition to which there are 20½ shares agreed to be advanced, which will secure a bonus of 1,282*l.* 15*s.*; the number of shares, therefore, at present to be provided for, is thus reduced to 686½. As this number annually decreases, so the association will approach nearer to its dissolution; the directors therefore urge the members to assist them in obtaining this desired end as soon as possible, and with that view, they strongly recommend those who are desirous of purchasing their own residences, or other property for investment, to have their shares advanced to them during the early stages of the association."

This paragraph merits serious consideration, as from the very beginning of the institution, "102½ shares have been advanced to members upon mortgage, the average bonus for each advance being 63*l.* 10*s.* 10*d.* per share, and the amount of capital paid off 12,270*l.*"

The reader will observe here the slow progress made by the directors in getting poor men to take up their shares; for while the "subscribing" for shares of 120*l.* each, gives a "holding" to members, provided 10*s.* a month be paid, the cautious,

"Holding out to tire the others down,"

become gainers in these 102½ shares to the extraordinary amount of 6,446*l.*, which is prudently added to 5,824*l.*, which the man, ambitious of house-property, further contributes to make the amount of capital paid off 12,270*l.*; that is to say, 102½ multiplied by 120*l.* In other language, the parties who have taken up these 102½ shares upon mortgage, have covenanted to discharge a debt of 12,270*l.*, by monthly instalments, which the directors improve at compound interest, and which, after all the explanations of these offered in our second letter, we shall not again enter upon. A debt, more than one-half of which they have wildly sacrificed for the empty boast of being "owners of property," which, after all is not yet theirs, and in this "untoward" age may never be theirs, nor their children's either, as we have pointed out in our former letters.

We desire we may not be misunderstood, as if we reasoned to dissuade men from labouring with all their might to acquire wealth. We beseech all men to work hard, to live economically, to provide for their families, to gain a good name in life, and bequeath an honourable reputation to their posterity. We entreat the poor man—no, he is not poor—he is rich in independent power who is the man we mean—the mechanic, the artisan, the day labourer, the man who is some hours aloft before December's sun gilds the morn, and who toils for hours after his glorious beams have tinged the western seas to salute the New World with another day—this is the man whom we endeavour to persuade that he can gain nothing from becoming the associate of the wealthier members of these building societies. Let him hear our oracle—the "Report" itself of "The London and Westminster Provident Association and Savings' Fund."

"The success that has attended the association up to the present time, arising from the number of shares that have been taken up, induced the directors, at their last meeting, to fix a proportionate premium upon all new shares subscribed for after that period; so that members now joining the association, or requiring an additional number of shares, will have to pay an entrance-fee of 7*l.* per share, excepting those parties who take up their shares, to whom an entrance-fee of only 1*l.* 10*s.* per share will be charged."

From this let him "read, mark, learn, and inwardly digest" what we say. But in making this honest and conscientious appeal to aspirants after house-property, we have well nigh forgotten what the previous quotation from the report saith:—"In addition to which there are 20½ shares agreed to be advanced, which will secure a bonus of 1,282*l.* 15*s.*, shewing that these shares yielded each a bonus of 63*l.* 11*s.* 6*d.* nearly." Here again we trace the monomania of house-property. The parties who have been indulged covenant to pay 2,460*l.* for 20½ shares of 120*l.*, of which 1,282*l.* 15*s.* is a bonus, and

1,177*l.* 5*s.* may be considered the ashes of the holocaust!

What is the meaning of these next words, "therefore, at present, the number of shares to be provided for is thus reduced to 686½?" Is it meant that this huge mass is to be advanced to members upon mortgage, at the awful sacrifice of 63*l.* or 62*l.* per share? We pause for a reply. As there is no fixed number by which the series is to decrease till the last share shall vanish, no man can tell when "the association will approach nearer to its dissolution," though it requires no conjurer to divine how "its dissolution" may be brought about. The directors had need, therefore, to urge the members to assist them in obtaining this desired end as soon as possible, lest "when that stern reaper, Time, shall put in his scythe, and mow them down."

The last quotation we made from the report is very rich. 102½ shares have been taken up, and elated with this success, the directors require "an entrance fee of 7*l.* per share from members now joining the association." This is rather a *bull*—nay, it is one—for the man desirous of "holding" a share is a *member* before he joins the association, and he will enjoy the felicity of companionship on agreeing to pay 127*l.* for a share; or, if he takes up a share, of giving the monied men 64*l.* 10*s.* 10*d.* of a bonus. Truly this is playing at rich and poor with a vengeance.

But to return to the calculation; let us suppose a man takes four shares of 120*l.* each, then the amount stands thus:—

$$\begin{array}{r} £120 \times 4 = £480 \text{ Amount of shares.} \\ 63 \times 4 = 252 \text{ Do. of bonus.} \end{array}$$

Sum received by the borrower ..... £228

to be paid off in ten years at 4 per cent. per annum.

If we take the man's loss of time, the contingency of fines and office expenses, we may consider the society gets full 5 per cent. in the improvement of its capital. The amount is simply 22*l.* 16*s.*, to be repaid yearly by monthly instalments; and also 9*l.* 2*s.* 6*d.* of interest on the sum of 228*l.* borrowed. This makes a monthly contribution

$$\begin{array}{r} \text{Borrowed money paid off} \dots \dots \dots £1 \ 18 \ 0 \\ \text{Interest on sum borrowed} \dots \dots \dots 0 \ 15 \ 6 \\ \hline 2 \ 13 \ 6 \end{array}$$

or annually the sum of 31*l.* 18*s.* 6*d.* The man pays for 120 months 2*l.* 13*s.* 6*d.*, which the directors improve at 5 per cent. compound interest, and make 404*l.* 14*s.* 4*d.* out of it, thus gaining 176*l.* 14*s.* 4*d.* out of the original sum of 228*l.*

But take 102½ shares at 120*l.* = 12,270*l.*, from which deduct bonus = 6,446*l.*, and divide these 5,824*l.* by 120, the number of months within which this sum must be repaid, adding thereto the annual interest of 4*l.* per cent., amounting to 232*l.* 19*s.* 5*d.*, or in round numbers 233*l.*; then we have a monthly annuity for 10 years of 50*l.* 9*s.* 6*d.*, or of 605*l.* 14*s.* a year.

This sum improved at compound interest as a monthly annuity of 50*l.* 9*s.* 6*d.* would in ten years amount to the sum of 7,679*l.* 14*s.* 6*d.*; to this add the bonus, 6,446*l.*, without improvement, and we have 14,125*l.* But improve the bonus at 4 per cent. only, and we have the sum of 9,541*l.* 13*s.* which, added to the improved monthly annuity, gives the sum of 17,221*l.* 7*s.* 8*d.*, being about a gain of 11,397*l.* on 102½ shares.

We have taken no account of the ground-rent and repairs, which must be paid yearly; but take these on a house purchased for 228*l.* at 5*l.* per annum, and the poor man would have to pay 36*l.* 18*s.* 5*d.* for 10 years; that is to say 3*l.* 1*s.* 10*d.* monthly; which in 120 months the directors would improve at 5 per cent. compound interest and make 458*l.*, thus gaining the sum of 230*l.* on a transaction which originally cost them 228*l.* as the sum lent to the poor man.

Sufficient is here shewn to satisfy any unprejudiced mind that the legislature has been grossly misled in sanctioning the proceedings of these building societies.

The ancient Mexican physicians had a peculiar mode of curing diseases: they had conical hovels built, in which they sweated their patients to exude the virus by the pores of the

skin. Few people among us voluntarily take physic; probably few of the Mexicans crept into the sweating hovel of the doctors out of sheer amateurism; and *mutatis mutandis*, it doth appear that few of the members holding shares in the "London and Westminster Provident Association and Savings' Fund" covet the sweating chambers of the capitalists, or pretended capitalists, in this little stock exchange jobbing concern. God grant, men say to him with the Psalmist, "my times are in thy hands," and thus enjoying a healthier tone of mind, they may trust rather to the good will of Heaven, the resources of honourable industry, and the wise security of other modes of investing their savings, than in an association wherein it is manifest that the benefits lay all on one side.

With these remarks we close our present letter; but shall add as a postscript a note that has been sent to the editor on our first letter. Had we worked out the problem on Mr. Short's data, the unfortunate speculator would have been in a much worse predicament than the society actually blazoned him in.

"Sir,—Mr. Wilton, in his first letter on the building societies, forms his calculation on the supposition that the borrowers can obtain 7*l.* on each share, which is an error in practice. The shares being put up to competition, they are frequently sold for a much less sum, and perhaps the average would be more correctly stated at 5*l.*, so that the profits of the capitalists will be considerably more than shewn in his statement. If 500*l.* is borrowed on this basis of the building societies, the calculation will be as follows:—9 shares at 5*l.* per share will produce 45*l.*, nearly the sum required, for which will be paid—

"9 shares, at 10*s.* per share per month ..... £4 10 0  
Interest 4*s.* per share ditto ..... 1 16 0

Total monthly payment ..... 6 6 0  
Multiplied by ..... 12

Making yearly payment to society ..... 75 12 0  
10

Total amount to be paid to the society for 495*l.* ..... £756 0 0

"If we borrow 500*l.* of a private individual, the calculation will amount to the following:—

500*l.* at 5*l.* per cent. per annum interest is ..... £25 0 0 per annum.  
And to pay off the capital in ten years ..... £50 0 0 ditto.

Multiplied by 10 years ..... 75 0 0  
10

A trifle in favour of this plan ..... £750 0 0

"And as the building societies will not close their accounts until each share has produced the 120*l.*, instead of ten it may be twelve or thirteen years, which of course will add much to the borrower's expenses, as they would have to continue their subscriptions and interest up to that time.

"With regard to the plan of borrowing of a private individual, there is no risk, besides the advantages of paying 5*l.* per quarter interest, requiring only six attendances instead of twelve, no fines; also the 50*l.* per annum to be saved for paying the principal, might be employed beneficially, or at least put out, with some of the banking companies, as a permanent deposit, and produce 2 per cent., which would pay the expenses of the mortgage deeds.

"Your most obedient servant,  
"W. J. SHORT.

2, Spring-terrace, Lambeth.

We must observe on Mr. Short's letter, that if the man pays 75*l.* 12*s.* a year by monthly instalments of 6*l.* 6*s.*, he will, as the directors improve his contributions at 5 per cent. per annum, by the conversion monthly of his mites into capital, have contributed in ten years the sum of 958*l.* 10*s.* 10*d.*, being 202*l.* 10*s.* 10*d.* more than Mr. Short's figures come to, as to the transaction between the borrower of 500*l.* from this building society and its wary directors.

The transaction as between the private individual and the borrower is simply an annuity of 75*l.*, which would at 5 per cent.



amount to 943l. 6s. 9d., being improved at compound interest.

But we have done for the present with this London and Westminster Building Society. We shall review its operations more in detail in conjunction with some others which greatly resemble the small loan societies, of which we shall have occasion to say something to our readers, among the class of borrowers; and we trust our remarks shall work on their consciences, as regards their families, like a well-digested homily.

## THE WINDOW-TAX, OR DUTIES ON LIGHT AND VENTILATION.

(Continued from page 615.)

The author of a philosophical work of somewhat rare merit,\* in dwelling upon the influence of light upon animal formations, remarks that—

"Some poor people having taken up their abode in the cells under the fortifications of Lisle, the proportion of defective infants produced by them became so great, that it was deemed necessary to issue an order commanding these cells to be shut up."

Here in England we think it no evil to turn living rooms above ground into dark cells, by our fiscal enactments. In the crowded lodging-houses of the poor there is not a dark closet that does not contain a bed; and there would be no dark closets, where they adjoin an external wall, but for the window-duties.

It is much to be regretted that both the public and the government, in the days of the Reform Ministry, were so ill-informed upon the subject discussed, that when Lord Althorp was Chancellor of the Exchequer, the repeal of the house-tax was preferred to that of the window-duties. The repeal of both taxes, however, was called for; and the government of the day, not being wholly insensible to the injurious operation of the latter, a pledge was given to remove the evils complained of in the case of all houses then built, and a bill (the 4th & 5th of Wm. IV. c. 54) was actually introduced and passed to carry out the object.

This pledge has been broken, and the clear unmistakable intention of Lord Althorp's act has been deliberately evaded for the sake of revenue. A brief reference to the discussions which preceded the Act, and its subsequent history, will show that we do not make this statement without foundation.

"Thursday, July 17, 1834.

"Mr. Hume.—I hope there is no occasion to remind the noble lord the Chancellor of the Exchequer of the pledge he gave us some time ago relative to the tax on windows. I am quite sure that the noble lord is desirous of rendering it as little oppressive as possible, and that if he cannot reduce its amount now, he will endeavour to do so next session. If the noble lord would limit the tax to its present amount, and allow every man who has paid the window-rate for an entire year to continue to pay the same composition and to open additional windows, it would be a very great relief. It is not at all uncommon in old-fashioned houses which contain a greater number of windows than modern buildings, to see many windows blocked up for the purpose of avoiding the tax. If the noble lord would redeem his pledge, he would confer a very great boon upon those parties."†

In reply, Lord Althorp stated that he did not remember having given any distinct pledge on the subject, but that he should be prepared to discuss the question when the Bill was in committee.

The House resolved itself into committee the following week, Wednesday, July 30, when Lord Althorp rose and said—

"I have now to beg leave to bring up a clause which was suggested to me by the hon. member for Oxford, enabling persons to open fresh windows in houses at present existing without any additional charge. As I apprehend there will be no objection to the clause, it will be unnecessary for me to trouble the committee with any observations upon it. I will, therefore, only say that it cannot occasion any loss to the revenue; its only effect is to prevent an increase of the revenue in the case of houses already existing."‡

We direct the attention of the reader to the words in italics, because one means by which the Commissioners of Stamps and Taxes have evaded the Act has been by construing it to refer not to houses then existing, but to then existing occupiers. So that in every case where an occupier of 1835 has opened additional windows under the 4th & 5th Wm. 4. c. 54, and then removed to another residence, the commissioners have caused the new occupier to be surcharged for all the additional windows; and this Mr. Goulburn (who had not referred to the precise terms of Lord Althorp's speech, explained, to the deputation of May last, was both the meaning of the law and its design.

"Lord Althorp's words were, 'its effect will be to prevent an increase of the revenue in the case of houses already existing.' What effect upon the revenue has really been produced?"

Produce of the window-duties for the years ending

April 5, 1835 .....	£	s.	d.
April 5, 1842 .....	1,177,656	8	9
	1,613,774	1	0

A large portion of this increase is of course occasioned by the new houses erected since 1835, but the full amount of the difference is not to be thus explained. The increased produce of the window-duties, it will be seen, is in the proportion of nearly two-fifths within seven years; but the population returns shew that the increased number of houses within a period of ten years, including the fourth-rate tenements which pay no window-duty, is only in the proportion of less than one-fifth,\* leaving a sum of at least 200,000l. per annum to be accounted for by the rigid assessments of late enforced; assessments more severe, vexatious, and exacting than have ever been known since the window-duties were placed upon the statute-book.†

Prior to 1835 the duty of assessment had been somewhat negligently performed, and perhaps there were few persons in the country charged to the full amount of window-duty for which they were liable. This, be it observed, was not the fault of the public, if fault it were, but of the government of the day. The occupiers of houses do not assess themselves to the window-duty; no returns are left with them to be filled up with the number of chargeable windows, as in the case of other branches of the assessed taxes. Indeed, not one person in a thousand is at this moment aware for what number of windows he is really liable, shop-windows, dairy-windows, and some others being exempt; and there being more than a dozen Acts relating to the subject.‡ The assessor is a government officer, whose duty it is to count the windows of every house, and charge accordingly.

It is important to note this fact, to estimate correctly the value of state morality when it gets entangled in a question of finance.

By accident, or more probably by the sinister design of some underling,—a design to which Lord Althorp could not have been a party,—the words *duly assessed* were introduced into the 4th & 5th William IV., chap. 54. Clause 7 provides that additional windows may be opened free of duty "by every person who is or shall be *duly assessed* for the year ending 5th of April, 1835." Without suspecting the interpretation that would be put upon these words, many thousand persons in all parts of the country set about improving the comfort and healthfulness of their habitations by opening additional windows; and what then did the government? A time had come when the treasury was empty; ministers were perplexed about ways and means; "the prince of the power of the air" flew from Somerset House to Downing-street, and whispered into their ears this advice:—"A vast number of silly people have put themselves in your power by a blind credulity in the faith of an Act of Parliament. None of these persons were *duly assessed* in 1835; the mistake was your own, but you may profit by it; take their money."

The advice was followed.

In the history of modern governments we

\* Inhabited houses in England and Wales:—  
1831. 2,481,344. 1841. 2,943,020.  
† One contrivance is to get rid of the exemption of farm-houses where a farmer takes in a lodger. The farm-house in such cases is assessed as a lodging-house.  
‡ The occupier is only bound to give notice of the opening of new windows.

have never met with a parallel case to this gross violation of the spirit of an unrepented act of legislation. The people of Pennsylvania have renounced repudiation; shame at last has reached them; but British statesmen have adopted the principle and yet defend it.

Every person, without a single exception, who opened additional windows upon the faith of Lord Althorp's Act, was surcharged for the increased number, some on one pretence, some on another; this being a very common ground of surcharge, that former window openings had been stopped up with lath and plaster, and not with brick, as required by the law.\* The case was brought before the judges in innumerable shapes, but in vain. The judges ruled in favour of the injustice, deciding that whatever might be a fair and reasonable excuse for a wrong assessment, the words of the Act "*duly assessed*" were imperative.

The Act was loosely and carelessly worded; but what is said in private life of the honour of a tradesman who, in making out a bill of charges, allows himself to take advantage of clerical errors in his own favour, instead of hastening to correct them?

That the errors in this case have not been rectified, and public faith kept, is not, of course, the fault of Lord Althorp, he has retired from public life; but the present Earl Spencer is fully aware that no man is at liberty entirely to renounce responsibilities he has once assumed. Earl Spencer pledged the faith of government on the window-duties, and to Earl Spencer the public may not unreasonably look for some explanation of the sense in which that pledge was given; the less unreasonably from the fact that whatever blame the public or the present ministry may seek to throw upon the Chairman of Stamps and Taxes, as a wrong interpreter of the Act, or an unsafe adviser, the appointment of that gentleman originated with his lordship, and not with any member of the cabinet of Sir Robert Peel.

The revenue derived from the window-duties we do not desire to see wholly abolished. The burden falls upon the owners of house property, and would be borne without a murmur if imposed in a less objectionable form. To remedy the late injustice committed, we would reduce assessments to the standard of 1835, and collect them (as was proposed) in the shape of a modified house-tax, or of the present occupancy tax, which might be increased for the purpose, and which is, in part, but the old house-tax under a new name.

We submit the case as one of grave interest in itself, and as belonging to a large question of sanitary improvement which we had proposed to discuss, but the apparent hopelessness of the task has induced us, for the present, to relinquish its further prosecution. Of what avail has been all the recent agitation upon the subject of cemeteries, drainage, abundant supplies of water, or upon a really efficient plan of medical reform? A few laborious investigators, to whom posterity will decree statues, have shewn how the annual mortality of the population may be diminished and the physical enjoyment of life increased by the most simple and economical arrangements, and they address a government beset with the ignorant, the doubting, and the mercenary, who exclaim at every step of contemplated progress, "There is a lion in the path!" and who see no moral turpitude in a measure which, from mere indolence or incapacity, robs their fellow-creatures of the pure air of heaven, and the light of the sun.

ARTIFICIAL MARBLE.—A large factory is about to be established in Berlin for manufacturing from plaster of Paris and solutions of alum, a species of composition said to be equal to the finest marble.

\* One of these surcharge papers is now lying before us, dated "28th October, 1841," and its printed form, as issued from Somerset House, will prove the fact to which we have adverted,—that the public have nothing to do with their own assessment to the window-duties, and practically, therefore, could but rarely be acquainted with the fact, whether they were or were not "*duly assessed*." The printed words over the money column are these:—

Amount of Charge, being the Sum you would have been liable to (for the Windows hereby charged) if the Assessor had <i>duly assessed</i> you.		
£	s.	d.

\* "Vestiges of the Natural History of Creation," p. 229.  
† "Mirror of Parliament," p. 275; of vol. for 1834.  
‡ "Mirror of Parliament," p. 3, 116.



## TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLLSON.

(Continued from p. 616.)

198. **BAOBABS.**—These trees have been known to acquire a perimetre of 435 feet, from which it is inferred that they must live many thousand years. A certain example in Africa was, though erroneously, considered by Humboldt as the oldest organic monument of our planet. Adanson, a distinguished botanist, made a deep cut in the side of its trunk, from which, on counting the concentric rings, he ascertained the thickness which the tree had acquired in three centuries; and, being already acquainted with the growth of young trees, he was thus enabled to make out an approximate to its age, which was 5,150 years. The enormous dimensions of the trunk are stated as bearing a striking disproportion to the other parts; and examples are alluded to which, with a trunk 90 feet in circumference, were only 12 feet in height.

199. A still larger example than the above, namely, 34 feet in diameter, was seen by Mr. Golberry, in the valley of the two Gagnacks, in Africa.

200. Greuv, in the year 1400, cut his name on two baobabs; and Petiver did the same thing 149 years afterwards. In 1749 Adanson saw these trees, and in the period which had elapsed since Petiver saw them—200 years—they had increased 7 feet in circumference.

201. **CYPRESSSES.**—At Chapultepec, in Mexico, there is one measuring 117 feet 10 inches round, which is spoken of as composed of a single trunk: this the younger Decandolle considers even older than the baobab of Adanson.

202. At St. Maria del Tuli, in the province of Oaxaca, there is one 118 feet in circumference, but which, on a narrow examination, proves to consist of three united trunks.

203. At Atlexo there is one 76 feet in girth. 204. In Persia there was one, mentioned by Strabo, the girth of which was as much as five men could span: that writer guessed it to be 2500 years old.

205. It is stated by Hunter, that in 1776 there existed, in the garden of the palace of Grenada, cypresses which were celebrated in the time of the Moorish kings, and were named *Cypresses de la Regina Sultana*, from a sultana who was seen sitting under them with a lover, who was one of the Abencerrages: their supposed age is between 800 and 900 years.

206. Michaux, a Frenchman, in his splendid work on the forest trees of the United States, states the size of the largest stocks to be 120 feet high, and from 25 to 40 feet in circumference above the conical base, which at the surface of the earth is always three or four times as large as the continued diameter of the trunk.

207. The largest now known is near the Lago Maggiore.

208. **LIMES.**—Decandolle mentions a lime at Trons, in the Grisons, which had been already celebrated in 1424, and measured, in 1798, 51 feet in circumference: this tree he calculated to be 583 years old.

209. That at the Chateau of Chaillé, near Melles, in the department of the Deux Sèvres, and which, in 1804, measured 15 metres round (about 50 feet). Decandolle supposed to be then 538 years old.

210. That author notices one at Depeham, near Norwich, which, in 1664, was 8½ yards in circumference; but it seems probable that in this instance he is in error, as Sir Thomas Browne mentions a lime at Depeham 48 feet round at a foot and a half from the ground, and 90 feet in height, and which most likely was the same tree.

211. The same author also informs us that "that which was planted at Fribourg, in 1476, on occasion of the battle of Morat, has now a diameter of 134 feet."

212. Another example, and which is also mentioned by Decandolle, is that at Henstadt, in Wurtemberg, which in 1550 was so large as to have need of props, and in 1664 measured 37 feet 4 inches in circumference.

213. The largest now known in England grows in Moor Park, Heris.

214. From a list in No. 76 of THE BUILDER, it would appear that the lime has been known in one instance to reach the age of 1,147 years.

215. **YEW.**—That at Hedsor, Bucks, mea-

sures above 27 feet in diameter; and, according to a ratio of growth deduced by Decandolle, from careful observation of the annual deposits of yew trees, must have attained the astonishing age of 3,240 years. It is in full health, surpassing all others at once in antiquity and magnitude.

216. That in Brabourne Churchyard, Kent, has attained the age of 3,000 years.

217. That at Fortingal, Perthshire, mentioned by Pennant, in 1770 was 2,588 lines in diameter, and would therefore be from 25 to 26 centuries old.

218. Those of Crowhurst Churchyard, Surrey, the same probably which are mentioned by Evelyn as measuring 1,287 lines in diameter, must, according to the same authority, be 14½ centuries old.

219. Those of Fountain's Abbey, near Ripon, Yorkshire, were well known as early as 1155. Pennant says they were, in 1770, 1,214 lines in diameter (= 10 feet 11 inches, nearly), and which, according to Decandolle's method of computation, makes their age at that time to have been above 12 centuries.

220. That in Gresford Churchyard, Wales, is upwards of 31 feet in circumference, and is probably not surpassed in the principality.

221. That in the Churchyard of Dithen, a parish in the parliu of the New Forest, Hants, and the larger portion of which was uprooted and laid prostrate during the severe gale of Tuesday, the 30th of November, 1836, is stated by Gilpin, in his "Forest Scenery," in 1794 to be in the decline; its trunk hollow, supporting three vast stems, and measuring below them about 30 feet in circumference. Long before its destruction a fissure had taken place, dividing the trunk into two parts; and of the ivy which had grown up against the interior portion of the trunk, one stem measured at its base 2 feet in circumference, and was found when the tree fell to have upheld it for many years, the larger roots being quite decayed.

222. White, in his "History of Selborne," mentions one in the churchyard measuring 23 feet in girth.

223. **BEECHES.**—In Windsor-park, one near Sawyer's Lodge measured, at 6 feet from the ground, 36 feet in circumference.

224. Near Oxenford Castle, Edinburghshire, a beech was measured on the 6th of June, 1763, and found to girth 19½ feet at 3 feet from the ground. It then was in progress of decay.

225. At Ormiston Hall, Haddingtonshire, a beech was measured on the 10th of May, 1762, and found to be 18 feet 10 inches in girth. This tree existed of late years, and was entire when blown down in a storm. The trunk was artificially scooped out into a shelter-house, which probably hastened its downfall.

226. At Newbottle Abbey, the seat of the Marquis of Lothian, a few miles south of Edinburgh, Professor Walker measured a beech in 1789 which he was of opinion must have been planted between 1540 and 1560; its trunk measured 17 feet in circumference at the thickest part, and the span of the branches was 89 feet; it contained 1000 feet of measurable timber. This tree was blown down shortly before 1809.

227. At Taymouth, one similar to the above, and apparently coeval with it, was blown down when it had attained a girth exceeding 16 feet.

228. The following large beeches in Cobham-park, Kent, were measured in girth at 3 feet from their roots:—

31 feet 8 inches.	26 feet 9 inches.
30 " 3 "	25 " 4 "
30 " 2 "	25 " 2 "
29 " 8 "	15 " 4 "

229. Under Old Savoy Palace, London, piles of beech were found in a state of perfect soundness. After exposure to air, however, a few weeks under cover, a coating of fungus had spread over their surface.

230. **VINES.**—In Windsor Great Park, in the gardens attached to Cumberland Lodge, there is one that fills a house 235 feet long, and the produce of which is prodigious.

231. The celebrated Hamburg vine at Hampton Court has existed for upwards of a century, and covers a space of 116 square yards; it is the exclusive property of the Queen, and its produce is invariably sent to the palace. It has been known one year to produce 2,200 bunches, of nearly 1 lb. each, realizing almost a ton weight.

232. A writer in the "North American Review" mentions wild grape-vines of enormous size. He says that whilst in the eastern states, and, he might have added, in Europe, "it rarely grows larger than a stout walking-stick. In our western states it sometimes surpasses in diameter the body of a full-grown man. This fact we have verified by actual measurement."

233. **THORNS.**—In Dalham-park, Suffolk, there is one remarkable for its great size and antiquity, as well as the manner in which it grows—parted into separate stems.

234. Those in Bushy-park, from which it has been thought to have probably derived its name, are generally supposed to have been in existence at the time of Oliver Cromwell.

235. At Jardine Hall, Dumfriesshire, there are two hawthorns upwards of 130 years old.

236. The following were measured in their girth at 3 feet from the roots:—

9 feet 0 inches.	7 feet 8½ inches.
7 " 9 "	7 " 7 "

## A GLANCE AT THE INTERIOR OF THE CHURCHES IN THE DEANERY OF SPARHAM, IN NORFOLK.

No. IX.

## WITH NOTICES OF THEIR ACTUAL CONDITION.

"Rebuild the spire! did you say, Sir?—the spire, Sir? Why, the thing's impossible: the art has been lost for centuries."

Pauget's St. Antholin's

**Twyford.**—This church appears embedded in the hazy glen—or heek, as the local phrase is—through which trickles one of the earlier affluents of the Wensum. A wicket near the north-east angle of the chancel affords picturesque access to the venerable pile from the lawn of a fine mansion immediately adjoining. The edifice comprises a nave and a chancel, but without external indication of this; also, a brick-built porch, with diagonal buttresses, over which has been raised a low steeple, crowned by an open bell-cott of wood, where hangs a single bell. The tower of this church—portions of which warrant us in assigning to it a Norman origin—stood at the west end, where a doorway into it may yet be traced. The primitive roof has wholly disappeared, giving place to a meagre frame-work of tie-beams, king-posts, and struts, unrelieved by the least attempt at ecclesiastical character: it is covered throughout with pantiles.

The pointed doorway within the porch has its archivolt set under a dripstone, or wood moulding, springing from sculptured heads, the hollow being enriched with little flowers. Opposite the door we find a square Norman font, supported on a round central stem without base or capital, which features, however, occur on the four corner shafts encircling it. The bowl is lined with lead and has a drain—the cover a wretched affair indeed.

The windows are more than commonly varied in style. Adjoining the porch in the south wall occurs a single-light window, widely splayed on both sides. Two others nearly similar to this are met with—one in the north wall at the extremity of the nave by the pulpit seems to have afforded light into the roof-loft; the other is at a much lower elevation in the south-west corner of the chancel, and were the *peccata questio* of lychnoscopes more fully established, we should have no doubt as to the object supplied by this not uncommon feature. A pointed window in the north wall of the nave has three cinquefoiled lights below, its upper portion being wrought in tracery that approaches the flamboyant style. The east window is a lancet-shaped triplet with perforated spandrels, the whole comprised under an equilateral arch: we need hardly refer to the symbolism of the Trinity here. A double lancet window occurs in the nave, and on the south wall opposite are two perpendicular ones, each of three "days," and hooded by segmental arches within.

We have spoken of a lychnoscope: nearly fronting it in the north wall of the chancel is found a wide niche under an obtuse Tudor arch, the jambs and soffits simply chamfered at their edges; it occupies a low position immediately under a square-headed window of the character already described. This niche has every indication of having been placed there to serve the purpose of an Easter or Holy Sepulchre; it may, without affecting this view, be at the same time the site of the



founder's interment. We were pleased to find a portion of one of the mullions restored in stone, but heartily wish that the sordid brick-work in the crockets had been at the same time replaced by glazing. The heads are inserted in projecting weather-mouldings, with plain horizontal returns.

With the exception of a spacious oaken pew lined with moreen, and appropriated, we suppose, to the occupants of Twyford Hall, the features of this church are less indicative than ordinary of

"The scandal  
That desecrates our age,  
An evil great as ever  
Iconoclastic rage."

The open seats, which, together with other portions of the furniture, have elm for their material, range longitudinally in the manner of stalls in a cathedral choir. They are without ornament of any kind; but the back seat, which is somewhat elevated above the others, has a wainscoting of arabesque panels, the remains of a former arrangement. On the north side of a chancel some features of a higher order constitute all that is now left of its screen. A polygonal pulpit, with sounding-board over it, and reading-desk beneath, occupies the north-east angle of the nave, which is supplied with a coved ceiling, the chancel being open to the ridge.

The furniture of this last somewhat exceeds the average condition. The altar-table, a slender fabric, the rails of more substantial form, and a plain church chest, have been recently painted and groined; the former is supplied with a handsome covering of dark blue cloth, trimmed with black fringe. It is devoid of a dossal or altar-screen; but the decalogue appears on the south wall opposite the pulpit, where a line engraving exhibits Moses, Aaron, and Joshua grouped, with the hallowed tablets in the foreground beneath. The date does not appear, but we read the imprimatur of "John Oreston, at the White Horse, Without Newgate, London." We scarcely need remark that the position is not in accordance with the rule laid down in the 82nd canon.

The pavement is unusually barren of interest; only one brass can now be discovered; its inscription being hidden by the square pew—a shield once under it no longer courts inspection of the genealogist. We were told that several colossal figures on the walls, fresco paintings, have vanished at no distant period beneath the triennial washings of lime, applied with no sparing hand. Would that it were more generally known and felt that "clergymen are in no small degree answerable for the havoc that has been perpetrated by the churchwardens!" A benetura, or holy-water-stoup, thrown into a dark corner as you enter, and the saddle of the ancient cross lying, slighted as if the token were altogether worthless, in an outer angle of the porch, are instances in point which might very creditably have been dispensed with. Twyford Church is dedicated to St. Nicholas, and therefore, if the supposed rule of orientation were strictly adhered to should point 30 degrees south of east.

#### MINERALOGY.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR  
OF NATURAL PHILOSOPHY.

(Continued from p. 617.)

It is in the nature of man to advance in discovery, and every new fact elicited by observation or experiment serves as an additional stimulant to urge him on his way. Our acquired knowledge of the surface of the earth has also brought with it a more extended knowledge of the material of which it is composed, and led to a series of inquiries at once pleasing and instructive to the philosophic observer, and to the community at large. The phenomena of calcareous beds have not been neglected, and it is to the careful examination of those we are indebted for a knowledge of many extinct species, or species analogous to those now existing; and it is not the least singular to find that a vast portion of the British strata on which we tread, and from which our agricultural and mineral riches are derived, is wholly composed of the remains of oceanic animals and vegetables peculiar to tropical seas, and so disposed in their generations

as to display an unbroken sequence of events, extending over many ages, and embracing epochs of years of which man previously could form no conception. Calx, or the earth of oceanic animals, its properties as an earth, its varied forms and combinations, were then more strictly attended to by mineralogists and chemists. Sir Humphrey Davy was the first to discover its relationship to the metals.

Geologists within these few years past, as its vast importance in the economy of nature was forced upon their notice, have made some feeble attempts to account for its disposition and phenomena: thus Mr. Lyall attributed its presence in such vast formations in the Pacific, Southern, and Indian Oceans to submarine springs, not taking into consideration their immensity of breadth, and length, and depth; the circumstance that such springs could not possibly exist; that latitude, and dip, and freedom from disturbing causes marked their origin and increase. His conjecture, that rivers might supply them, is still less tenable, for the Red Sea, rapidly filling up with calcareous deposits and coral formations, has not a single river communicating with it; neither are there any rivers to supply calx for the vast formations in the Pacific; nor could all the rivers in the world administer to the rapid and insatiable requirements of these immense repositories of calx.

On the other hand, it is well known that the ocean waters hold very little lime in solution or suspension, and that the suspended particles in rivers are deposited within the immediate area of action; that the lime-secreting animals become more abundant and much more diversified as they near the surface of the water, light and heat being as essential to the production of lime, as to the production of vegetable earth, both being governed in the sum of their increase by the sum of light and heat and local co-operative causes, and both being influenced in their disposition by moving causes. Many calcareous animals are exclusively confined to particular zones, and can exist only in particular temperatures; others change or modify their form and qualities, diverge into species, decrease in size and density of structure, and become partly or wholly divested of their calcareous coverings.

Our leading chemists and geologists, unable to trace effects to their first causes, contend that the earths are produced by the disintegration and decay of rocks, nay, they go so far as to assert that such is the origin of vegetable earths, which embrace so vast an extent of the surface beds of the earth, and are more particularly abundant in the extensive deltas and plains of the earth. This, however, is reversing the order of nature, for every species of rock known to us, either contains, or wholly consists of, animal remains, or is so mechanically constituted as to exhibit an exact conformity with the varying sedimentary positions now taking place within the ocean waters, lakes, and rivers, or in depressed portions of the earth. It is repugnant to our reasoning powers to travel out of nature in search of primary causes, when those causes are manifest in nature, and open to the observation of all men. Men of science begin their labours of discovery where they should end, and end where they should begin. Examine, for instance, shell marble, or limestone; does not common sense teach us that it is composed of marine animals, and the remains of animals? in many specimens the form, the internal configuration is not lost, the brilliant display of colours is not impaired, the disposition of the beds has remained since the period when these creatures existed unchanged, within seas and in zones favourable for their propagation and increase; here we are compelled to stop, or enter into the interminable field of conjecture and speculative science.

Let us begin with organic nature, examining its powers of elaborating earths, and its varying phenomena of action and result. Take, for instance, the mosses on walls, the vegetable bodies on the hills and plains; varying in form and in earthy constituents, they increase and propagate at the final expense of the elements, and from them model the earths. They exist, and pass through the allotted stages of life, but not for themselves alone; they support the animal creation, and during the whole period in which the vital processes are carried on, they contribute to the increase of the earth:

devoured by animals, their elaborated particles are not lost—ceasing to exist, their consolidated matter is added to the earth. The peats and mosses exemplify this amazing increase in a wonderful manner; springing up in narrow valleys, depressed basins, and low lands deserted by the sea, they continually add to the lower bed on which they rest, but do not abstract therefrom; foot after foot they rise, every new vigorous shoot springing forth at the expense of its lower branch whence it sprang; the vegetable fibre, as removed from atmospheric influences, and subjected to lateral pressure, passes into the state of earth, and thence into the state of plastic clay, and sometimes into the state of coal. Is it possible, I ask, by our examining it in the latter states, that we can form correct conceptions of its beginning? Most assuredly it is not.

The like operations are manifest in the formation and increase of calcareous matter from the sandy or rocky bed of the ocean; the coral architect springs up, and, like the lichens and mosses, every successive living shoot builds upon its predecessor, and so far from abstracting its material from the base, it communicates its vital juices thereto until the whole base becomes converted into solid limestone-rock; and in that rock who shall retrace the vital phenomena long since passed away? Why should we entertain a doubt that lime is generated by the vital process any more than that vegetable earth is? There must have been, there must be still, a beginning for all compounds, and ignorance of chemistry, or contracted views of geology, ought not to stand as a barrier to discovery. The four elements of earth, air, fire, and water, of ancient philosophy, have made way for the four elements of oxygen, hydrogen, nitrogen, and carbon, of the moderns, and every day's discovery threatens further modifications and changes. Natural philosophy has not at present an universally acknowledged base on which to rest itself.

M. C. Fischer, the proprietor of the manufactory of porcelain at Pirkenhammer, near Carlsbad, has observed that the substance resembling silicious concrete, which occurs in the peat bogs near Frangensban, in Bohemia, consists almost exclusively of the armour of some species of naviculae: this Ehrenberg confirmed; he also found other *baccillaria* intermixed. Original specimens of the silicious concrete of the Isle of France and of Santa Fiora, in Tuscany, which were analyzed by Klaproth, shewed that they likewise consisted almost exclusively of the envelopes of infusoria of several genera of *baccillaria*, yet sometimes of the same and almost all still living species, in conjunction with rare silicious specula of fresh and sea-water sponges, without any intervening binding material. Ehrenberg also discovered that the ochraceous slimy substance which sometimes covers the bottoms of marshy brooks and moats, and which appears to have been considered as a deposit of the oxide of iron, is a very delicate *baccillaria*, which at a red heat becomes like a red oxide of iron, and contains much iron, but does not lose its form either by the heat or upon being treated with acids, and consequently possesses silicious armour most approximating to that of the genus *gallionella*. Numerous discoveries have been made by the microscope of substances previously known only as particular earths, and clays, and rocks, being almost wholly composed of particular species of animals; are not these to be adduced as proofs that the earths derive their origin from vital phenomena; the fixed and insoluble residues of animal substances, silicious shells, bony coverings of shell-fish, containing a large proportion of calcareous earth, &c.?

NEW NAUTICAL INVENTION.—A useful invention is now in the act of being applied to one of our men-of-war; it is called a "manœuvrer," and is the proposition of R. Foulerton, Esq. It consists of an Archimedian screw, fitted through the dead-wood of the ship at right angles with the keel, and set in motion by the capstan, for the purpose of turning the ship round, when, from calm weather, the helm has no effect upon the vessel. It does not project in any degree, so as to impede the ships way through the water; and must be highly useful in the case of a ship being attacked by steamers or gun-boats, in bringing the broadside to bear on them; or it may even assist a ship in the act of staving.



## OLD ENGLISH CHAIRS.



OLD ENGLISH CHAIRS.

TO THE EDITOR OF THE BUILDER.

SIR,—The above represents two of four genuine Old English chairs belonging to Thomas Charles, Esq., of Chillington-house, Maidstone, Kent, who has an exceedingly curious collection relating to English antiquities.

The sketches are copied from drawings made by Mr. Pretty of Northampton.

Little needs be said respecting these chairs, except, that they are rather superior specimens, and that a great number of them is to be obtained in the cottages and farmhouses in Wiltshire and Gloucestershire, and I have no doubt in that part of the county.

I am Sir, &amp;c.,

C. J. RICHARDSON.

22, Brompton-crescent.

## SOCIETY FOR IMPROVING THE DWELLINGS OF THE LABOURING CLASSES.

THIS society has lately put forth a statement, accompanied by an engraved plan of the fifteen houses now in course of erection in the Lower-road, Pentonville. The following extract fully explains the humane objects they have in view, and the means by which they propose to carry them out:—

"The committee, feeling that no description or reasoning, however accurate, is likely to make such an impression on the public as an actual experiment, have resolved to build a certain number of houses, as models of the different kinds of dwellings which they would recommend for the labouring classes in populous towns.

"In the arrangement of these buildings, the object has been to combine every point essential to the health, comfort, and moral habits of the industrious classes and their families, reference being had to the recommendations of the Health of Towns Commission, particularly with respect to ventilation, drainage, and an ample supply of water.

"The buildings are of three different classes, and designed to accommodate in the whole twenty families and thirty single persons.

"1. Eight of the families are to occupy

each an entire house, with a living-room on the ground-floor, having an enclosed recess or closet large enough to receive beds for the youths of the family, and two bed-rooms on the upper floor.

"2. The remaining twelve families are to be distributed in six houses, each family occupying a floor of two rooms, with all requisite conveniences; and as the apartments on the upper floor are to be approached through an outer door distinct from that belonging to the lower floor, their respective occupants will thus be kept entirely separate, and each floor be virtually a distinct dwelling.

"3. The centre building on the east side is intended for the accommodation of thirty widows or females of advanced age, each to have a room, with the use of a wash-house common to them all. It is proposed that the general supervision of this establishment shall be entrusted to a responsible resident.

"The contracts entered into for the buildings warrant the committee in the confident expectation that, whilst securing a remunerating rate of interest on the outlay, they will be enabled to afford to the occupants accommodations of a very superior description to those at present attainable by the labouring classes, and that at a rent considerably lower than is now commonly paid. The committee hope and believe also that the detailed statement, which it is their intention at the proper season to lay before the public, will encourage many benevolent individuals to promote the erection in their own neighbourhood of similar dwellings, and thereby conduce to the moral as well as the physical welfare of a large class of their poorer brethren, who at present have not the opportunity of bringing up their families with a due regard even to the decencies of life, and are thus placed in circumstances tending greatly to counteract the influence of all religious instruction.

"The committee deeply regret that the limited amount of funds hitherto placed at their disposal obliges them to pause, and to question how far they may be justified in undertaking the erection of the whole of the buildings contemplated by the society; but they are strongly encouraged to hope that the marked expression of public feeling in reference to the improvement of the dwellings of the labouring classes, will lead to such a prompt

and liberal increase of contributions as will enable them to complete their projected plan by the approaching spring, and also to direct their attention to the equally-important object of model dwellings adapted to the agricultural districts.

"They think it right to add that the income derived from the proposed buildings will be devoted to the promotion of the general objects of the society, and accounted for in their annual report."

## METROPOLITAN IMPROVEMENT SOCIETY.

THE meetings of the Metropolitan Improvement Society have been resumed, and will in future be held on the first Thursday in every month, at the offices of the society, 20, Bedford-street, Covent-garden. At the meeting on the 5th, the attention of the members was chiefly directed to the contemplated new street, which is to lead from the Houses of Parliament to the neighbourhood of Belgrave-square. This street will be one of noble dimensions,—somewhat wider than Regent-street, and, as originally proposed, the western front of the Abbey and the Tower of the New Houses of Parliament, would have been visible throughout the whole line. This object has been lost sight of in the plan now adopted. The new street will make a crooked bend at its eastern extremity to avoid pulling down St. Margaret's Workhouse, and the bend will be such as entirely to exclude the view of the Abbey and Mr. Barry's tower. This mutilation of the original plan in its most important architectural features has been occasioned by an anxiety to avoid an increased expenditure of about 15,000*l.*, a sum quite insignificant as compared with the magnitude and importance of the contemplated improvement. A remonstrance has been addressed by the Society to the Commissioners on the subject. A resolution was also passed at the meeting to oppose a Bill about to be submitted to Parliament for inclosing a portion of the public roadway in Lincoln's-inn-fields, adjoining the new law courts. The project is to convert this roadway into a narrow foot-path instead of completing the carriage communication between the Strand and Holborn, by widening the approaches to the south and north!



# THE DWELLINGS OF THE WORKING CLASSES INFERIOR TO THOSE OF THE PAUPER AND THE PRISONER.

WITH how many comforts, how many decencies, how many virtues, a clean, well-ventilated dwelling is associated, nobody needs to be informed; such is to a family what personal cleanliness is to an individual—a means of health, recreation, rest, and enjoyment. Nor is it unimportant in a moral sense—

"For with the body's purity, the mind  
Acquires a secret, sympathetic aid."

If your business leads you to the dwelling of an artisan—one of the great race whose hands make our wealth, our luxuries, our comforts—where are you likely to find them? In a guttery back street, or stench-abounding alley, you climb a filthy stair; and in a close unventilated room, parlour, kitchen, and all, you find the entire family huddled together, for cooking, eating, and sleeping. All the air admitted is through the key-hole, or the broken pane of a window that will neither open nor shut. Neatness is impossible, and with the best housewife her task is the pursuit of cleanliness under difficulties; for how can cleanliness be attained where its first elements, air and water, are with difficulty attainable? The husband, driven away by the noise, the stench, and the discomfort of his little place, which ought to be his home, is probably at the public-house; the children are in the gutter, and the wife in suds, straw, or saucers. The dilapidated habitations of the rich, abandoned by their advance in the comforts and decencies of life, degenerate into abodes of the poor. There is no such thing thought of, with all our thinking, of providing the poor with habitations fitted to their wants or means, unless they become chargeable to us as paupers; then indeed an Elizabethan palace rises proudly from some dry and salubrious site. Commissioners, with a thousand a year, see that it is provided with baths, infirmaries, and every necessary of health. Doctors devise plans for its ventilation; the best of clothing, and food, and every thing else is advertised for. But, unless a man is either wealthy or a pauper, no care is taken to give him a decent abode; humble industry may hide its head where it can; as long as it is in working order we take no heed of it; but the minute it is demoralised or depauperised, we have the most elegant model-prisons to correct it, and the most beautiful union-workhouses to lock it up in!—*Bentley's Magazine.*

## RAILWAY INDICATOR.

THERE has just been published in Paris an account of an instrument for indicating the speed of trains, and registering any undue excess; this, it is expected, will act as a wholesome monitor to engine drivers, and lessen the risk of railway travelling, by rendering it impossible to escape detection where a dangerous velocity has been attained. This contrivance consists in a governor, such as is commonly used in steam-engines, and set in motion by the customary gearing from one of the axles of the locomotive. To the vertical sliding portion of the governor an index is attached, which passes along a graduated vertical scale, and by the height to which it reaches shews the degree of speed attained; any excess of speed produces a further elevation, and brings into play a second index, which is unconnected with the first, and which on the fall of the governor remains at its maximum height—a standing testimony against the negligence and recklessness of the engineer. As a further precaution, it is arranged that one of the balls of the governor carries a hammer, which strikes a bell, and loudly calls for the attention of the driver. To prevent tampering with the indications of the instrument, the second or tell-tale index is locked up, and the key remains in the possession of some superior officer, who alone, at the termination of a journey, can replace it in its original position, ready for a new indication. The first index, which only takes a cognizance of speed within the regulated limit, is open to the inspection of all in its neighbourhood; and, if this be neglected or concealed, the bell protests most clamorously against the danger and the wrong.

# ON THE CONSTRUCTION OF HAND-RAILS OF STAIRS.

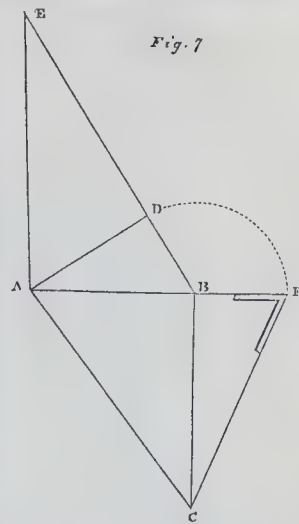
BY MR. GEORGE RIDLEY.

No. II.

18. THE TRIHEDRAL SOLID.—Any figure consisting of three plane faces beside its base, is a trihedral: thus the three faces of a triangular pyramid is a trihedral. We have not space to explain to the utmost extent the properties of all the cases of this solid. In carpentry, the nature of its angles has been long known in the formation of the hipped roof. In masonry, its principles are applied with equal success in the construction of plain oblique arches. Its uses are equally indispensable in the principles of perspective, projection, dialing, &c.

19. In the science of hand-railing, the late Mr. Peter Nicholson has the merit of first adapting its principles, in determining the obliquity of the ordinates, required in tracing out the contour of his face mould; he also with equal ingenuity applied the properties of its solids angles, in determining the position of the face mould upon the surfaces of the plank, out of which the rail was cut.

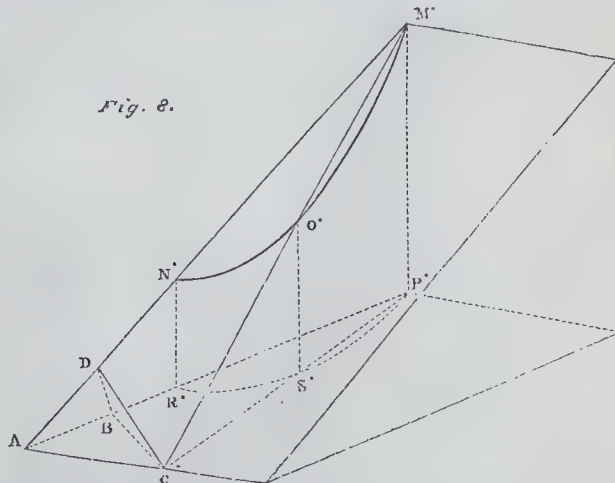
20. It may be necessary here to observe, that the angles of the trihedral are of two kinds, one of which is that which forms the angle or bevel of any two of its arrises which constitute the sides of its superficial surfaces; the other is the angle, or bevel, formed by the intersection of any two of the surfaces which constitute the solid itself. This last is sometimes called the dihedral angle, but is more generally known by the name of the solid angle, and is always considered as taken with the legs of the bevel at right angles to the arris which is common to both surfaces. Let the lines A, B, C, and A C (Fig 7) be the three sides of a right-angled triangle, which forms the base of a trihedral solid. Let the right-angled triangle A B D, represent the development of its vertical side, and the triangles A D E, and B F E, the superficies of the two remaining slanting sides. In this figure the line A E, will require to be equal in length to A C, D B equal to B F, and D E equal to F C, moreover the line A D will require to be square to, or at right angles to D B; B F at right angles to B C; and D E at right angles to A D. Suppose, then, that the planes of the triangles A B D and B C F are turned up on the lines A B and B C, as if on hinges, until the lines B F and B D meet each other; and the triangle A D E turned over upon the line A D until the point E falls upon C; we should then have before us the form of a trihedral solid. If this solid be formed in wood, upon the



surfaces of which the letters of reference are marked to correspond with those upon the development of its surfaces, as shewn in the figure, by a careful attention to the model, it will be seen that the dihedral, or the solid angle across the arris of the vertical surface, A B D, and the inclined surface A D E will be the angle or bevel B F C, as shewn by the development of the triangle B F C. And the lines A E and A C when united will form the arris of intersection of the slanting surface, and the plane of the base of the trihedral.

21. In carrying the use of the trihedral into practice, let us suppose that its vertical face A B D is but a portion of the face of a plane passing vertically through the body of the cylinder, as already described by Article 9, and more particularly delineated in Fig. 8, wherein the slanting surface A D C of the trihedral is conceived to form a portion of a plane cutting obliquely through the body of the cylinder, and the base A B C of the trihedral form, forming a portion of the same plane as that of the base of the cylinder, we shall then perceive the body of our cylinder encircled by the body of the trihedral solid.

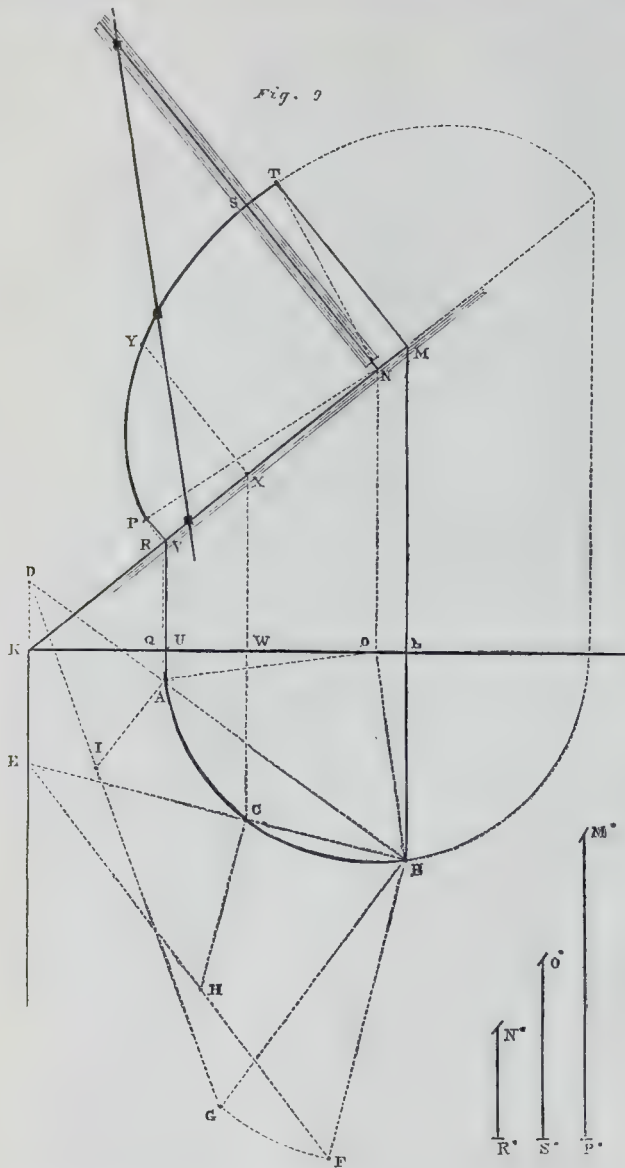
Fig. 8.



22. Now, as the plane of our cutting section is to pass through three points given in position on the surface of the cylinder, which, as we have already observed, must agree with three corresponding points on the line of heights, as laid down on the development of the central line of the rail; and as the slanting

surface of the trihedral and the cutting plane through the cylinder are both in the same plane. It is, therefore, by laying down the development of this plane, that we are enabled to apply the use of the beam-compass in describing the contour of the face-mould with certainty.





23. Thus in Fig. 9, let the circle A C B represent the centre line of the plan of the rail; let the line N' R' represent the height of the centre of the rail over the point A, the line O' S' the height over the point C, and the line M' P' the height over the point B. Then through the points A B and C draw the lines B D and B E, upon which draw the perpendicular lines B F, B G, C H, and A I make B F and B G each equal to M' P'; C H equal to O' S', and A I equal to N' R'. Through the points G and I draw the line G D, cutting the line B A produced in the point D; and through the points F and H draw the line F E, cutting the line B C produced in the point E; then through the points D and E draw D E, which is the line or aris of intersection between the plane of the base of the trihedral and the plane of its slanting side; the foot of this slanting surface will therefore rest on the line D E, and the inclination thereof will be such that its plane will pass through the three points on the surface of a cylinder, as we have already noted. And, moreover, as a portion of the base of the cylinder is included in the base of the trihedral, so also will a corresponding portion of the cylindric section be included on

the plane of the slanting surface of the trihedral, which we have already described as the cutting plane of the cylindric section.

24. In paragraph 9, and Fig. 2, we have shewn the mode of producing the section of a cylinder by the use of the beam compass; but before this can be done, it is necessary to have the position of a vertical plane passing through the axial line of the cylinder, which also is to be at right angles to the cutting plane of the cylinder. The position, therefore, in which our vertical plane must stand, is that shewn by the line K L, which is to be drawn at right angles through O to the line D E. By changing the position of the vertical plane on the line D B of the trihedral to the line K L, as here shewn, while that of its inclined surface remains in the same position, we shall find that the dihedral or solid angle formed by the intersection of the vertical and slanting planes are at right angles, or square to each other; and if from the point B, on the base of the trihedral, we draw the line B L at right angles to the line K L, we shall find the height of the slanting surface over the point L, to be the same as that over the point B. The elevation of our vertical plane on the line

K L, will, therefore, be a right angled triangle, whose hypotenuse, M K, is the intersecting line, or aris, which the vertical surface forms with the slanting surface of the trihedral; and the perpendicular, L M, is equal to B F. Upon this vertical surface let the perpendicular line, O N, represent the axial line of the cylinder; and the perpendicular line, Q R, the line of intersection formed by the surface of the cylinder, with the vertical plane of the trihedral: here, then, because the vertical plane of our trihedral passes through the axial line of the cylinder; therefore that portion of the intersecting line, R N, will form one-half of the longitudinal diameter of the ellipse; and the radius of the cylinder will be equal to one-half the transverse diameter, as shewn by the line N S, from which the curve of the ellipse may be described, as shewn in paragraph 9, Fig. 2; but that portion of the elliptic curve, requisite for the centre line of our face mould, may be obtained by drawing the ordinates, M T and V P, at right angles to the line K M, cutting the curve in the points P and T. The point Y in the curve, which stands perpendicularly over the point C on the plan, may also be determined in the curve by drawing the corresponding ordinates, W C and X Y, in the same manner as the ordinate M T.

#### ON THE APPLICATION OF CLAY PIPES FOR HOUSE DRAINS AND SEWERS.

BY W. D. GUTHRIE, A.M., F.R.C.S.L., &c.

AFTER much consideration of the best system of the construction of main sewers, I have at last arrived at such conclusions as neither I nor any of those scientific friends whom I have consulted on the subject, are able to detect any mistakes in. The first leading principle which I am desirous shall be distinctly understood is this, viz.: That there is no other proper means of removing the debris of houses, towns, and cities, whether large or small, but through the agency of water, which cannot be too abundantly supplied.

How properly to direct and duly to economise water furnished for this purpose must hence be a matter of paramount importance. That none shall be wasted carelessly, and that as small a quantity may on all occasions be rendered as efficient as possible, are matters of the greatest moment. These therefore are my cardinal points.

It now became to me manifest that from these premises the grand object would be, so to proportion drains that the supply of water would at all times be effectual in removing soil and preventing depositions of all kinds.

This, it is clear, could only be done by causing them to bear a proper ratio to the roofage, and the size of tubes through which water is conveyed to the house from which the drain is to be led. Now if, as is almost always the case, the water-pipe of an establishment leading from the main, be only half an inch, or say an inch, it struck me that there could be no necessity for a construction of one foot, one and a half, two, and even three feet calibre to conduct this water and its accompaniments from the house into the common channel or main street sewer, it having merely acquired the addition of the soil. For example, if I furnish a house with water by means of a half-inch water-pipe, it is clear, the most that a drain could ever be called upon to accomplish, would be to afford a conduit to the main sewer, but if water can flow through a half-inch tube, it assuredly can meet with no obstacle or hindrance to its progress in a two or three inch tube, care being taken that sufficient strength be given to the drain tube.

The rule for the size of the drain-tube is therefore simple, viz. to the calibre necessary to carry off the water laid on, add that required for the reception of the rain or surface water. This is readily calculated from the indications of the rain gauges of the locality. I conceive that the grand point in the arrangements is never to have the capacity of the sewer so vast, that the advantages of the force of the water, which it is intended it should transmit, shall be lost, which of course must necessarily be the case, if such proportions occur as that which I have already mentioned. The next point I had to establish was the nature of the materials best calculated

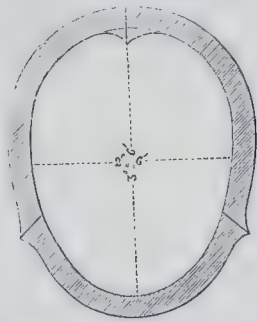


for the construction of conduits for sewerage, it was apparent no brick building or mason work (if my data be correct, of which I have no doubt) could at all be made available for sizes so small as that which I contemplated introducing. I therefore consulted with the manufacturer of tubes of Terra Cotta and different other kinds of clay as to their expense, and the probable strength which might be given to tubes of from two to eighteen inches diameter, and the result was, in all respects, so satisfactory, that I soon came to the conclusion, that no house drains or private sewers could, by possibility, be perfect in their operations, if built either of brick or stone, and that the substitution of strong tubes of small calibre made of indestructible materials could be found an invaluable improvement. As the strength of the tubes which I propose using as conduits for sewerage has frequently been questioned, I beg to submit the following facts, which proves indisputably that objections to my system, founded on this basis, are perfectly untenable. A few specimens of fire-clay tubes were manufactured in the neighbourhood of Glasgow by the Gaonkirkton Coal Company, and these were, in the presence of a number of scientific and interested gentlemen, tested by hydraulic pressure, when it appeared that it was not until a greater pressure than that equal to a perpendicular column of water 900 feet had been applied, that they could be burst! I was not present when the experiment was made, but Mr. Smith of Deanston, and several distinguished persons who were, informed me of the fact. But a moment's consideration will serve to convince any one that a conduit for any fluid must be stronger, if formed in complete circles, than made up of numerous small fragments which have no affinity for each other; in fact, which only preserve a form or shape by the sheer force of their surrounding and superincumbent pressure. Two years have elapsed since I first mooted this idea, and I have much satisfaction in now being able to state that the principle was at once conceded by scientific persons while I was in London; and that since my return to Scotland, there has not been a single sewer built either of stone or brick in the town of Ayr—clay tubes have invariably superseded them. The Ayr arrangements, however, I am sorry I cannot altogether approve of, because no principle seems to have been recognized; all that appears to have been thought necessary, was the adoption of circular clay tubes, instead of the old expensive rude brick or rubble-built drains. Notwithstanding this, the people are unanimous as to the great advantage which the tubes possess over the old system. The sizes employed are from nine to eighteen inches dimensions, which, for reasons here stated, and which also appear in the body of my evidence, I entirely disapprove of for the purposes of mere house drainage. The tubes should be made of fire-clay and glazed; the glazing does not add sensibly to the cost, and would be a great improvement. It may be interesting to remark, that I was particularly struck during my stay in Ayr by observing the loss which a community sustains from the want of combined action.

If public companies, curators of local trusts, and private persons, were to digest properly their schemes, and cordially to co-operate, it is easily demonstrable, that much economy and every sense of the term would invariably be experienced. In the town of Ayr they have no Act empowering the authorities to cause inhabitants to adopt such arrangements as have recently been shown to be indispensable for the protection and preservation of public health; therefore every man who desires to improve his premises, entertains not desire from a conviction of the necessity for making certain alterations, in order that the health and comfort of his family may be secured. But as there have, in this place, been no public meetings to discuss the merits of those suggestions, which have been offered for the general improvement of the town, every one must proceed as his own architect or builder may choose to dictate, irrespective of his next door neighbour's operations. Each who desires to lead his soil-drain into the drain, must make his own direct communication with the main. I have endeavoured to point out the folly of such proceedings, by shewing to the parties the vast saving, which would

be effected if neighbours would only consult each other, and harmoniously co-operate.

I shewed, to the satisfaction of competent persons in Ayr, that if proprietors in the lower and descending parts of streets would allow the landlords on the higher grounds to make connections with the private drains of those as they descended, each bearing his own expenses, or such proportion as might be required to convey the tube past his property, that then one connection only with the main would be necessary for a number; the expense of making which, if divided amongst a number, would be comparatively trifling. This system which I propose, I have no doubt will, ere long, be universal, as its advantages are obvious. Having sufficiently and satisfactorily established the principle that all drains or sewers ought to bear positive reference to the quantity of water, &c. which it can be calculated they would be required to convey, and having ascertained that in the case of small or house drains, this was matter of easy accomplishment, I next directed my attention to the common or main receiving sewers, and with a view to shew that the same principle which prevails in the small, will also be found to regulate the large, I consulted scientific and practical men as to the possibility of constructing sewers into two, or three, or four pieces, instead of the common tedious, imperfect, and expensive mode of brick building in cement or mortar. I proposed the adoption of pieces of fire-clay moulded in the most unobjectionable forms, and of great strength, which requisite, I was assured by the manufacturers, thickness and high temperature would, in the case of this material being employed, be certain to secure. The fixing upon the best configuration, now started up as a new difficulty; at last, however, I succeeded in convincing myself and such scientific friends as took interest in my pursuits, that the section of the form represented in the accompanying sketch



is decidedly more perfect than any thing that has hitherto been employed for sewerage purposes. It has also been asked what pressure externally and internally would such a construction as this withstand, the answer is simple,—no superincumbent weight whatever could crush it (this the manufacturers one and all guarantee); the pressure which it would bear from within would be in the direct ratio of that from without; a glance at the diagram will shew that, like a brick-built circle, it has no strength save that which it derives from the pressure of the surrounding materials. The cost of a sewer of the dimensions marked on the diagram, would be about 18s. or 17. per yard. I find that fire-clay tubes 12 inches diameter, and 12 inches in length, can be purchased in Glasgow for 9d. per foot, or 2s. 3d. per yard, which is exactly half the prices furnished to me by the London manufacturers. The manner in which small or side drains are connected with this kind of sewer is simple; circular openings of various diameters are left at the time they are made in a great proportion of the side pieces, a little above that part where they rest on the invert, into which a tube of from 3 to 12 inches may be inserted, as the case might be.

The following is a calculation which I made while in London in April 17th, 1843, with a view to shew the economy which would be effected by the adoption of small strong tubes instead of brick-built sewers:—

Brick-built, first class, 24. 10s. per yard = 2,640l. per mile.

Brick-built, medium class, 14. 10s. per yard = 2,640l. per mile.

These are the prices of the Holborn and Finsbury metropolitan district of sewers, furnished to me by my friend Mr. Roe, Civil Engineer.

Tubes of terra cotta or fire-clay:—

Tubes of 1 foot 6 inches diameter, at 15s. per yard = 1,320l. per mile.

Tubes of common brick clay:—

Very best, 1 foot diameter, at 3s. per yard = 246l. per mile.

Prices of drain-tubes in Glasgow, of common clay, including flange of from one to two inches:—

3 inches diameter, 6d. per yard.

6 inches diameter, 9d. per yard.

9 inches diameter, 1s. per yard.

12 inches diameter, 1s. 3d. per yard.

18 inches diameter, 2s. per yard.

Tubes of cast-iron, of 12 inches diameter, would weigh about 21 cwt. per yard, the cost of which would be 6s. 6d. per cwt., or say 14s. 6d. per yard, of a strength equal to 300 feet pressure, which would be = 1,276l. per mile.

These prices, it is to be understood, are merely approximations, as the manufacturers were especially requested by me not to furnish me with quotations less than the present wholesale prices of the articles; so, of course, if a great demand were to take place for extensive sewerage operations, there can be no doubt the materials could be had for little more than half the prices I have mentioned, more especially when it is known that the tubes can be manufactured with great rapidity by machines, driven either by steam or horse power. I have myself a working model for this purpose, which I invented three years ago, and which operates beautifully.

Earthenware pipes from the Shropshire Pottery may be obtained through Messrs. Darby and Co., Coal Brook Dale, Shropshire.

Fire-clay pipes, 4 inches diameter, 1s. per yard, and 6 inches diameter, 1s. 6d. per yard, from the Gaonkirk Fire-bricks, Glasgow.

There are a great many niceties to be attended to in the reducing this system to practice, so that its perfection may be completely brought out, and its efficiency of operation secured. The manner, for example, of connecting small tubes with each other, and these again with the great receiving or common sewer. The mode of keeping sewers free from deposit by flushing I have sufficiently explained in my evidence. I may, however, remark that if the tubular system of sewerage were to be properly conducted, that no such flushing apparatus as that described by me, or any other contrivance for this purpose, would ever be required; and I am convinced that in a few years brick-built sewers will be but the rare exceptions; whole towns and cities will be sewered at small cost, and more perfectly than it is possible to accomplish by brick building. I purpose as speedily as possible publishing a small treatise on sewerage, in which I mean to shew the objections which pertain to those colossal constructions that exist, and continue to be made in the metropolis; the means best calculated to remedy their defects; and lastly, describe the kind of sewerage which I think unobjectionable, and what I would, therefore, recommend for adoption in all cases where new sewers are required.

In the mean time I shall only add, that it will afford me great pleasure to communicate with such parties as may desire to be informed on this interesting and important subject, and to furnish them with every information they may require, or that I am possessed of.

**NEW SOLDER.**—Dissolve zink in muriatic acid to saturation, add pulverised sal ammonia to this solution, and after boiling it for a short time it is ready for use. In using this compound no cleaning of the metal is necessary, however oxidized, and oil and other materials are dispensed with. It is only necessary to apply with a piece of sponge upon a stick, or a feather, this solution to the part to be soldered in place of the material now used, to prevent oxidation and facilitate the flow of the solder. Such is the efficacy, that if two pieces of bar, possessing considerable surface, be wet with this solution and pressed together, upon the application of the soldering tool, the solder will at once flow between the plates throughout. —*Mechanics' Magazine.*



## CAUTION TO BUILDERS.

On Saturday last a case was tried in the Court of Common Pleas, before Lord Chief Justice Tindal, involving the responsibility of builders for accidents resulting from their not carting away the excavated soil of a newly-formed drain.

The defendant (Gray) in the earlier part of the present year was engaged in making some extensive alterations—pulling down, repairing, and rebuilding houses; and it happened that in the course of these alterations it became necessary to make a drain communicating with the main sewer. A drain was accordingly dug for that purpose, but the gravel and excavated soil which came from it were, instead of being carted away, placed in the road, at a distance of several feet from the kerb. The defendant was expropriated with on the subject, who said that he would remove it as soon as he could. Unfortunately, however, for the plaintiff (Burgess), the heap of gravel was still in the same place on Sunday, the 28th of July last. It appeared that about half-past 9 o'clock in the evening of that day the plaintiff, accompanied by a friend named Crofts, was on his return homeward in a chaise-cart, when one of the wheels ran upon the heap of gravel in question, and the plaintiff, who was driving, was thrown by the shock into the road. The horse in the cart being frightened, immediately started off at a gallop with the cart and Crofts, who contrived to retain his seat, from which he was soon, however, dislodged by the smashing of the cart against the Mile-end turnpike gate. The cart was broken to pieces and the harness much damaged; and upon going back to the plaintiff himself, it appeared that his leg was broken just above the ankle joint. The plaintiff was laid up for six or eight weeks in consequence of the accident, and his surgeon's bill amounted to about 12*l*.

The jury found a verdict for the plaintiff—Damages 45*l*.

## Correspondence.

## ON IRREGULARITY OF DESIGN IN ARCHITECTURE.

TO THE EDITOR OF THE BUILDER.

Sir,—Consistency is the soul of design; and in writing upon the above-mentioned subject, I wish it to be distinctly understood that my remarks will only refer to certain kinds of architectural design, such as the Italian, the Tudor, the Elizabethan, &c., and will not apply to architecture generally; for nothing could possibly be more absurd than to erect a Grecian temple (for instance) with the portico on one side, and the building filled in with similar eccentricities, as it would be in direct opposition to the leading principles and features of that particular style of architecture for which ancient Greece is so celebrated. The Italian, the Tudor, the Elizabethan, &c., are, however, quite the reverse of this, and the architect is left quite free to indulge his taste and fancy, and in the generality of cases more effect is produced by an irregular building, more art displayed, and more comfort gained in its arrangements than by a regular one. In nature there is no such thing as uniformity; no two hills are exactly alike, no masses of water or groups of foliage are precisely similar, and the landscape is as varied as it can possibly be, and yet as beautiful as it is varied; ought we not then to remember this fact when about to erect a building in the country (for of course it is out of the question in a town), and act accordingly? Take, for example, a mountainous district; what erection can look better than a noble castellated building, with its massive towers, its lofty turrets, embattled parapets and machicolations, its walls of various elevations, its great diversity of windows,—in short, every thing as irregular as possible, and yet as a whole presenting a very imposing appearance? Contrast this with the effect of a Grecian building in a similar situation, its straight, horizontal lines and rows of columns, all very beautiful in themselves, but quite unsuited for such a locality. Take another instance: a small country villa in the Tudor style, situate in a beautiful valley, and surrounded by wood and water; imagine this building to be of red brick, with white stone dressings, with a porch to the entrance doorway, with square and bay

windows filled in with quarry lights and stained-glass, above them lofty roofs and projecting gables, with carved verge-boards and pendants, and crowning all, the stacks of red brick chimneys, with their shafts clustered together, each shaft differing in pattern. Contrast the picturesque and rural effect of such a villa with another erected in a square form, with plain windows, flat roofs, and low chimneys, and then judge which would form the most pleasing object, and be most suited to the surrounding scenery. Besides, in an irregular building, a stranger will naturally feel curious to know its internal arrangement, and how it is contrived, so as to have a picturesque elevation, without any sacrifice of the usual domestic conveniences; and this feeling occasions him to look upon an irregular building with peculiar interest. Again, what can be more fitted for an elevated situation than an Italian building, with its lofty cornices, its curious tiling, its rich ornamental and overhanging cornices, its diversity of windows, some grouped together and others in single lights, and its ornamental balconies, verandahs, and terraces? I do not know any thing which more improves the features of a fine landscape than a commanding pile of building, and nothing which injures it more than a dull, heavy structure, as stiff and uniform as a regular, unbroken series of straight lines can well make it. During the last few years, many beautiful villas have been erected in different parts of England, but there is much yet to be done towards improving the public taste. It is not long since that I looked over a large mansion in the course of erection, the cost of which would be nearly 20,000*l*, and yet the external appearance more resembled an hospital or barracks than any thing else. This ought not so to be.—Yours, &c.

EDWARD MANFRED.

## WINDOW DUTIES.

Sir,—In furtherance of the exposition of the objectionable impost on light and air in dwelling-houses, making dungeons of the habitations of the middle and working-classes, I beg to call your attention to a fact existing at the present moment in King William-street, Strand. The inhabitants of the south side of that street, after a vain attempt with the Commissioners to get that tax mitigated upon a certain portion of their windows (which are curiously situated), by representing their plan of avoidance, if this tax was pressed for, have, I believe universally, covered with a skylight, the well-hole of an area at the back of each house reaching from the leads even with the first-floor down to the basement, into which no less than six or seven lights besides doorways open, including the ventilators of two water-closets, thus making borrowed lights of them, avoiding the tax, and half poisoning themselves with the impure air arising from their drains and cesspools, and their ill-ventilated lower apartments.

If you think this fact worthy notice in your valuable publication, it may be confirmed by application to any of the residents; while, for certain reasons, I remain, Sir, yours,

Dec. 16, 1844.

ANONYMOUS.

## RED BRICK-WORK.

Sir,—On reading over in last week's number, your notice on red brick-work, I cannot let the opportunity pass without a remark which is due to the town of High Wycombe, Bucks, where there are several fronts the brick-work of which is brought to the greatest perfection; large cornices, architraves, two fluted columns part of the way down, and then reversed with capital and base mouldings, and a fine doorway, very lofty, projecting forward, differing wonderfully from its almost next door neighbour. The ceiling in the entrance-hall of one is beautifully enriched, pains being taken to preserve it from the whitewash brush,—which is too often the case through employing inexperienced persons.—Yours, &c.

A SUBSCRIBER, R. B. W.  
Kensington.

## THE NEW HOUSES IN HOLBORN.

Sir,—I have been rather surprised to see that in the three model houses, in the course of erection at the bottom of Plumtree-street, now Bloomsbury-street, they have got

cast-iron breast-summers without providing them with a wrought-iron straining-bar or bolt. The trifling expense that this addition would have been, could not be of any importance, and it is of such material consequence to the safety of the houses, either in case of fire or excessive weight. Had the girders in the mill at Oldham been provided with this, the accident which happened there could never have taken place.—I remain, Sir, your obedient servant,  
Dec. 17, 1844.

## CHURCH-BUILDING INTELLIGENCE, &amp;c.

*New District Churches.*—Great efforts are being made for the erection of churches in the new districts constituted under the Parliamentary measure of last session, which provides for the division of the larger parishes with a view to more extensive and efficient superintendence. Since the 1st of April last grants have been made in twenty of these cases amounting to the sum of 5,225*l*, and the total sum contributed during the same period for the purpose of obtaining increased accommodation throughout England and Wales is 15,583*l*.—viz. for the erection of forty-one new churches, and the rebuilding, enlarging, &c., of fifty-one existing churches, by which means 32,245 additional sittings will be obtained, including free seats for 25,550 persons.

*The New Church in Lambeth.*—The new church which has lately been erected at the corner of Little York-street, and Lower Marsh, Lambeth, in a densely-populated neighbourhood, is nearly completed. It is built of white brick, and of very neat appearance. The building is fire-proof, the rafters and pillars supporting the roof being composed of iron. The entrance is in the Lower Marsh, where a neat square tower has been erected capable of holding eight bells, which will shortly be hung. There are 300 free-sittings, and room for 600 more persons.—*The British Magazine.*

## RAILWAY INTELLIGENCE.

*The Warwick and Leamington Railway.*—On the 2nd inst., this newly-formed line was opened to the public. The time occupied in its construction, under the superintendence of Mr. Stephenson, has been eighteen months. The gradients are rather heavy, the steepest being 1 in 100. Messrs. J. Jackson, London, and J. Cumming, Birmingham, were the contractors. The Kenilworth, the only intermediate station, on the outskirts of the town, is constructed of Kenilworth stone. That at Leamington, in the Roman Doric style, is situate on the main road between Leamington and Warwick. The first feature of interest, and one of the principal works, is that of the Milborne Grange viaduct, composed of seventeen arches, of 31 feet span, built of red brick, faced with stone and supported by stone piers: it cost 2,400*l*. The Castle Gutter Brook Bridge is of three arches, of 60 feet span, composed of blue brick, and cost 1,400*l*. The timber bridge, spanning three roads, is formed of wood-work, with stone piers, 50 feet span, and has cost 940*l*. The viaduct over the Avon consists of nine arches, of 60 feet span, and is the chief work upon the line. It is built of blue brick, has cost 4,650*l*, and commands a fine view of the Avon, and of the demesne of the Hon. C. B. Percy, at Guy's Cliffe.

*Edinburgh and Granton Railway.*—The directors of the Edinburgh, Leith, and Granton Railway having made application to the sheriff to nominate and appoint a competent person to superintend the working operations of the tunnel through the city, we understand that Mr. George Buchanan, civil engineer, has been appointed for that purpose. Mr. Buchanan's qualifications are well known, and it is to be hoped that his appointment will have the effect of allaying any fears that may have been engendered in the public mind.—*Edinburgh Evening Post.*

*Tunnel Bridge.*—On Saturday last, the key-stone of the tunnel bridge, near Sedgwick, was put in by Mr. John Sefton, builder, who, we believe, has the construction of the railway bridges between Sedgwick and the Sedburgh road. This is the first bridge yet keyed on the Lancaster and Carlisle line. The work has been inspected by Mr. Stephenson and Mr. Mould, and highly commended.



**New Railway Projects.**—It is understood that 246 schemes are lodged at the Board of Trade. The next consideration is, how will the Board of Trade deal with these matters? It seems now to be understood that the Board is engaged in dividing the lines into classes—that that done, it will express an opinion on each project, and present it in the shape of a report to parliament—but that an intimation will be given to the promoters of the general views of the Board sufficient to enable them to determine for themselves whether they will go forward or retire from the field.—*Railway Times.*

**Goliath Engines.**—Four of the largest locomotives ever constructed are about to be built for the Sheffield and Manchester Railway. The cylinders are to be eighteen inches, the stroke two feet, the wheels, six of them four and a quarter feet diameter, and all six coupled. The weight of the engine alone, when loaded with fuel and water will be 24 tons. It is calculated that on a level they will draw separately from 1,000 to 2,000 tons.

### Miscellaneous.

**ANCIENT ROMAN ARCHITECTURE.**—Last Thursday week, as some men were employed digging for the purpose of forming a new sewer in the New North-road, Hoxton, they discovered, at a depth of about 20 feet below the surface of the ground, a remarkable Roman structure. The first presentiment they had of approaching something wonderful was to find themselves standing upon a hard flat surface instead of the usual rough earth and stone. The fact was immediately communicated to the surveyor, who, in company with about a dozen men, repaired to the spot. After some little delay, it was determined that the tiles, &c., should be taken up, and for that purpose six men were selected to descend, who, after some considerable delay, succeeded in raising several large pieces of stone and tile, underneath which was discovered a small cellar or vault, the dimensions of which were 3 feet in length by 2½ feet in width, and 3 feet 7 inches in depth, strongly tiled throughout. Several small vessels of earthenware were found, as also a small urn, supposed to be of gold. The excavation was immediately covered over, and men placed to guard it. A more wonderful specimen of ancient Roman architecture has never been discovered.—*Times.*

**PROPOSED IMPROVEMENTS IN CONNECTION WITH HUNGERFORD BRIDGE.**—Last week, at a meeting of the proprietors of the Hungerford and Lambeth Suspension Bridge Company, the chairman said the original estimated cost of the bridge was 104,500*l.* The directors were now able to inform the proprietors that the work would be completed, including every expense, for the net sum of 102,800*l.*, which they would see was less by 1,700*l.* than the estimate of 1838. But the directors had now to ask the proprietors to give them a sum of money to do that which was not originally contemplated—they wanted to pass from the Belvedere-road to Sutton-street (a fine thoroughfare of 35 yards wide, and built since the bridge was projected), so as to obtain a good access to the York-road. The directors found they would be able to carry out this desired approach for less than 5,000*l.*, including all expenses, and since the report was written negotiations had taken place which led the directors to hope that the property required would be obtained without the expense of going to Parliament for an Act for the purpose.

**IMPORTANCE OF A PLENTIFUL SUPPLY OF PURE WATER IN TOWNS.**—It is, perhaps, too much to expect that people will be induced to return to the natural beverage, so long as it is supplied to them in the impure state in which it reaches the inhabitants of London, and of most large towns in this country—in fact, such water is neither palatable nor wholesome, and it is one of the evils affecting the public health which calls most loudly for correction, and the remedy for which is by no means difficult. Filtering does not purify water, as it can only remove the impurities which are mechanically suspended in it, and not such as are in a state of solution. Filtering cannot be successful in depriving it of its deleterious properties: we might as well attempt to remove the poison from a solution of arsenic by filtering.—*On the Care of Health, by J. H. Curtis, Esq.*

### TESTING OF AN IRON BRIDGE IN IRELAND.

—The lattice bridge which is built over the Royal Canal, on the Dublin and Drogheda Railway, and whose span is 144 feet 6 inches, was the subject of an interesting experiment on the 13th inst. After taking out all the wedges under the two west beams, by running one engine and three carriages across three times, the greatest deflection was two-tenths of an inch, and each time the bridge resumed its original position. The bridge was tested a second time the same day by running a coupled engine across, the weight of the tender, eight carriages, and three trucks, averaging from eighty to ninety tons. This train of carriages and engine was allowed to stand upon the bridge until Mr. Hamilton, Sir J. Macneill, and Mr. McCormick, measured the deflection, which was two-tenths of an inch, and when the train moved off the bridge, it resumed its original position.—*Drogheda Conservative.*

**PROPOSED TUNNEL UNDER GLASGOW.**—The city of Glasgow is surrounded by great lines of communication; on the north by its great canals, the Forth of Clyde and Monkland, and the Edinburgh and Glasgow and Garnkirk Railways, and on the south by its magnificent river and harbour, with its communicating lines of railway. But these are cut off from all means of communication with each other by the densely populated city which intervenes. At present an enormous traffic passes over the streets in heavily-laden carts and waggons, and the proposed scheme is to connect by a great tunnel the southern with the northern side of the city. This enterprise is promoted by some of the most respectable and wealthy citizens of Glasgow, and by the great companies whose immediate interests it will so directly promote. The estimate is under 150,000*l.*

**EXTRAORDINARY BRICK-MAKING.**—Mr. Hodson's patent machine for making bricks is truly wonderful when compared with the amount of labour it is capable of accomplishing, and the perfect manner in which it completes its work. The stock-brick dies will throw off four thousand bricks in a day, equal in all respects to the first-rate article in the market; whereas the ordinary number of bricks produced by one man in a day, in the usual mode of making them, is eight hundred!—*Hall Packet.*

**ROYAL PALACE OF LINLITHGOW.**—It will be gratifying to learn that the ancient and royal palace of Linlithgow has lately undergone extensive repairs, under the sanction and at the expense of the government. This venerable building forms one of the noblest piles of ancient architecture in Scotland, and, with the sweet and placid loch reposing amidst the graceful undulations of the neighbouring landscape, forms altogether an object of much beauty and interest.—*Edinburgh Witness.*

**COLCHESTER IMPROVEMENTS.**—A public meeting, convened by the Mayor of Colchester, was held last Thursday week for the purpose of forming an institution embracing the following objects: A public reading-room, a library for reference and circulation, a museum, a lecture-room, and an observatory. The project has the support of most of the influential inhabitants both in the town and neighbourhood.

**DUNDEE TRIUMPHAL ARCH.**—The triumphal arch to be erected at Dundee to commemorate the landing of her Majesty and the Prince Consort at that Royal burgh, last autumn, is commenced. The subscription, with the liberal donations of Lord Panmure, Lord Douglas, and Viscount Duncan, at present exceeds 1,500*l.*

**NEW NATIONAL SCHOOLS AT HULL.**—The expense of erecting these schools was 1,600*l.* They are built in the most substantial manner, in the Tudor style, under plans furnished by the Committee of Privy Council on Education, and the National Society, and will accommodate 650 children.

**LORD PEMBROKE'S TOWN RESIDENCE.**—The Earl of Pembroke's splendid mansion on Carlton-terrace, which has been so long undergoing a course of decorative repair, is not expected to be ready for the reception of his lordship and establishment for a twelvemonth at the earliest.

### USE OF THE ARCH AMONG THE GREEKS.

—Series of drawings made by the late Mr. Dodwell during his travels in Greece display the various doorways of Pelagic fortifications, from the lintel of single stones resting on upright jambs, to the overlapping of the stones until they reached each other, in the form of a triangle, as in the gate of the lions, the entrance into the treasury of Atreus, &c. But the most remarkable monument is the subterranean chamber; complete plans and sections of that extraordinary building are given by Mr. Donaldson in the supplement to the "Antiquities of Athens," from which it appeared to have been constructed in the form of a parabolic cone, of 48 feet in diameter at the base, and 44 feet 6 inches in height, by means of rings of regular masonry, overlapping each other until they reached the apex, where the aperture was closed by a flat stone. From this and other buildings of a similar kind, there is reason to infer that the ancient Greeks had very imperfect notions of the arch. Mr. Kinnard, in his "Description of the Antiquities of Delos," gives a representation of a portal or gateway on the ascent of Mount Cynthus, formed to support the wall of the ancient fortifications. The entrance was constructed with ten large stones inclined to each other, like those at the aperture into the great Egyptian pyramid. It was perhaps the earliest specimen of Pelagic architecture in Greece, displaying the first step towards the principle of the arch. That it was known by the Etruscans seems evident from the remains of arches and bridges now existing in the country of the Volsci, in Italy; and the researches of travellers in that country, within the last few years, have brought to light many curious examples, anterior to the period of the Cloaca of Rome, and the tunnel of Albano by Aeneas Marcius. Mr. Rennie is of opinion, from his examination of the subject, that there exists no sufficient evidence to establish the knowledge or use of the arch among the Greeks.—*Railway Chronicle.*

**INDESTRUCTIBLE CARBONIC PAINT.**—A patent has recently been taken out in America by J. Weisman, of Philadelphia, for an indestructible anti-corrosive pigment. The patentee says:—"The nature of my invention consists in combining the metal of carbon, or purified graphite, with caoutchouc and shellac, together with a small portion of acetate, or sugar of lead; the ingredients being mixed with linseed oil and spirits of turpentine." *Claim:*—"What I claim as my invention, and desire to secure by letters patent, is the combination of carbon, or pure graphite, with caoutchouc and shellac, together with acetate of lead, linseed oil, and spirits of turpentine, for the purpose set forth, forming a perfectly indestructible anti-corrosive pigment, which also serves the purposes of anti-abrusion."—*Franklin Institute.*

**THE SMOKE NUISANCE.**—Manchester is to be reformed as to its smokiness. It seems that last session an Act was passed by Parliament imposing a penalty of 40*s.* a week on all furnaces in Manchester and Salford that should not, after the 1st January next, consume their own smoke; and at a recent meeting the town council undertook to enforce the Act. Some manufacturers have already adopted a very simple and efficacious contrivance for the purpose by driving a stream of atmospheric air into the furnace.

**TWO NEW POLICE COURTS.**—An order has passed the Privy Council appointing Monday, the 30th instant, as the day when the Union Hall Establishment will be removed to the new court at Stones-end, Borough; and that of Lambeth-street, Whitechapel, to the one just finished in Kennington-lane. A considerable change has been made in the districts attached to each of the metropolitan police-courts.

**NEW SECESSION COLLEGE, EDINBURGH.**—The college for the new secession from the Established Church of Scotland is to be in Edinburgh. The sum required was 20,000*l.* and 19,000*l.* of this sum has been raised from as many subscribers of 1,000*l.* each.

**PROPORTION OF HOUSES TO POPULATION BETWEEN THE UNITED STATES AND ENGLAND.**—The total number of houses in the United States is 1,300,000, while in England we have 349,147—not half the quantity in proportion to the population.



**PATENT SELF-ADJUSTING RULER.**—The round common rulers necessarily soil the paper upon which the pen acts, by transferring the ink to it. To obviate this inconvenience, a Mr. Schlesinger has invented a ruler which he very properly calls self-adjusting, in which the revolving part is concealed under a brass barrel, so that the pen slides and leaves the ruler perfectly clean and free from ink. This improvement is so manifest, not only for the advantage it affords in point of cleanliness and the superior accuracy it gives in parallel ruling, but for the speed with which it is used in shading drawings. On the side opposite the brass barrel is a scale for pencil ruling, divided into inches and parts, and true as a parallel ruler.

**IMPROVEMENTS IN SUNDERLAND.**—The Lords of the Treasury have granted £750L, part of the Parliamentary grant for public works, &c., to the corporation of Sunderland, in aid of a plan for providing a place of recreation for the inhabitants, the only condition of the grant being, that the ground, when purchased, shall be legally and permanently secured as a place of recreation for the people. It is intended to purchase and lay out Building-hill. The estimated cost is about 3,000L, the remainder of which will be raised by public subscription.

**STRASBURG CATHEDRAL.**—The *Presse* states that the belfry of the Cathedral of Strasburg has deviated considerably from its perpendicular within a short time, and has inclined more than 6 feet, calculating between the elevation of the summit and the base.

### TENDERS.

**TENDERS** delivered for Works proposed to be done at Forest Hill in Alterations and Additions to the House, and in the Erection of a Lodge and Stable, for—Dismock, Esq.—Mr. Porter, Architect, Bermondsey.

Messrs. King and Co., Islington	£1,520
Mr. Jay, London-wall	4,192
Messrs. Young	4,120
Mr. Plummer	3,970

The quantities collected and supplied to the builders, the tenders opened in their presence.

### NOTICES OF CONTRACTS.

For the supply of 6,000 tons of Iron Rails, each rail to be 16 feet in length, and weighing 65 lb. per yard.—H. Parker, Secretary to the Great North of England Railway Company, Darlington, Dec. 23.

For making a Sower in the Town of Cambridge, to be cylindrical and 2 feet diameter in the clear, length about 355 yards, average depth about 9 feet.—Frederick Randall, Clerk to the Commissioners, Cambridge, Dec. 26.

For the several works in the erection of the East and North Walcot Dispensary, Bath.—Mr. H. E. Goodridge, Architect, 7, Henrietta-street, Bath, December 28.

For the execution of Works necessary for the completion of the whole of the Railway from Shorham to Chichester, being a distance of about 22½ miles.—Frederick Otley, Secretary, Brighton and Chichester Railway Office, 4, Dean-street, Tooley-street, December 31.

For a supply of Iron Rails and Chain.—William Taylor, Secretary of the Great Southern and Western Railway, 3, College-green, Dublin, December 31.

For the erection of an Organ in the City Hall of Glasgow, cost not to exceed 1,500L.—Mr. G. W. Muir, Glasgow, January 1.

For Re-pewing Leverington Church, near Wisbech.—The Rev. Henry Jackson, Leverington, or Mr. W. Adams, Architect, Wisbech, January 7.

For Four Locomotive Engines and Tenders.—George King, 62, Moorgate-street, January 8.

For a Survey Plan and Valuation of the Township of Kimberworth, in Rotherham Yorkshire.—Mr. George Taylor or Mr. Richard Rhodes, Overseers of the Poor, January 8.

For taking down the present Bridge at Carrick-on-Shannon, and constructing a Stone Bridge of five segmental arches, with its approaches; building quays and harbour, forming wharfs, and deepening the bed of the river.—Edward Hornsby, Secretary, Shannon Commissioners' Office, Custom-house, Dublin, January 8, 1845.

For completing the Railway from Bishopstoke to Salisbury.—Alfred Morgan, Secretary, Nine Elms Station, Vauxhall, January 10.

For the erection of the Railway Works between Leeds and Bradford, including fencing, earthwork, masonry, roads, and permanent way.—William Clarke, Secretary, Hunslet-lane Station, Leeds, January 27, 1845.

For the execution of Works on the Chester and Holyhead Railway.—1st. A distance of eight miles, or thereabouts. 2nd. A distance of twenty-two miles, or thereabouts. 3rd. A Tunnel through the promontory of Penmaen Back, near Conway.—George King, Secretary, 62, Moorgate-street, January 29, 1845.

For the supply of 11,000 feet of nine-inch cast-iron Pipes for a new line of Aqueduct to be laid in the Island of Malta.—Vin. Casolari, Collector of Land Revenue, Office of Land Revenue and Public Works, Valletta, Malta, March 31, 1845.

### COMPETITIONS.

**THE** Committee of the Association recently formed in the Metropolis for the Construction of Baths and Wash-houses for the Labouring Classes, are desirous of obtaining Plans and Estimates for the Erection and Fitting-up of the First Establishment. The general basis of the plan can be seen at the Office, No. 3, Crosby-square. The author of the plan considered the best by the Committee will be selected to execute the work.

Plans for an Agricultural College to be erected at Cirencester, to accommodate 200 pupils and 6 tutors. The style is left to the taste of the architect. A Premium of 10 Guineas to the author of the most approved plan.—Robert J. Brown, Esq., Hon. Sec. Cirencester, January 1.

Plans and estimates are required for a Pauper Lunatic Asylum for the County of Somerset; the building to accommodate 300 patients, and to contain two Stories. The Committee of Visiting Magistrates wish it to be of a plain, cheerful character, but will not further fetter the architect by suggesting any particular arrangement as to the interior, its ventilation, warming, or otherwise. The ground selected contains 36 acres.—The Clerk of the Peace, Taunton. A Premium of 100L will be adjudged for the best plan, and 50L for the next best.

The directors of the Manchester and Birmingham Railway Company have offered a premium of 20 Guineas for the best design for Carriages suited for excursion trips and for private parties.

### TO CORRESPONDENTS.

*Communications have been received from the following, and are under consideration:*—"An Amateur," on a new Material for making Bricks—"T. H. Cash," on Window Glass—"An Old Subscriber," on the best Method of Book-keeping for Builders—"A Subscriber," on Perforated Zinc—"A Regular Subscriber," on the Reading Competition—"A Subscriber from the First," on the Various Styles of Architecture—"T. P.," on the best form for Pot Kilns for common red-ware—"W.," inclosing a sketch of a Chapel lately erected at Byers-green, Durham.

"Ignis."—We have not seen either the "Fire Annihilator" or a description of it; the patent, we believe, is only just enrolled.

"Economy and Improvement."—The Manchester Corporation cleared upwards of 30,000L. during the past year by supplying the inhabitants with gas. The profits have been, or will be, applied to local purposes.

The Minutes of Proceedings of the Institution of Civil Engineers have been received.

"A Herford Builder" wishes to know where "Vitriolic Cloth," and "Jeffery's Patent Marine Glue," can be obtained.

### APPROACHING SALES OF WOOD, &c.

BY AUCTION.

January 7, 1845.—At the Hall of Commerce, Threadneedle-street: 1,225 logs of St. Domingo Mahogany of superior quality and large dimensions.—Thomas Edwards, Broker, 1, Pinner's-lane, Great Winchester-street.

January 17, 1845.—At Garraway's Coffee-house, Cornhill: 10,000 Baltic and Swedish Deals and Batten; 10,000 Colonial Yellow Pine and Spruce Deals.—E. D. Warrington, broker, 15, New City Chambers.

BY TENDER.

Pear, Apple, Plum, and Cherry Trees now growing on the site of Victoria-park, being together 683 Trees.—Particulars of each lot may be had at the Office of Woods and Forests, 2, Whitehall-place, and at Mr. John Greig's, Hackney-wick, who will also show the trees. December 31.

### MEETINGS OF SCIENTIFIC BODIES

During the ensuing week.

MONDAY, December 23.—Geographical, 3, Waterloo-place, 8½ P.M.; Medical, Bolt-court, Fleet-street, 8 P.M.

TUESDAY, 24.—Zoological, Hanover-square, 8½ P.M.

### ADVERTISEMENTS.

**HIP TILES** to suit slate roofs in colour; Ridges, with plain or rebated joints, roll tops, and vertical ornaments; drains, many sizes, with plain or socket joints; paving in squares, hexagons, octagons, &c., different colours; roofing, in Grecian or Italian styles, other devices also, or plain; conduits, which do not require pure water; fire-bricks and tiles; clinkers, and of out-door paving; sundry wall-coping, garden-borders, chimney-tops; also tular and other uses of peculiar material. No agent, but a depot at WHITEFRIARS, and 22, WATERLOO-LANE, FLEET-STREET, LONDON, under Mr. PEAK'S personal care, to supply genuine FERRO-METALLIC goods at fair prices as per quality.

THE FILERIES, TUNSTALL, STAFFORDSHIRE, are near the centre of England, whence boats are sent direct to any inland places; or to the Mersey for the coast, the colonies and elsewhere.

TO ARCHITECTS, ENGINEERS, CONTRACTORS, BUILDERS, MASON, AND PLASTERERS, MR. WHARTS, SHIPPERS, AND THE PUBLIC IN GENERAL.

**JOHNS AND CO.'S PATENT STUCCO CEMENT.**—The following are the positive advantages possessed by this invention over every other Cement hitherto introduced.—It will effectually resist damp. It will never vegetate nor turn green, nor otherwise discolour. It will never crack, blister, nor peel off. It will form a complete Stone casing to any building covered with it. It is as closely resembles Stone that it is impossible to detect it. It never requires either to be painted or coloured. It will keep fresh and good in the case in any climate for any number of years. It is the only Cement that can be depended upon for export. It is the only Cement that can be used with confidence by the Sea-side. It may be used in the hottest or coldest climates at any season. It will adhere to any substance, even to wood, iron, or glass. It will carry a large proportion of Sand than any other Cement. It matures by age, and becomes perfect when other Cements begin to perish. It may be worked through the Winter, as frost has no effect upon it. It may be used on the inner walls of new Houses, which may be papered over or painted directly. Roofs laid or pointed with this Cement will remain undamaged by the severest Storms. Any Plasterer may apply it. The last use for use in the interior of buildings. The first cost of this material does not exceed that of the cheapest Cement now in use; but with all the above-named extraordinary and valuable advantages, nothing can approach it in point of economy.

Architects and Builders who have used this Cement have declared that it requires only to be known, to be universally preferred.

Specimens may be seen, and a Prospectus fully describing the Cement and its mode of application, together with a volume of Testimonials from every part of the Kingdom, may be obtained on application to MESSRS. JOHN & CO., AGENTS for the Patent, 5, Maiden-lane, Queen-street, Cheap-side, London; of whom also may be had.

**JOHNS AND CO.'S PATENT STONE COLOUR STUCCO PAINT** has been intended for pointing over exterior Walls of Houses that have been covered with Roman or other Cements, and which have become dirty and discoloured. It is in every way better suited for this purpose than White Lead paint, which will frequently come off in flakes, being in direct chemical opposition with Cement; whereas MESSRS. JOHN & CO.'S PATENT PAINT having an affinity for Stucco, binds itself with it, stopping the action, thereby rendering the wall proof against weather, and in the finish producing a pure stone-like effect, producible by no other Paint whatever. It is cheap in its application, and may be used by any Painter, in any climate, even in the most exposed Marine situations.

### SEYSSAL ASPHALTE COMPANY.

"CLARIDGE'S PATENT."

ESTABLISHED 1838.

**THIS ASPHALTE** is a Bituminous Ligne stone, obtained from an inexhaustible Mine at Tylmont, in the Jura Mountains.

Previously to its introduction into this country, in 1838, the Material had been used for many years in France, and its great utility was extensively patronized by the Government of that Country.

Among the various uses to which it can be applied, the following may be enumerated: For Foot-Pavement, for Carriage Roads, for Carriage Approaches to Mansions, Garden-walks, and Terraces; the flooring of Kitchens and other basement offices; also of Coach Houses and Stables, Dog Kennels, Barn Floors, Cow Houses, Piggeries, Poultry Houses, Gun Rooms, and Maltings. For Roofing, Covering of Railroad and other Arches, the Lining of underground Cellars near Rivers to prevent the ingress of the Tides; also in Covering the ground-line of Walls, to prevent damp rising (this application of the Asphalt of Seyssal is particularly recommended by the Commissioners on the Fine Arts), thereby rendering the basement stories in the worst situations both dry and warm. It is an excellent Cement, as applied to Dock, Breakwaters, or Walls built for resistance to the encroachments of the Sea. For lining of Tanks, Fish-Ponds, and other Hydraulic purposes.

J. FARRÉLL, Secretary, Seyssal Asphalt Company's Works, "Claridge's Patent," Stangate Depot, London.

COMMISSIONERS OF FINE ARTS' REPORT ON THE MEANS OF PREVENTING DAMP IN WALLS. THE DIRECTOR OF THE SEYSSAL ASPHALTE COMPANY have much pleasure in recommending to the notice of Architects, Builders, and others, the application of THE ASPHALTE of SEYSSAL, as the only effectual means of preventing DAMP rising in WALLS.

The following account of its application is extracted from "The Appendix to the Commissioners of Fine Arts' Report," page 18.

In 1839 I surveyed and inspected the construction of a house of three stories on the Lac d'Enghien. The foundation of the building is constantly in water, about 10½ inches below the level of the ground-floor. The entire horizontal surface of the external and internal walls was covered, at the level of the internal ground-floor, with a layer of Seyssal Asphalt, less than half an inch thick, over which coarse sand was spread.

Since the above date no trace of damp has shown itself round the walls of the lower story, which are for the most part painted in oil of a gray stone colour. It is well known that the least moisture produces dark spots, darker on lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is only about 2½ inches above the external surface of the soil, and only 1½ at the utmost, above that of the sheet of water.

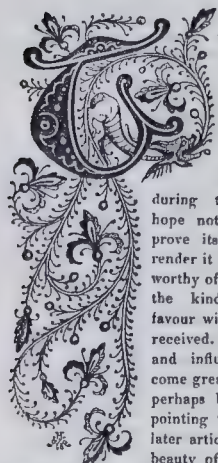
The layer of Asphalt having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been since remarked at the base of the door-posts.



# The Builder.

No. XCIX.

SATURDAY, DECEMBER 28, 1844.



WO years have passed away since we committed the first Number of our Journal to the public, and we have striven

during that time, we hope not vainly, to improve its efficiency and render it more and more worthy of its purpose and the kind and growing favour with which it was received. Its circulation and influence have become great, and we might perhaps be pardoned if, pointing to some of our later articles, and to the beauty of many of the

illustrations, we indulged in certain self congratulations. So far, however, from this, or from being in any degree disposed to relax in our endeavours and remain satisfied with *THE BUILDER* as it is, we have been actively engaged in making such arrangements for the ensuing year, as will enable us to set before our readers earlier and more varied information, and to increase in many other ways its value. We have obtained the assistance of a gentleman well known for his energy and professional ability, and will spare no pains to render this journal complete in all respects. Of the intentions of our editor we shall not speak now, leaving him to set them forth at length in the ensuing Number. Suffice it to say that they are more extensive than we have yet avowed, and cannot fail to interest a larger class of readers.

The proceedings of the various societies connected with architecture, practical science, and art, especially of the Royal Institute of Architects, will be carefully reported by one moving amongst them, and acquainted with their working, so as to present in our journal a faithful record of their proceedings (and it will be the *only* one), which may safely be referred to hereafter.

We have now only to offer our grateful thanks to friends and correspondents; and, with a confident hope that they will rally round us with increased numbers, respectfully wish them, and sugar for ourselves,

A Happy New Year.

## SOCIETY OF MASTER CARPENTERS.

A MEETING of this society was held at the Freemasons' Tavern, Great Queen-street, last Monday evening, for the purposes of electing officers for the ensuing year, and taking into consideration a petition to Parliament to abolish the window-duties, or to so modify them as to lead to a better system of ventilation. Mr. Biers, the president, took the chair, and was supported by Mr. Sparks, the vice-president. With the exception of the treasurer and the auditors, no alteration was made in the election of officers. Mr. Higgs was appointed treasurer in the room of Mr. Lever, from whom a

letter was read, stating that after having served the society to the best of his ability for a period of thirteen years, severe ill health at last compelled him to tender his resignation. Several members present spoke in very complimentary terms of the way in which Mr. Lever invariably discharged his duties. A vote, expressive of the regret which the society feel both as to the resignation and the cause which led to it, was unanimously passed, and, as a testimony of the highest respect, Mr. Lever was elected an honorary member. The auditors chosen were Mr. Stephen, Mr. Burstall, sen., Mr. Locke, and Mr. Gooch.

Mr. Biers introduced the subject of the petition above referred to in a long and able speech, pointing out the evils which sprung from the present system of window duties, which press with particular severity upon the labouring classes, and expressing a firm belief that an alteration for the better would take place during the ensuing session, if means such as they were then about to carry out were generally adopted. Several members joined in the discussion, particularly Mr. Stephens, Mr. Burstall, sen., Mr. Locke, Mr. Thomas Ridge, Mr. Higgs, and Mr. Gooch; after which the following petition was determined upon, and at once received the signatures of all present:—

"To the Honourable the Commons of the United Kingdom of Great Britain and Ireland, in Parliament assembled.

"The petition of the undersigned Master Carpenters and Builders residing in and near the metropolis,

"Humbly sheweth,

"That your petitioners are desirous of adopting every improvement in construction which may tend to promote the healthfulness of dwelling-houses, in accordance with the valuable evidence laid before your honourable House by Sanitary Commissions, but that your petitioners have daily reason to observe that a fatal obstacle exists to the improvements most needed, in the present mode of assessing houses to the window duties.

"That the window duties, as now assessed, operate as a premium upon defective construction, the occupier having a direct interest in blocking up every opening intended for the admission of light and air that can possibly be dispensed with, to lessen the burden of taxation.

"That under the existing system, an unglazed aperture only 7 inches wide cannot be made for purposes of ventilation in a cellar in London without the payment of an average duty of 8s. per annum, although such an opening is now permitted to be made free of duty in the town of Liverpool, by a local Act of last session, 7 & 8 Vict. cap. 51.

"That your petitioners are deeply impressed with a conviction that the influence of light and air are intimately connected with the moral as well as the physical state of the whole population. That the exclusion of light is unfavourable to habits of personal cleanliness, and that the crowded lodging-houses of the poor become necessarily abodes of disease when rendered by fiscal enactments gloomy receptacles of dirt.

"Your petitioners therefore pray your honourable House to put an end to the serious evils arising from this cause, by either a repeal of the window duties or by such a limitation of their present burden, that taxation may no longer keep pace with improvement, and that there may be no check or hindrance to the construction of light, cheerful, and well-ventilated dwelling-houses for any class of the community.

"And your petitioners will ever pray, &c."

## BUILDING SOCIETIES.

### LETTER IV.

BY WILLOUGHBY WILTON.

My first letter\* on these societies was founded on data which supposed that the borrower paid no more than the surveyor's valuation of the premises, to wit, 315*l*.: that the buyer or borrower took 4*1*/<sub>2</sub> shares at 70*l*., which he was to liquidate in ten years by monthly instalments of 3*l*. 3*s*., and a ground-rent of 5*l*. a year. It assumed besides that 100 capitalists and 100 borrowers constituted the society:

and at the end of ten years it shewed a profit of 29*l*. with 5*l*. a year for ground-rent to each of the capitalists.

I purposely omitted in that letter the calculation of the bonus of 50*l*., which the borrower gave to the capitalists; but in my second letter\* I included the bonus in the calculation, and shewed that the "debtor-speculator" would be compelled to continue his subscriptions for seventeen years and two months, before he could get rid of his obligations to the "Metropolitan," or any other building society; and in that time his repayment of 480*l*. would amount to 889*l*. in the hands of the capitalists; and that he would thus pay the capitalists "twenty-two years and nine months' rent" for the pleasure of being his own landlord.

My third letter† touched upon the "London and Westminster Provident Association and Savings' Fund;" and demonstrated that the borrower does not participate in the profits, but is compelled to allow usurious discount to pay an illegal rate of interest; and also to incur liabilities which no prudent man would knowingly risk; and, as in the former, that these societies cannot terminate in ten years.

I had founded all my calculations upon the data furnished by the Prospectuses of these loan societies; and my third letter was in type before I had read any of the numerous pamphlets that have been published for and against these building societies, save and except some notices of them which appeared in *THE BUILDER*, and for which I refer my reader to the particular numbers in which those notices are to be found.

I have endeavoured to reduce the question to one of figures; and if I have uttered a hard word against these societies, its appearance was not required to guarantee the representations which the doctrine of numbers made of the statements exhibited in the prospectuses.

I must now advertise the reader that in these societies, as at first established, the shares were fixed at 150*l*., in conformity with the Act of Parliament; the monthly subscriptions were 1*l*. a month per share; and when there was money in hand, a meeting was called, and any shareholder wishing to purchase property sent in a tender, stating how much less than the *ultimate* value of his share he would take in consideration of receiving immediate payment; and the tender offering the largest discount was entitled to the preference; the property was purchased, and mortgaged to the society, the shareholder kept up his subscription of 1*l*. per share monthly until these, with their profits, amounted to 150*l*. per share, when those members who had not borrowed received the 150*l*. also. The deeds were then given up, and the society, the mortgages having been paid off, was dissolved.

I understand that in the manufacturing districts, some of these societies did well, and closed their transactions in ten years. But this success raised up new societies, in which the shares were fixed at 120*l*., and the monthly payments at 10*s*., and it has been to these last I have hitherto directed my attention, and to these I shall still confine my remarks. Now, while it is perfectly true that a monthly subscription of 1*l*., if improved at 5 per cent. compound interest for ten years, would be sufficient to meet the loan of 150*l*., it is equally fallacious to assume, as the prospectuses do, that when the shares are reduced 4*th*, and the monthly payments 4*th*, the societies can close in ten years, but must endure the full term which the figures give in my second letter. The position of those members who do not borrow, but allow their monthly payments to accumulate on the principle of compound interest until these and the profits from the borrowers make their shares 120*l*., requires no illustration—there is to them a certainty of profit without difficulty or risk; they pay 10*s*. a month per share for a period of from nine years and two months, says "COMMON SENSE," and are then to receive 120*l*. per share, or interest at the rate of about 20 per cent. per annum on the money paid in. This is the share received by gentlemen well known for their ability and habitual caution,—who will not neglect their duty in a speculation from which such enormous profits are to be realized,

\* *THE BUILDER*, No. 96, pp. 601, 602, 603.

† *Ibid.*, No. 98, pp. 625, 626, 627.

\* *THE BUILDER*, No. 95, pp. 580, 590.



—who must know that the borrower cannot purchase a house in ten years for 98l. more than he would have paid in rent in that time,—who require security for the nominal value of the 4l or 8 shares a man may purchase, each at 120l.—who declare the borrower's deposit of 14l. per share forfeited if he is unable to complete his purchase. Now, as the only security which the Act of Parliament contemplates is the property bought, it is plain, these societies are not *building*, but *loan* societies; they cannot benefit the necessitous, nor enrich, or even assist the industrious man in obtaining a small property: for if he take 8 shares at 120l. each, he bargains for 960l.: if he allow discount 59l. per share, he takes 488l., and the property bought with this he mortgages, and finds surties for the payment besides of 472l. to the capitalists, or members who do not take up their shares. Here, then, it appears that the Act of Parliament is set at naught, and that these societies are *loan*, not *building* societies. Thus, without attempting to balance the account, the transactions are epitomized:—

9 shares at 120l. each	£960 0 0	20 annual payments of 48l.	£960 0
Discount, 59l. per share	472 0 0	Or 144 years' subscription of 48l.	696 0
Balance borrowed	£488 0 0	Ditto of Interest at 19l. 4s.	278 8
Subscription on 8 shares at 6l. each	48 0 0	Total sum paid	£974 8
Interest on ditto, or redemption money 2l. 8s. each	19 4 0	Less sum borrowed	488 0
Total annual payment	£67 4 0	Leaves a sum of £486 8	
10 years' subscription of 48l.	480 0 0	paid above the sum which has been received.	
10 years' interest at 19l. 4s.	192 0 0		
Total payments for 10 years	672 0 0		

It is abundantly manifest from this rough estimate, in which I have not looked at the improvement of the monthly contributions, as in my second letter, that these societies are *loan*, not *building* societies, and cannot terminate in ten years. If, however, a member wishes to close his dealings with the directors at the end of one year, to redeem the mortgage, on which he has borrowed 488l., he can do so by paying 912l., which, with the year's subscription of 48l., will make 960l., which is the full amount expressed to be secured in and by the mortgage. This statement has been controverted; but its truth appears indisputable. The borrower, however, would gain little, even if his first year's subscription were allowed him.

Moreover, I have learned that members holding unpurchased shares, who withdraw during the first four years, not only do not receive any portion of the profits, but incur a forfeiture by so doing; for if the borrower fail in his monthly payment, call it 5l. 12s., he is fined as follows\* :—

	Non-payment of subscription.	Non-payment of interest.	Total of fines.
£. s. d.	£. s. d.	£. s. d.	£. s. d.
1st Month	0 4 0	0 2 0	0 6 0
2nd do.	0 12 0	0 6 0	0 18 0
3rd do.	1 8 0	0 14 0	3 2 0
4th do.	2 12 0	1 6 3	3 18 9
5th do.	4 4 0	2 2 0	6 6 0
6th do.	6 4 0	3 2 0	9 6 0

And it appears by the rules of these societies, "Should the borrower neglect to pay such fines until they amount to 12s. per share, he shall be chargeable with an additional fine of 1s. per month per share until the same amount to 20s., and afterwards with a fixed fine of 2s. 6d. per month per share on such arrears until liquidated."

"Half of the above fines to be imposed for the non-payment of interest."

Here is a pretty smart series which I will leave the managers of these societies to answer for, reminding them that about 113 years ago, there flourished a "CHARITABLE CORPORATION," whose professed intention was to lend money to the poor at legal interest, upon small pledges, and to persons of a higher rank upon proper security, but the cashier, who was member for Marlow, and the warehouse-keeper disappeared in one day; 500,000l. was lost to the members—the petitioners were reduced to extreme distress—for the deluded masses now came to Parliament—a secret committee investigated the matter—many persons of rank and quality

were implicated in "this infamous conspiracy," and no fewer than six members of Parliament were expelled for the "most sordid acts of knavery." It is often said there is no evil to the person, or property, or character of individuals in "happy and merry England," for which there is not a remedy. I will not now venture any opinion on the foregoing quotation, but state what the fixed fines will amount to in six months, on a monthly payment of 5l. 12s., as I find them in the little work referred to above; merely observing that these fixed fines are exclusive of ordinary fines and additional fines.

	Non-payment of subscription.	Non-payment of interest.	Total of fines.
£. s. d.	£. s. d.	£. s. d.	£. s. d.
1st Month	1 0 0	0 10 0	1 10 0
2nd do.	2 0 0	1 10 0	3 10 0
3rd do.	3 0 0	3 0 0	6 0 0
4th do.	4 0 0	5 0 0	9 0 0
5th do.	5 0 0	7 10 0	12 10 0
6th do.	6 0 0	9 10 0	15 10 0

I venture to assert now that no borrower who has once fallen into arrear with his payments can ever overtake this increasing series: people talk of screws having so many threads to the inch; how much is the gain per cent. in this score of fines? But there is a remedy for this, for the rules provide that if the borrowers neglect to make these payments for six consecutive monthly nights the society may—nay, are to—take possession of the property mortgaged as security, absolutely to sell the man's "freehold," and "out of the proceeds, in the first place, discharge all costs, charges, and expenses incurred; secondly, reimburse the society all subscriptions, fines, and other payments due, owing, and payable under and by virtue of the rules, or mortgage deed, or both; and the surplus, if any, is to be paid to the borrower."

The borrowers have no voice in this or any other question which may be agitated, resolved on, or carried into force by the lenders; for as soon as a member has borrowed money—

"He shall be deemed to have withdrawn from these societies in respect of any share or part of share he may have purchased, and shall cease to have or take any interest therein; but shall, nevertheless, be subject to those rules as a member."

He is repudiated if he shew his face to speak or vote, or use the privileges of the members who remain lenders; and if he fail in six payments his "castle" is sold, and all his fine speculations end in the words of Adam—

"Yet well if here would end

The misery; I deserved it, and would bear  
My own deservings; but this will not serve;"

and, lifting up his eyes, he sees the only house in which to seek shelter—the union workhouse.

It is shewn above that an annual payment of 48l. as for subscription for ten years, and interest or redemption money of 19l. 4s. per annum, will in that time amount to 672l., as the sum paid by the borrower; but if the lenders improve the monthly contributions of 5l. 15s., or the 12ths of 67l. 4s., for 120 months, at 5 per cent. per annum compound interest, they will make 857l. 8s. out of the borrower's contributions, which gives a profit of 185l. 8s. 1d. And suppose the lenders consider that the borrower has paid 672l. in ten years, he will still have to pay 288l. But this is not the proper view of these 144 years' subscription of 48l. a year, and 19l. 4s. of interest. These items, amounting to 67l. 4s., improved for 144 years at 5 per cent. compound interest, will give the lenders the sum of 1,395l., or thereabouts; the payments being 5l. 15s. for 174 months consecutively.

This is the true and legitimate way of viewing the question; and I recommend the Lord Chief Justice of the Court of Common Sense to call the attention of the "counsel for the plaintiffs" to this point when the examination of the witnesses shall be undertaken.

Hence, I infer, the counsel for the plaintiffs in this court are below the mark by the sum of 421l.; and this makes all the difference in the improvement of money, in which the borrower is *tax et præterea nihil*.

There are yet some nice points to be considered in regard to the way in which interest is charged and paid, which I reserve until another opportunity.

## DESCRIPTION OF THE IRON SHED AT THE LONDON TERMINUS OF THE EASTERN COUNTIES RAILWAY.

By WILLIAM EVILL, Jun., Grad. Inst., C.E.

(Read at a Meeting of the Institution of Civil Engineers.)

This station, which was commenced in 1810, and has proceeded to its present state, as the funds of the company permitted, contains the engineering, directoral, booking and other offices, of the joint companies of the Eastern Counties and the Northern and Eastern Railways:—

The trains of each company run on the same line for upwards of three miles; the Northern and Eastern Railway branching off from the Eastern Counties at Stratford.

The station is entirely built on arches; those supporting the columns of the roof are semi-circular, each of 25 feet span, and consist of five rings of brickwork. They are detached from the arches supporting the station, in order that they may not be affected by the vibration caused by the trains.

The station itself forms three sides of a rectangle, inclosing the shed on the north, south, and west sides; the trains running into the shed from the east.

The shed consists of three elliptical roofs of corrugated iron supported on columns. The span of the centre roof is 36 feet, with a rise of 9 feet; the height of the springing line, above the rails, is 22 feet 6 inches. The span of each of the side roofs is 20 feet 6 inches, with a rise of 4 feet; the height of the springing line being 17 feet. The entire length of the shed is 230 feet.

There are two rows of seventeen cast-iron columns on each side. The columns are 13 feet 9 inches apart, and are connected immediately over the capitals by a cast-iron elliptical open girder,  $\frac{1}{4}$  inch in thickness. On this girder runs a gutter, also of cast-iron, from which the sides of the roof spring. The other sides rest on a cast-iron gutter, let into the brickwork of the station, supported by iron brackets, and strengthened by wrought-iron tie rods, running down through the brickwork.

The columns, which are continued above the first gutter, are connected by cast-iron semi-circular open panelling, and from the gutter upon this the centre roof springs.

The corrugated iron is bolted to flanches running the whole length of these gutters. The columns are cast in two parts, the upper being let 3 feet into the lower part. Pieces are cast on the columns to let into the girders and panelling; thus, in connecting the columns with the girders, panelling, and gutters, no bolts whatever are used.

The base of each column rests on a stone, which is firmly bedded in concrete; the circular part is continued through the stone to the backing of the arches, where it is fixed in a cast-iron shoe. At the end of the shed the columns are doubled, and are cast stronger, as they support one wall of the building.

There are three lines of rails, with a gauge of 5 feet, under the centre roof, and one line of rails and a platform, under each of the side roofs.

The corrugated wrought-iron roof is composed of sheets of No. 16 wire gauge, or  $\frac{1}{16}$  inch in thickness. The arch is formed by curving the sheets of iron, in the transverse direction to the corrugated arches, and riveting them together longitudinally.

The weight per foot of the corrugated iron is 3 lb.; the whole weight of the centre roof, which measures 10,235 superficial feet, being scarcely 13½ tons, and each of the side roofs, which measure 5,405 superficial feet, weighs 7½ tons.

The roof is thoroughly drained, the water running down the curve of the corrugation into the gutters, and thence through the columns, to their base, whence drains are carried down the backing of the arches below and through the piers to the ground.

The roof was erected by Messrs. Walker and Sons, of Bermondsey, who purchased the patent of Mr. H. R. Palmer, the inventor and patentee of the corrugated iron, at a charge, including fixing, of 6l. 10s. per square of 100 superficial feet, the whole cost of the three

\* Building Societies.—Proceedings in the Court of Common Sense, p. 29.



roofs being 1,365 ft. They might, however, now be erected for nearly half that cost, as the patent has expired, and increased facilities for manufacture have been provided.

The castings were made by Messrs. Braithwaite, Milner, and Co., and the shed was designed by Mr. John Braithwaite, the engineer to the Eastern Counties Railway, and was erected under his superintendence.

Lightness and strength appear to be attained by the corrugation of iron, inasmuch as a single sheet, so thin that it will not stand alone in an upright position, will, after undergoing the process of corrugation, bear in a vertical position, upwards of 700 lbs. without bending. Its economy is manifest from the saving it effects in other materials usually used in building, and the roofs already erected appear to have tested its durability. This roof has stood perfectly firm, and is not in the slightest degree altered in form, although of a large span.

Many corrugated roofs have been erected. There is one of 40 feet span and 225 feet in length in the entrance basin at the London Docks; one in the St. Katherine's Docks, and others on the Birmingham, Great Western, and Blackwall railways; they are, it is understood, generally approved.

Mr. Palmer has lately taken out a patent for corrugated cast-iron, which is now being used for erecting a bridge near Swansea, in South Wales. It consists of three arches; two of them 48 feet span, and one of 50 feet span. This corrugation requires no riveting, as the joint is cast on the plate, and the construction of the bridge is stated to be much simplified by the use of iron in that form.

#### TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLLSON.

(Continued from p. 628.)

237. **FIR AND PINE.**—Near Astoria, in the territory of Oregon, eight miles from the embouchure of the river Columbia, exists a fir measuring 46 feet round and 155 feet high.

238. Another, on the banks of the Unqua, measures 57 feet in girth, and is 246 feet high.

239. At Roseneath Castle, Argyleshire, there is, with many others of magnificent dimensions, a silver fir upwards of 125 feet high, and the stem of which, at 6 feet from the ground, measures 7 feet in diameter: another nearly equals this.

240. There has existed on the Inches at Aberdeen, beyond the memory of any living individual, an immense trunk of Deeside fir, girthing perhaps 25 feet at the largest part, and supposed to have been carried down the Dee by some flood, and hauled on to one of these little islands, which are now connected with the main shore.

241. There is a noble tree of Scotch fir growing on the estate of Brodie, in Morayshire, 15 feet in circumference.

242. There is a specimen of the Fir tribe worthy of notice in the main street of Yoxford, in Suffolk.

243. At Gordon Castle, a plank from an immense tree, some 7 or 8 feet wide, is kept in the hall, as a sample of Spey or Rothenmurchus growth.

244. Brindley said that Red Riga Deal, or Pine-wood, would endure as long as oak in all situations.

245. The trusses of the old part of the roof of the Basilica of St. Paul, at Rome, which were framed in 816, were sound and good in 1814, say a thousand years afterwards.

246. The large dormitory of the Jacobins' Convent, at Paris, lasted 400 years.

247. Pontey, in his "Forest Pruner," states that some natural grown Scotch fir was known to have been 300 years in the roof of an old castle, and was as fresh and full of sap as timber newly imported from Memel, that in fact part of it was actually wrought up into new furniture.

248. At Fulham Palace, there is in the garden a pinaster upwards of 80 feet high, and exceeding 12 feet in circumference.

249. **ORIENTAL PLANE.**—About three miles from Constantinople, in the valley of Bujik-dere, there is an example which measures 150 feet in circumference, and incloses a space 80 feet round.

250. Pliny mentions a plane tree in Lycia, the hollow trunk of which was sufficiently

commodious to afford a night's retreat to Licinius Mutianus and eighteen followers: the cavity measured 75 feet round, and the summit of the tree was likened to a small forest.

251. Flint, the distinguished geographer, mentions, under the appellation of Sycamore, an example near Marietta, Ohio, measuring 15½ feet in diameter; also one which he had seen on the Big Miami river, apparently larger.

252. At Utica, in the State of New York, the hollow trunk of an enormous specimen was fitted up and used as a retail shop; afterwards it was carried to New York for exhibition, and is probably that which follows:—

253. A Number of the *New York Traveller* relates that "A Sycamore tree of most singular and extraordinary size has been brought to this city from the western part of this state. The interior is hollowed out, and will comfortably accommodate some forty or fifty persons. It is splendidly furnished as a sitting-room, and contains every article of elegance and usefulness. It has a handsome piano, sofas, glasses, and mirrors of fit and becoming style, and is decorated with pictures and fancy articles." An English journalist thinks it probable that the apartment was obtained in the lengthway of the trunk, the diameter of it affording a sufficiency of height from floor to ceiling.

254. Judge Tucker, of Missouri, fitted up an ample and convenient study from a portion of a hollow trunk, providing it with roof, stove, &c.: in this instance the building was regularly cylindrical.

255. Clark and others mention very large examples, and Mr. Quin, in his late voyage down the Danube, refers to one of vast dimensions.

256. Herodotus informs us that Xerxes when he invaded Greece, reposed a whole day under an enormous plane, with the colossal form and pleasant shade of which he was so much delighted that he encircled it with a collar of gold.

257. **POPLAR.**—Sir Thomas Browne, in mentioning the lime tree referred to in Art. 210, describes also a poplar near Harling, as of nearly the same dimensions.

258. In Hampton Court Park there is one 97 feet in height, and the branches of which are so great, springing, as they do, near the ground, that they give to the tree the appearance of a group: it is 14 feet in circumference.

259. **IVY.**—At Gizean, near Montpellier, Decandolle saw one whose trunk near the base measured 6 feet round, and the immensity of which, he says, was truly astonishing. If still in existence, this tree is computed at 4½ centuries old.

260. Another, known to be forty-five years old, was but 7½ inches round; this was taken as the datum from which the age of the preceding was estimated.

261. The writer saw about twelve years ago, in the ruined castle of Rothesay, in the island of Bute, ivy of very strong and abundant growth; many of the stems, from recollection, being as much as 7 or 8 inches in diameter, and some of which had, when twigs, penetrated small crevices in the massive walls, and grown there till they rent the latter quite through.

262. See also Art. 221.

263. **OLIVE.**—In the Garden of Olives, at Jerusalem, there are now eight that are believed to be at least 800 years old, there being ancient documentary evidence which proves their having existed anterior to the taking of Jerusalem from the Saracens by the Turks in 1043; according to other authorities, however, all the trees near, during the siege of Jerusalem, were cut down, although most probably their roots, and among them those of these eight, were left undisturbed.

264. The largest mentioned in Italy by Picozzi is at Pescio; this tree, according to Moschetti, must be 700 years old.

265. **CEDAR OF LEBANON.**—Some now growing there are said to be more than 30 feet in circumference, in 1787 they were supposed to be about 800 years old.

266. Pliny mentions its use in the temple of Apollo at Utica.

267. **MAHOGANY.**—About October, 1843, Messrs. Broadwood, the piano-forte manufacturers, gave 3,000*l.* for three logs, the produce of a single tree.—*BUILDER*, p. 496.

268. Honduras logs are occasionally as much as 5 feet square.

269. **PEAR.**—There is one growing in the garden of the parsonage at Homelacy, in Herefordshire, which once covered half an acre of ground; now it occupies an amazing space, the branches delving into the ground, taking root, and springing up into fresh trees, after the manner of the banian-tree.

270. **ACACIA.**—In the *European Magazine* for October, 1811, the Rev. James Willis, writing to Sir John Sinclair on this tree, says, "the largest growing in this country is on a bed of pure chalk, in the gardens of Whitebury House, near Fordingbridge, belonging to Lord Shaftesbury."

271. **DRAGON-TREE.**—In the Island of Tenerife, in 1822, a tempest laid prostrate a colossal and celebrated specimen of this tree, which measured 45 feet in circumference near the roots, and about 50 or 60 feet in height; and which gigantic dimensions it had attained as early as the fifteenth century. The trunk parted into many branches in a candelabrum-like fashion, each terminated with tufts of leaves; the tree had continued to bear fruit as well as leaves, and to evolve during the dog-days the deep red liquor called *dragon's blood*, which, when dried and become brittle by the atmospheric action, is vended by the apothecaries.

272. **ORANOE.**—It is stated that that in the convent of Santa Sabina at Rome was planted by St. Domenico in 1200; and that of Fondi by St. Thomas d'Aquinas in 1278.

273. **AFRICOT.**—A fine specimen, planted in 1714, is growing in the garden of J. J. Deighton, Esq., Hurston; it has a stem 3 feet in circumference, and bears an abundance of fine-flavoured fruit.

274. **ASH.**—One is recorded which was 24 feet in circumference, and another upwards of 40.

275. In Cobham Park, Kent, two trees measured respectively, at 3 feet from the roots, 13 feet 7 inches, and 12 feet 3½ inches in circumference.

276. **MULBERRY-TREE, SHAKESPEARE'S.**—Perhaps some reader of *THE BUILDER* can contribute some information respecting this.

277. **BANIAN.**—See Art. 122, No. 51.

278. **ALDER.**—See Art. 90, No. 84.

*Erratum in Art. 181, 5th line.*—For "about 450," read "considerably above 300."

#### NOVEL PROPOSITION TO KEEP DOVER HARBOUR CLEAR OF SHINGLES BY MEANS OF STEAM.

It is manifest that the shingles forming the bar occasionally in front of Dover Harbour would be removed by a continuous torrent of water acting with a force against them exceeding that by which they were brought there, and that the present tidal force cannot be effective by any increase of water, because such force is limited by the tidal height, and by the time of the tide, and is doubly a diminishing force—first, in its advance and descent to the points of its operation, and secondly, by the opposition of the reflux of the tide in its rise after the ebb; and that the force of the efflux water at mere tidal height can never be equal to the influx water at the same height, augmented by winds and currents.

It is also manifest that a force exceeding that which brings the shingles in the front of the harbour's mouth could be obtained by steam-engines with a system of pipes, stop-cocks, and valves, to be served with the penned water, and could be made to operate successfully in keeping the entrance of the harbour clear; and consequently, that the depth of the outer harbour, now left dry at low water, would be thereby augmented. For example, if the 380 yards of cast-iron pipe, 7 feet in diameter (which, at 11*l.* per ton, cost 10,000*l.*), when taken up, had been laid at a depth of two or three fathoms below low water, in lengths, radiating from a steam-engine power fixed on the south-western pier head, or if pipes at such a depth had been added to the present sluices, and a stream of water forced by steam power through them with a velocity several times greater than that of the tide and currents, there would not have been any cause for the recent memorials to the Warden of the Port and to his assistants.

It has been proved upon the best evidence, that an extension of the south-western pier into three or four fathom water at low water,



would screen off the south-westerly gales, and cause the shingles in their tangential passage round the pier so extended to go in the direction of Hope Point, and that a breakwater refuge for shipping would be thereby effected in storms. By such a work one side of a refuge harbour would be provided. The only objection started to the extension of this pier has been the difficulties of getting vessels to sea with the winds from the southward and eastward. The question at issue is that of getting vessels into the harbour, not out to sea.

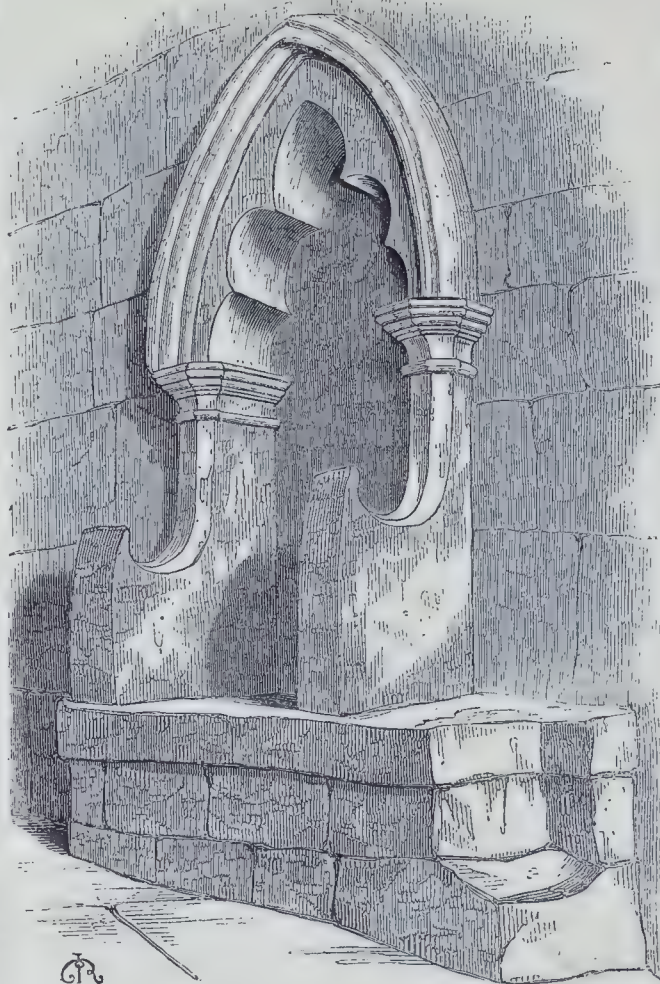
It is suggested, as a preliminary to any works in front of the harbour, that soundings at equal distances from the coast, in the fronts of the harbour and parade, in the direction of fixed lines, marked out by stationary posts, set out by certain bearings of the compass on the shore, to the extent of eight fathoms water, should be taken at various times of winds, tides, and seasons, and registered on blank maps prepared with the compass, bearing lines, and points of distance drawn on them; by which proceeding it is thought that some knowledge might be obtained of what should be done, and much expense in speculative projects avoided. Sketches of such blank maps, with the compass direction of the lines, would be acceptable. If such maps, containing the soundings taken in the manner before mentioned, were seasonably, and tidably, with the various winds, published, they would be as useful maritimately, as with reference to the works necessary to remedy the defects of the entrance to this harbour.—*Correspondent of the Dover Chronicle.*

#### IMPROVEMENTS IN THE TOWER OF LONDON.

THIS ancient fortress is about to undergo extensive alterations and improvements. A new grand entrance will be made facing Upper Thames-street, and will be approached by a drawbridge. The Warders'-hall, now fronting the Stone-kitchen, is to be destroyed, and a new one to be erected, which, together with the ticket-office and guard-room, will form the buildings at the grand entrance. The two archways almost at the extreme eastern end of the fortress, leading to what is termed the Irish barracks at the south-east angle, are to be removed. The entire row of buildings on the opposite side of the way is also to be demolished, and the whole space of the rampart wall will be cleared away. The houses fronting the barracks in a line with the King's Arms public-house, about forty in number, are to share a similar fate. The alterations intended immediately adjacent to the grand parade are equally extensive. The houses on the right, after passing under the Bloody Tower to the parade, now the residence of some of the warders, will be destroyed, also the guard-room; all the buildings contiguous to the White Tower are to be swept away, so as to throw that interesting and stately structure open to the view of the spectator, many of its beauties being hidden by the unsightly buildings that are attached to it. On the ruins of the grand store-house is to be erected a magnificent building for the accommodation of 800 soldiers, the style of which is to be in strict keeping with the White Tower. Extensive excavations are now going on in order to secure a good foundation, for which purpose the whole of the burial-ground attached to St. Peter's ad Vincula has been devoted, the bodies therein having been removed and deposited in a spacious vault. Some of the buildings to the west of the parade are to be pulled down to make room for more substantial erections. The houses on the terrace, known as the Map-office, are to be used as officers' residences, the roofs of which will be made to correspond with the White Tower and the intended new barracks. The Beauchamp Tower, which stands on the west side of the parade, will be thrown open to public view, and when the records are removed to the New Houses of Parliament, the White Tower will be open for public inspection.

**ST. MARTIN'S CHURCH, HEREFORD.**—A prospect exists of the speedy completion of this edifice under the superintendence of Mr. Jeppard, the architect. A committee has been formed, a subscription entered into, and the consecration will probably take place early in the ensuing spring.

#### STONE CONFESSIONAL CHAIR, LENHAM CHURCH, KENT.



PERSPECTIVE VIEW.

(From a Drawing by C. J. Richardson, Esq., F.S.A.)

#### STONE CONFESSIONAL CHAIR, LENHAM CHURCH, KENT.

THE above relic of very ancient days is worthy the pencil of a Cattermole; it can hardly be looked upon for an instant without suggesting the dark figure of a monk reposing in the seat, and listening to a kneeling penitent beside him. These stone confessional chairs are very uncommon. As this is a complete example with the kneeling stone and elbow ledge by the side of the seat, we give, besides the view, a plan, elevation, and section of it. The date is probably early in the 13th century. It is very nearly perfect, and stands against the south side of the chancel, at Lenham Church, near Maidstone, in Kent. At the west end of the chancel, which is a very large one, are sixteen stalls, which were formerly appropriated to the monks of St. Austin when they visited their estate in this parish.

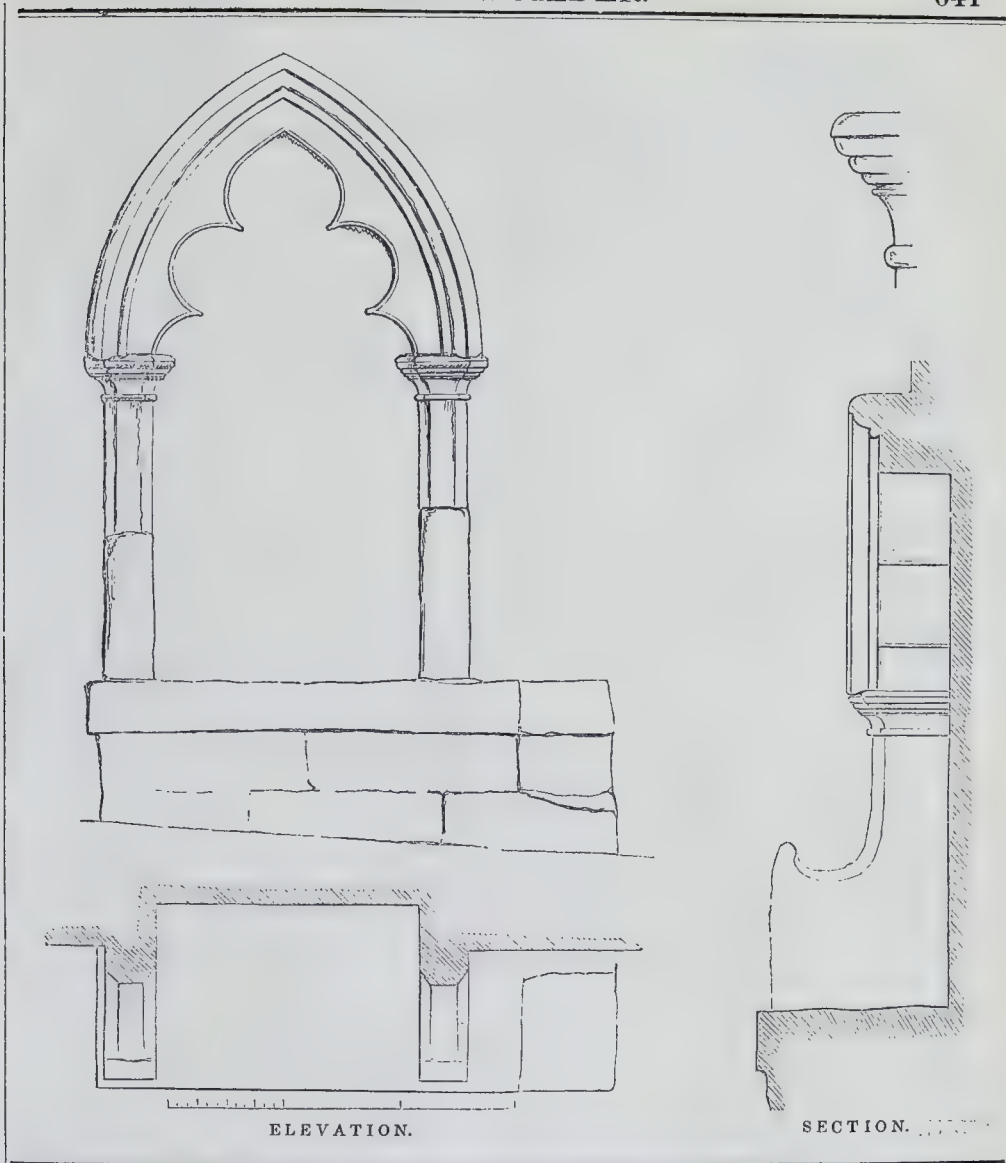
An interesting controversy took place a few years since between the Rev. Samuel Denne and David Wells, Esq., on the subject of stone seats in the chancels of churches. Mr. Wells' paper was published in the 3rd volume of the "Vetusta Monumenta" of the Society of Antiquaries, while that of his opponent appeared in the 10th volume of the "Archæologia."

Mr. Wells entertained the opinion that the stone seats now occasionally to be found in chancels were originally intended for the officiating priest to rest himself on during the performance of his sacred duties; his words are, "such seats are only to be found in the chancel choir, of some distinguished chapel where only the sacramental rites could be performed with great solemnity, and they are invariably placed in the south wall; whence it is clear that these stone seats were originally designed for the officiating priest." And further on he says, "The number of these stone seats varied according to the dignity of the place: in small rectories one, in others two; some have three, &c."

One of the general rubrics of the Roman missal is, that when the celebrant is allowed to rest himself, he shall be seated a CORNU EPISTOLÆ JUNTA ALTARE, i. e. near the altar, and at the south horn of it.

Picart, in his "Religious Ceremonies," refers to a rule in the Roman Catholic Church, which directs that "The confessor must hear the confession in the church at that part of it which is furthest from the high altar, i. e. at the bottom of the nave, which is most exposed to the view of the people."





#### ON THE EXCAVATIONS OF THE ROCKY CHANNELS OF RIVERS BY THE RECESS- SION OF THEIR CATARACTS.

DURING the late meeting of the British Association at York, Mr. Featherstonhaugh drew attention to the manner in which extensive swampy districts upon the continent of North America have been drained and rendered fit habitations for man. During his researches in that part of the western hemisphere, he found evidences upon all the rivers whose valleys were bounded by lofty escarpments, that the gorge in which each river flowed had been cut out of the land by the recession of a cataract. The river Mississippi flowed in a valley of this character. From the Falls of St. Anthony to its mouth in the Gulf of Mexico, the distance was about 2,000 miles, during the first 1,200 of which these escarpments, varying from 100 to 450 feet in height, were everywhere found, divided from each other by a width varying from one to two and a half miles, the valley being during the greater part of this course thickly studded with well-wooded islands, amongst which the waters of the river flowed. Upon a level with the surface of these islands were extensive plains connected occasionally with lateral

valleys coming through the escarpments, the soil of which was identically the same with that of the islands, being a light vegetable sandy soil much mixed up with decayed freshwater shells; shewing that these soils were the old muddy bottom of the river, deposited when it occupied the whole breadth of the valley from escarpment to escarpment. These, and analogous appearances upon the courses of other American rivers, especially the immense lacustrine deposits separating Lake Erie from Lake Huron, seventy miles in breadth, were adduced as proofs of a great diminution of the quantity of fresh water once occupying the lakes, and the fluviatile courses of that continent: indeed, from the difference of level between a point on the Wisconsin River and the channel of upper Fox River, over which boats now pass in time of great floods, the water communication betwixt the Mississippi and Lake Erie seems to have been uninterrupted. This portion of the paper was intended to shew, that the quantity of water in the rivers in ancient times so far exceeded the quantity flowing in them at present, that the cataracts in the rivers must have been much more powerful, and that therefore the process of excavation of the rocky channels of

rivers by the recession of their cataracts, must have been then effected in much shorter periods of time than at present. From all these considerations, and from the known fact that the Falls of St. Anthony had not receded more than twenty yards in the last 100 years, the author drew the deduction that the whole valley of the Mississippi, from the Falls of St. Anthony to the point where the escarpments terminate, had been excavated by the recession of that cataract, and that the excavation had proceeded at a much more rapid pace than it does in our times. The author next proceeded to explain the peculiar mechanical power which streams employ in forming their channels by the operation of cataracts, and divided it into two methods, the *molar* or grinding process, most common in mountainous countries constituted of primary rocks, and the *subtracting* or undermining power exercised upon strata of a softer quality. To illustrate the first of these methods, Mr. Featherstonhaugh exhibited a beautiful pictorial view of a remarkable cataract in the Cherokee country, called Oynay Kay Amah, or White Water, which he visited in 1837, and which had not attracted the attention of any other traveller. This cataract was at a point



several miles from the extreme edge of the mountain, and was upwards of 600 feet high, the water falling in various pitches and declined planes from the top to the bottom. Wherever the water found a depression in the surface of the gneiss it lodged there, and on the first fortuitous pebble coming into cavity the work of destruction would begin, the current incessantly whirling about the pebble, and grinding the sides of the rock until a *pot-hole* was formed. These were there in great numbers, some of them four feet in diameter, and six feet deep. Where great numbers abounded, and parietes became at length weak, and giving way, all the *pot-holes* would coalesce in one. This process being repeated in various portions of the rock, the cohesion of the mass became diminished; and at the season of periodical floods, huge masses, weighing forty tons and upwards, would be precipitated to the bottom. This was the state of the great fragments at the bottom of the ravine, all of them bearing evidence of having been dislocated by the power of the water exercised upon the *pot-holes*. Such was the method by which this gorge, several miles long and about 600 feet in depth, had been ground out of this mountain of gneiss. At this locality were the evidences of the volume of the river having once been at least ten times larger than at present. A semi-circular ledge of gneiss, at the top, east of the stream, and 1,200 feet wide, was worn bare for a great distance, and down its perpendicular face was concave, as if the river had been projected over the top, and the screen of water in face of the concavity, and the concussion, and the moisture, had produced the usual effect, of peeling off the coats of the rock. It presented much such an appearance as the rock at the Horse-Shoe Fall at Niagara would do if the water were to be so much diminished at that point as to abandon it, and to be projected only from the comparatively small fall of the Schloss, on the American side of the river. For the other example of the *subtracting*, or undermining power exercised in the recession of cataracts, the Falls of Niagara were taken, of which a flat view was given, together with a section of the rocks. Mr. Featherstonhaugh had published a paper, in 1831, explaining the recession of this cataract. It is well known that the river Niagara flows upon a bed of limestone from which it projects itself, and that this rock is supported by a strong bed of friable shale upwards of seventy feet thick. The moisture arising from the screen of water, the current of wind behind it, and the concussion, loosen and remove the shale, and the superincumbent limestone losing its support falls down. In this manner the cataract has receded at least six miles from the Queenston heights. Mr. Featherstonhaugh expressed an opinion that this operation of excavating long channels of rivers, as in the instance especially of the Mississippi, may be considered in the class of providential arrangements, since by it the lakes, swamps, and immense swampy surfaces become drained, and rendered salubrious and productive habitations for man. There were many other interesting points brought forward in this paper, of which we have only room for this abstract.

**COLCHESTER LITERARY AND SCIENTIFIC INSTITUTION.**—We referred last week to the formation of this institution. Since then, a public meeting has been held, at which various resolutions were agreed to, among them the following:—"That the requisite funds be raised, partly by donations and partly by shares of 10*l.* each, bearing interest at 4 per cent. per annum; and that as soon as the sum subscribed be sufficient to justify such a step, a convenient site be selected, on which to erect an appropriate building for the purposes of the institution." Before the meeting separated, donations and subscriptions were announced amounting to upwards of 700*l.*

**COST OF FRENCH AND ENGLISH RAILWAYS.**—The cost of the Paris and Rouen Railway is put down by Mr. Laing, of the Board of Trade, at 24,000*l.* per mile; Paris and Orleans, 24,000*l.*; English passenger railways generally, 34,000*l.*; and the average of the Birmingham, Great Western, and South-Western lines, 47,000*l.*

#### SOCIETY FOR PROMOTING THE IMPROVEMENT OF COTTAGES.

SOME months since a society was formed on the Northumberland and Durham borders of Scotland for the improvement of the cottages of the peasantry. The persons chiefly instrumental in forming the society were Dr. W. S. Gilley, of Durham, Mr. Ralph Carr, and the Rev. Edward Fielde, of Rennington. The inauguration meeting was held at Alnwick, Charles Bosanquet in the chair, and the following resolutions were carried:—

"That a society be formed for encouraging and recording the improvement of cottages in the northern division of Northumberland.

"That the thanks of the meeting be given to Ralph Carr, Esq., for his exertions in promoting the present meeting; to Mr. Fielde, for his cordial advocacy of the measure; and to Lord Frederick Fitzclarence, for his practical illustration of cottage improvement at Etal."

Dr. Gilley, while writing last week to the editor of the *Morning Herald*, says:—"I am happy in being able to add that the cause continues to advance in Northumberland and on the borders of Scotland; and I was lately informed by an architect, who has had considerable experience, that a spirit prevails which leads him to expect a general improvement in the habitations of the labouring classes."

#### Correspondence.

##### ARCHITECTURAL COMPETITION.

TO THE EDITOR OF THE BUILDER.

SIR,—Your *Leamington* correspondent's condemnation of the Reading competition, I consider rather premature; as far as I can judge, every thing has been conducted with perfect impartiality and fairness, with but one exception, and that is, that several designs, in which the conditions contained in the printed instructions have not been complied with (and which are, therefore, incomplete), have been admitted, and are submitted for the opinions of the competitors, together with those in which every condition has been complied with, and all the required information as to value of freehold ground-rents, drainage, &c., has been furnished. These should, I think, have been rejected, as each will naturally be inclined to give the preference to those designs which most resemble his own, and therefore, those who have been at considerable trouble and expense in obtaining information and preparing their designs will labour under considerable disadvantage, there being no instructions given for the guidance of the competitors in delivering their opinions, which might have obviated the difficulty. Trusting you will excuse this intrusion upon the space of your valuable journal,—I remain, Sir, your obedient servant,

A REGULAR SUBSCRIBER.

Dec. 18, 1844.

##### THE CHORISTERS' SCHOOL, MAGDALEN COLLEGE, OXFORD.

SIR,—The Bursar of this institution, in his letter to you of the 4th inst., states that the successful competitor for the choristers' school never had a single glance at any of the designs sent in to the care of the Bursar, and that he had no facility or advantage allowed him which had been refused to any other competitor. I would briefly ask, whether the circumstance of Mr. Derick's being allowed to send in his design fourteen days after the others had been forwarded, as required by the instructions, can be called no facility or advantage? It is mere Jesuitical sophistry to argue that such advantage had not been refused to any other competitor; it never was asked for, for who, in the name of common sense, would ever have dreamt of asking from the commission permission to send in his design fourteen days after time, unless under the request for a prolongation, which should be, as usual in such cases, made known to all the competitors?

When such sophistry as this is put forth in exculpation of a palpable injustice, it is not pressing the point logically too far to remind Mr. Bursar that a useful hint communicated respecting designs unseen, may be quite as valuable as a single glance not permitted—"Verbum sapienti."—Your obedient servant,

Dec. 24, 1844.

#### Miscellaneous.

**ANNUAL DESTRUCTION OF PROPERTY BY LIGHTNING.**—The amount of damage occurring annually to our public and other buildings by lightning is of a very serious character. A writer in *Nicholson's Journal of Science* has estimated it at 50,000*l.* The following are a few instances of its effects:—The beautiful spires of St. Michael's and St. Martin's, at Liverpool shattered; Christ's Church, Doncaster, ruined; Spitalfields and Streatham Churches set on fire; St. Martin's, St. Clement's in the Strand, and Brixton Churches; the fine old church of Exton in Rutland; Stannington Church; the beautiful tower of Magdalen College, Oxford; the tower of St. Michael's Church, at Cork, laid in ruins; the fine granite chimney at the Royal Victualling-yard, Plymouth; flax and cotton mills at Hull. The greater part of these were so shaken and damaged, as to demand very extensive repairs. A thousand pounds did not cover the expense of renovating the spire of St. Martin's, damaged by lightning in 1842.

**INTERIOR OF THE EARTH.**—The increase of temperature observed in mines is about one degree Fahrenheit for every fifteen yards of descent; and, should the increase go on in the same ratio, water will boil at the depth of 2,430 yards; lead melt at the depth of 8,400 yards; every thing be red hot at the depth of seven miles; gold melt at the depth of twenty-one miles; cast-iron melt at the depth of seventy-four miles; soft iron melt at the depth of ninety-seven miles; and, at the depth of 100 miles, there must be a temperature equal to the greatest artificial heat yet observed—a temperature capable of fusing platina, porcelain, and indeed every refractory substance we are acquainted with. These temperatures are calculated from Guyton Morveau's corrected scale of Wedgwood's pyrometer; and if we adopt them, we find that the earth is fluid at the depth of 100 miles from the surface; and that, even in its present state, very little more than the soil on which we tread is fit for the habitation of organized beings.

**THE SAGO-PALM TREE.**—Of all the palm-trees which are natives of Asia, the Sago-palmist is one of the most useful and interesting. The trunk and large leaves of the sago-palmist are a powerful resource in the construction of buildings; the first furnishes planks for the carpenter, and the second a covering for the roof. From the leaves are also made cord, matting, and other articles of domestic use. A liquor runs from incisions made in its trunk, which readily ferments, and is both salutary and agreeable for drinking. The marrow, or pith of the tree, after undergoing a slight preparation, is the substance known by the name of sago in Europe, and so eminently useful in the list of nutritious food for the sick.—*Dictionnaire d'Histoire Naturelle.*

**THE STATE BED OR SCARLET ROOM AT CHATSWORTH.**—This room was so named from containing the bed on which George II. died. The bed and furniture are of crimson silk damask. This, with the chairs and foot-stools used at the coronation of King George III. and Queen Charlotte, were the perquisites of the fourth duke, as lord chamberlain of his Majesty's household. On the ceiling is the painting of Aurora, or the morning star, chasing away Night. In the centre compartments between the windows are Diana turning the Country People into Frogs, Diana Bathing, Diana turning Actæon into a Stag, Diana Hunting. In the corner compartments are—Bacchus and Ariadne, Venus and Adonis, Meleager and Atalanta, Cephalus and Procris. Tapestry—Jupiter and Leda, Perseus and Andromeda, Apollo and the Nymphs, Minerva and Vulcan.

**HEREFORD IMPROVEMENTS.**—The Hereford Town Council contemplate the enlargement and improvement of their Guildhall. Last week, at a special meeting of the council, Mr. Leonard Johnson produced a plan of the proposed alteration, which met with very general approval. After various opinions had been advanced with respect to the plan, it was determined that as this was not the period of the year to enter upon the work, the question be further taken into consideration at the quarterly meeting in February next.



**ARCHAEOLOGICAL MUSEUM AT ATHENS.**—A letter from Athens, of November 14, says:—"The Government has conceived the idea of founding a national Archaeological Museum, in which are to be placed the various antiquities at present deposited in the Temple of Theseus, as well as all that may be hereafter discovered or purchased by the state. It is intended to unite models of the ancient Greek buildings still existing in Greece and elsewhere, as well as casts of all inscriptions that are now to be seen either in Greece or other countries, copies of paintings, &c.; so that the new museum will contain, either in original or copies, the most remarkable objects remaining of ancient Greece. Funds are to be applied for to the chambers for carrying out this design, and the new museum is to be placed in the Acropolis."

**COST OF SALTWOOD TUNNEL.**—Preliminary works and previous expenses, 36,353*l.* 4*s.* 6*d.*; payments under contract, 72,332*l.* 19*s.* 7*d.*; inspection, rent of land, sorting bricks, &c., 820*l.* 1*s.* 5*d.*; assumed value of plant, 3,000*l.*; total cost of Saltwood tunnel, 112,542*l.* 5*s.* 6*d.* Being at the rate of 118*l.* per lineal yard for the whole tunnel; 953*l.* yards in length, or half-a-mile and 73*l.* yards; but upon a very careful admeasurement the tunnel proved to be very little short of 954 yards. The bricks for Saltwood tunnel were made at Folkestone, averaging five miles distant from the works; and the cost when delivered was 51*s.* per thousand. The quantity of bricks used in the construction of Blechingley and Saltwood tunnels, including the entrances, culverts, shaft towers, and all contingent works, was as follows:—Blechingley, 14,696,005, or 11,099 per lineal yard; Saltwood, 10,186,246, or 10,677 per lineal yard.—*Practical Tunnelling*, by F. W. Simms, C. E.

**THE NEW DOCK, &c. AT HULL.**—Since the issue of the prospectus of these works, a very neat and well-finished lithographed plan has been published, which is intended to be widely circulated. Judging from the appearance of this plan, we may hope to see a very capacious dock, with a commodious basin, and every useful facility for carrying on the most extensive mercantile concerns. It is expected the dock will be about 800 yards long, and averaging about 200 yards wide, with a splendid promenade from the lock to the mouth of the basin. The outfall is to be deepened and widened, and plenty of land is laid down for building purposes on the east side; a breakwater pier is to be erected on the Bureum sand, nearly 1½ miles in length.—*Hull Packet*.

**COLD-DRAWN IRON TUBING.**—M. Hector Ledru recently laid before the French Academy of Sciences some specimens of cold-drawn iron, and other tubing. A few years ago the only tubing made in France, for gas and other purposes, except lead tubing, was made by hand. In England, iron-drawn tubing (by heat), without soldering, was first made, and was imported, by special permission, into France on account of its vast superiority over hand-made soldered tubes. Within the last two years the French have, in this branch of manufacture, eclipsed the English, for they now, by pressure, draw tubing cold, and it is in every respect perfect, indeed much more perfect than the hot-drawn tubing.

**PUBLIC WALKS, BATHS, &c.**—The subscriptions for public walks, baths, &c., at Manchester, amount to 28,824*l.* The Town Council of Hull have granted 300*l.* towards making public baths, adjoining the new water-works in that town. A highly influential meeting has been held in Bristol, "for the purpose of taking into consideration the propriety of establishing public baths and wash-houses" in that city; all parties were unanimous in their support of such a measure, and the Bishop of the diocese took an active share in the proceedings of the day.

**LEAD MINES IN DERBYSHIRE.**—It is gratifying to learn that further speculations in the lead-mining business in the Peak have just emerged from contemplation to actual commencement. The Watergroove Mine, Eyam, greatly celebrated for its mineral riches, will eventually be relieved from water by a sough or level, which will branch off from the Morewood sough, Middleton Dale, an expedient which will undoubtedly require considerable outlay.—*Derbyshire Reporter*.

**BRIDGE AT ATHLONE.**—Last month a bridge was opened across the Shannon at Athlone. The design is by Mr. Rhodes, engineer to the Shannon Commission, and the contractor was Mr. McMahon. The bridge consists of three elliptic arches of 63 feet span each, and a cast-iron swivel bridge of 45 feet span, and 24 feet breadth of roadway. In forming the coffer-dams considerable difficulty was experienced from the loose gravelly nature of the soil. The swivel bridge was constructed by Messrs. Mallett, of Dublin, and notwithstanding the immense weight of the framing, said to be nearly 300 tons, each leaf can be opened or closed in about a minute, by the efforts of one man. The traverse rings, which are of cast-iron, 24 feet diameter, and weighing each about 16 tons, were turned in the lathe. The style of the bridge is the massive Roman, somewhat similar to that of London-bridge.

**BATHS AND WASH-HOUSES IN LONDON.**—It is the intention of the committee to commence with forming four model establishments in populous districts—three on the Middlesex side, and one on the Surrey side of the river Thames, the number of such establishments to be increased from time to time as circumstances may permit; and it is also intended to afford assistance to such districts or parishes as may be disposed to form similar establishments in their respective localities. The first of the four model establishments will be erected within about a hundred yards of the city, at an expense of from 7,000*l.* to 10,000*l.*, and it is intended to have about 100 baths and 150 wash-tubs, with every accommodation for drying the clothes of the poor when washed. The amount of contributions already received is 6,500*l.*, to which may be added 200*l.*, voted last week by the Court of Common Council.

**THE ROYAL EXCHANGE.**—On Monday, the 16th inst., the long closed up avenue at the east end of the 'Change, formerly Freeman's-court, was opened to the public. By this opening, all sides of the new building were cleared, and the shops and offices all round became accessible. On the following Wednesday a further step was made for public accommodation by the throwing down of the barriers of the portico at the west end, and the opening of the merchants' area to the free access of the public. This interesting circumstance took place at eleven o'clock, and the building remained open until dusk. On the 1st of January it will be given up to the merchants for their use.

**FLEET PRISON.**—The Corporation of London appear strongly disposed, we might say determined, to purchase the Fleet Prison, partly to prevent its passing into the hands of individuals who might convert it into rookeries and tenements which would be a disgrace to the city, and partly for the purpose of erecting a spacious avenue on its site, as a relief to Ludgate-hill in the event of the erection of a viaduct over Holborn-bridge. Mr. R. Taylor last week, in the Court of Common Council, moved that a communication be opened with the Commissioners of Woods and Forests to ascertain upon what terms the prison can be purchased. The subject was ultimately referred to the City Lands Committee.

**NEW CHURCHES.**—At a meeting of the Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels, held on the 16th instant, grants were voted towards the erection of six new churches, viz. at King's Cross, Halifax; Little Drayton, Market Drayton; Rhos-y-Cae, near Holywell; South Milford, near Sherburn, Yorkshire; Armitage-bridge, Huddersfield; and North Moor Green, North Petherton. At the same meeting it was determined to enlarge the churches at Coniscliffe, near Darlington; Maross, near Langhame; Arcley Kings, near Stourport; and Great Wilbraham, near Cambridge.

**PROPOSED NEW CHURCH AT HEREFORD.**—At the meeting of the Hereford Diocesan Church Building Society, held on the 20th instant (the bishop in the chair), the dean called attention to various plans of a proposed new church for the parish of St. John's. The bishop of the diocese had kindly offered to give 100*l.*, the Queen Dowager 10*l.*, and other friends of the church had expressed their intention of aiding in the work.

**KING WILLIAM'S STATUE IN THE CITY.**—This colossal statue is at last on its pedestal in King William-street, fronting London-bridge. The figure is 15 feet 3 inches in height, and weighs twenty tons. It was cut out of two enormous blocks of granite, and the work has occupied the artist (Mr. Nixon) nearly three years. The dress of the statue appears to be that of an admiral's uniform, a cloak hanging gracefully over the shoulders. The right hand bears a scroll. The likeness is considered admirable. Subsidiary pillars, intended as points of refuge for the public in crossing the open space of Eastcheap, will be erected forthwith.

**ENLARGING OF DEPTFORD DOCKYARD.**—There has been for some weeks a rumour that it was the intention of the Government to increase the dockyard establishment at Deptford. The general activity which now prevails in that yard proves that the rumour was well founded. Two new building slips are being made, and the erection of large timber sheds, mould lofts, and other buildings for stores have been ordered to be forthwith commenced.

**PROPOSED RAILWAY STATION IN THE CITY ROAD.**—The Eastern Counties Railway Company propose to extend their line from the Shoreditch station to the City-road, near Old-street.

**HARWICH PIER.**—No less than three applications will be made to Parliament during the approaching session for leave to construct a pier in the port of Harwich.

**DOVER LANDING JETTY.**—These works are to be commenced forthwith, the South-Eastern Railway Company having taken 300 shares in the speculation.

#### MEETINGS OF SCIENTIFIC BODIES

During the ensuing week.

THURSDAY, January 2.—Zoological, Hanover-square, 3 P.M.

FRIDAY 3.—Botanical, 20, Bedford-street, Covent Garden, 8 P.M.

SATURDAY, 4.—Asiatic, 14, Grafton-street, 2 P.M.; Westminster Medical, 32, Sackville-street, 8 P.M.

#### Tenders.

TENDERS delivered for the third Contract (C) of the Leeds Borough Gaol, consisting of the Juvenile and Female Cells, Chapel, &c.—Hirst and Moffitt, of Doncaster, Architects. Perkin and Backhouse, of Leeds, Inspectors for the Committee.

##### MASONS.

Wood and Tredale.....	£7,270
Hogg and Tilney.....	6,499
Cliff and Huslor.....	6,002

##### JOINERS.

Winn and Pawson.....	1,998
Wilson.....	1,987
Bulmer.....	1,750
Woodhead.....	1,600
Gill.....	1,500

##### BRICKLAYERS.

B. Woolley.....	3,799
W. D. Boothman.....	3,612
Samuel Atack.....	3,500
T. Longley and Sons.....	3,445
I. and W. Garland.....	3,398

TENDERS delivered for erecting Seven Four-rate Houses in Mount-gardens, Westminster-bridge-road, for Mr. Godfrey.—Messrs. Willshire and Parris, Architects, Lambeth.

Messrs. B. and N. Sherwoods..	£2,830
Mr. Robert Hicks.....	2,294
Mr. Robert Armstrong.....	2,290
Mr. John Wilson.....	2,194

The quantities taken out and supplied to the Builders, and the Tenders opened in their presence.

#### NOTICES OF CONTRACTS.

For the execution of Works necessary for the completion of the whole of the Railway from Shoreham to Chichester, being a distance of about 22½ miles.—Frederick Otley, Secretary, Brighton and Chichester Railway Office, 4, Dean-street, Tooley-street. December 31.

For a supply of Iron Rails and Chairs.—William Taylor, Secretary of the Great Southern and Western Railway, 3, College-green, Dublin. December 31.

For 500 tons of hard Guernsey Granite.—G. Clark, Clerk to the Guardians of the Brentford Union, New Brentford. December 31.



For 10,000 Larch Sleepers 9 feet long and 10 inches thick for the Glasgow and Ayr Railway.—December 31.

For the erection of an Organ in the City Hall of Glasgow, cost not to exceed 1,500l.—Mr. G. W. Muir, Glasgow. January 1.

For laying the Pipes required in the Hull New Water Works.—Thomas Thompson, Esq., Town Clerk, Hull, or Mr. Thomas Wickstead, Old Ford, near London. January 6.

For the supply of the following stones for pavements, namely, York Flag of 3 inches and 2½ inches thick, at per yard superficial; Castle Hill Stone, 2½ and 1½ inches thickness, at ditto; Rock-hill of like respective thicknesses, at ditto; Aberdeen Granite, half sovereigns, at per ton; Devonshire Kerb, at per yard run, &c.—Francis Southgate, Clerk to the Paving Commissioners, Milton, next Gravesend. January 7.

For re-paving Leverington Church, near Wisbeach.—The Rev. Henry Jackson, Leverington, or Mr. W. Adams, Architect, Wisbeach. January 7.

For Four Locomotive Engines and Tenders.—George King, 62, Moorgate-street, January 8.

For a Survey Plan and Valuation of the Township of Kimberworth, in Rotherham Yorkshire.—Mr. George Taylor or Mr. Richard Rhodes, Overseers of the Poor. January 8.

For taking down the present Bridge at Carrick-on-Shannon, and constructing a Stone Bridge of five segmental arches, with its approaches; building quays and harbour, forming wharfs, and deepening the bed of the river.—Edward Horsby, Secretary, Shannon Commissioners' Office, Custom-house, Dublin. January 8, 1845.

For completing the Railway from Bishopstoke to Salisbury.—Alfred Morgan, Secretary, Nine Elms Station, Vauxhall. January 10.

For the erection of the Railway Works between Leeds and Bradford, including fencing, earthwork, masonry, roads, and permanent way.—William Clarke, Secretary, Hunslet-lane Station, Leeds. January 27, 1845.

For the execution of Works on the Chester and Holyhead Railway.—1st. A distance of eight miles, or thereabouts. 2nd. A distance of twenty-two miles, or thereabouts. 3rd. A Tunnel through the promontory of Penmaenbach, near Conway.—George King, Secretary, 62, Moorgate-street. January 29, 1845.

For the supply of 11,000 feet of nine-inch cast-iron Pipes for a new line of Aqueduct to be laid in the Island of Malta.—Vin. Casolari, Collector of Land Revenue, Office of Land Revenue and Public Works, Valletta, Malta. March 31, 1845.

#### COMPETITIONS.

The Committee of the Association recently formed in the Metropolis for the Construction of Baths and Wash-houses for the Labouring Classes, are desirous of obtaining Plans and Estimates for the Erection and Fitting-up of the First Establishment. The general basis of the plan can be seen at the Office, No. 3, Crosby-square. The author of the plan considered the best by the Committee will be selected to execute the work.

Plans for an Agricultural College to be erected at Cirencester, to accommodate 200 pupils and 6 tutors. The style is left to the taste of the architect. A Premium of 10 Guineas to the author of the most approved plan.—Robert J. Brown, Esq., Hon. Sec. Cirencester. January 1.

Plans and estimates are required for a Pauper Lunatic Asylum for the County of Somerset; the building to accommodate 300 patients, and to contain two stories. The Committee of Visiting Magistrates wish it to be of a plain, cheerful character, but will not further fetter the architect by suggesting any particular arrangement as to the interior, its ventilation, warming, or otherwise. The ground selected contains 36 acres.—The Clerk of the Peace, Taunton. A Premium of 100l. will be adjudged for the best plan, and 50l. for the next best. January 22.

The Committee of the Art Union of London offer the sum of 500l. for an Original Picture illustrative of British History. Cartoons, six feet by four feet six inches, are to be sent in (as will be hereafter notified) by the 1st day of January, 1846, and from these the selection will be made. Artists must send specimens of their abilities as painters, if required so to do. The successful candidate must undertake to complete the finished picture, of the same size as the cartoon, by the 1st of January, 1847, and to superintend the engraving. The Committee wish it to be understood that their object in giving so long a period for the preparation of the cartoon is for the purpose of affording artists sufficient time thoroughly to study the various details of their compositions, and to produce in the cartoon a completely finished and well-wrought study for the picture. The Committee reserve to themselves the right of withholding the premium if works of sufficient merit be not submitted.

#### APPROACHING SALES OF WOOD, &c.

BY AUCTION.

January 7, 1845.—At the Hall of Commerce, Threadneedle-street: 1,225 logs of St. Domingo Mahogany of superior quality and large dimensions; also 3 logs of Satin Wood.—Thomas Edwards, Broker, 1, Pinner's-hall, Great Winchester-street.

January 17, 1845.—At Garraway's Coffee-house, Cornhill: 10,000 Baltic and Swedish Deals and Batts; 10,000 Colonial Yellow Pine and Spruce Deals.—E. D. Warrington, broker, 15, New City Chambers.

BY TENDER.

Pear, Apple, Plum, and Cherry Trees now growing on the site of Victoria-park, being together 683 Trees.—Particulars of each lot may be had at the Office of Woods and Forests, 2, Whitehall-place, and at Mr. John Greig's, Hackney-wick, who will also shew the trees. December 31.

#### Current Prices of Wood and Metals.

December 24, 1844.

	£. s. d.	£. s. d.
Box, Turkey, bd. per ton ..	2 0 0	5 0 0
CEDAR, Pencil, per foot ..	0 0 3	0 0 4
Cuba .....	0 0 3	0 0 4
N. S. Wales .....	0 0 34	0 0 54
Green, per ton ..	5 5 0	9 0 0
EBONY, Ceylon, large ..	6 0 0	7 0 0
small .....	4 10 0	5 15 0
Madagascar, small ..	5 0 0	6 0 0
LIGNUM VITÆ, Jamaica ..	3 0 0	5 0 0
St. Domingo .....	8 0 0	12 0 0
MAHOGANY, Cuba, per foot ..	0 0 8	0 1 2
St. Domingo .....	0 0 9	0 1 2
Honduras .....	0 0 54	0 0 10
TIMBER:—		
Teake, African, per load ..	9 0 0	10 0 0
Oak, Quebec .....	4 5 0	4 10 0
E. Riga .....	4 2 0	5 0 0
Dantzic and Memel ..	3 17 6	4 10 0
Swedish .....	3 15 0	3 17 6
Pine, Quebec, red, per load ..	4 0 0	4 2 6
yellow .....	3 10 0	0 0 0
Miramichi & St. Johns ..	4 10 0	0 0 0
Wainscot Logs, 18 ft. each ..	9 0 0	0 0 0
Lathwood, Memel, &c. fm. ..	31 0 0	32 0 0
Deals, Gefle, 14 ft. 3 in. by 9 ..	27 0 0	28 0 0
Stockholm .....	26 0 0	27 0 0
Gottenburg, 12 ft. 3 in. by 9 ..	26 0 0	27 0 0
Christians, 1st & 2nd ..	28 0 0	30 0 0
St. Petersburg, Memel, ..	18 0 0	20 0 0
Dantzic, 12 ft. 14 in. ..	17 0 0	18 0 0
Quebec yellow Pine, ..	17 0 0	18 0 0
first quality .....	10 0 0	12 0 0
second ditto .....	16 10 0	19 0 0
White Spruce, 120 ..	0 18 0	1 6 0
Dantzic Deck, each ..	9 0 0	10 0 0
Plank, Dantzic Oak, load ..	130 0 0	140 0 0
STAVES, Baltic, per 1200 ..	0 0 0	0 0 0
Quebec Pipe, 1200 fms ..	17 0 0	0 0 0
Pantheon .....	84 0 0	0 0 0

COPPER—Brit. Cake, p. ton	84 0 0	0 0 0
Tile .....	83 0 0	0 0 0
Sheet, p. lb. ..	0 0 94	0 0 0
Old .....	0 0 81	0 0 0
South Amer., ton	72 0 0	0 0 0
IRON, British Bars .....	6 5 0	6 10 0
Rods .....	6 15 0	7 0 0
Hoops .....	8 5 0	8 10 0
Sheets .....	8 15 0	0 0 0
Cargo in Wales, Bars ..	6 0 0	0 0 0
Pigs No. 1, Wales ..	3 10 0	4 0 0
No. 1, Clyde ..	2 17 6	3 0 0
Russian, c.c.n.d. ..	16 10 0	0 0 0
Swedish .....	9 15 0	10 0 0
LEAD—British, Pig, p. ton	16 15 0	17 0 0
Sheet, milled .....	17 5 0	0 0 0
Shot, patent .....	19 15 0	0 0 0
Red or Minium .....	21 10 0	0 0 0
White .....	23 10 0	0 0 0
Litharge .....	20 0 0	0 0 0
Spanish Pig .....	16 0 0	16 5 0
STEEL—Swedish Keg ..	15 16 0	0 0 0
Faggot .....	16 10 0	0 0 0
TIN—In blocks, p. cwt. ..	3 11 0	3 12 0
Ingots .....	3 11 0	3 12 0
In Bars .....	3 13 0	0 0 0
Banca .....	3 3 0	0 0 0
Straits .....	3 2 6	0 0 0
Plates p. box 225 sheets—		
No. 1. C. 13½ by 10 in. ..	1 5 0	1 11 0
I. X. ....	1 11 0	1 17 0
SPELTER—On the spot, ton	22 12 6	22 15 0
Delivery .....	22 5 0	0 0 0
ZINC, English Sheet ..	32 0 0	0 0 0
ORISIDEV .....	0 3 0	0 0 0
QUICKSILVER .....	0 4 6	0 0 0

#### APPOINTMENT.

The Commissioners of Sewers for Westminster and part of Middlesex are about to appoint a Fourth Clerk of the Works at a salary of 120l. per annum. The appointment in the first instance will be for one year only, and take place at the Office, No. 1, Greek-street, Soho-square, on Tuesday, January 14.

#### ANNOUNCEMENT.

We perceive from a prospectus just sent to us that the author of the papers which have appeared from time to time in our pages headed "Glances at the Interior of the Churches in the Deanery of Sparham, in Norfolk," intends republishing the same with very considerable additions, under the title of "Sketches for an Ecclesiology of the Deaneries of Sparham and Taverham, in Norfolk." The work will be published in part 8vo. monthly numbers, each containing descriptive accounts of from seven to ten churches, and will be rendered at the lowest possible rate consistent with a bare return of the charges incurred, that is, at certainly not more than 8d. per No. The deaneries of Sparham and Taverham comprise forty-six churches, among them several of very high architectural interest. The work will be published by subscription.

#### TO CORRESPONDENTS.

"H. E. Kendall, jun."—We are obliged for the suggestion; it will be acted upon in our next number.

"G."—We received several communications on the subject referred to in our correspondent's postscript, and selected that one for insertion which apparently contained all the leading points of the remainder.

"F. Richardson."—We have answered his note by post.

"A Subscriber."—Perforated plates of zinc are chargeable to the window-duties "if so perforated as to afford light, but not if so as to serve the purpose of ventilation only." For additional information on this subject, we refer our correspondent to No. 97 of THE BUILDER.

"T. H. Cash."—The rate of duty on Crown Glass is 73s. 6d. per cwt. The quantity charged with duty in 1829 was 114,862 cwt.; in 1830, 96,565 cwt.; in 1831, 100,086 cwt.; and in 1832, 103,902 cwt. It is difficult to form any precise estimate of the value of the glass annually produced in Great Britain; we believe, however, that it cannot amount to less than 2,000,000, nor employ less than 50,000 workmen.

"A Constant Reader."—We have not seen either the names or the amounts of the parties willing to contract for the erection of the Bristol Barracks.

Communications have been received from "Dartford" on Architectural Competition; and from "George Snowball" on Flooring Dogs, with a model. Both are under consideration.

#### ADVERTISEMENTS.

**NOTICE TO INVENTORS.—OFFICE** FOR PATENTS OF INVENTIONS AND REGISTRATION OF DESIGNS, 23, Half-moon-street, Piccadilly. Patents obtained for the United Kingdom and Foreign Countries; Designs registered; printed instructions, containing the charges, forwarded gratis; and every information given by application, if by letter pre-paid, to Mr. M. J. Cooke, 29, Half-moon-street, Piccadilly.

**NOTICE TO INVENTORS.** OFFICE FOR PATENTS OF INVENTIONS AND REGISTRATIONS OF DESIGNS, 14, Lincoln's-inn-fields.—The printed INSTRUCTIONS gratis, and every information upon the subject of PROTECTION for INVENTIONS, either by Letters Patent or the Design given by application, if by letter pre-paid, to Mr. Alexander Prince, at the office, 14, Lincoln's-inn-fields.

**TO ENGINEERS, DRAUGHTSMEN, &c.** STEPHENS' RULING AND MECHANICAL DRAWING INK, for Engineers, Artists, and Designers. This article will be found superior to the best Indian Ink for the above purposes. It does not smear with Indian-rubber, or wash off with water. It flows freely from the drawing-pen, and never corrodes or encrusts it. It may be used on a plate or slab, with a camel's hair brush, diluting it with water, or thickening it by drying, as required. It has the advantage of being ready for immediate use. Sold in conical-shaped Bottles, convenient for using from without any stand, by the Inventor, Henry Stephens, 54, Stamford-street, Blackfriars-road, and by Booksellers and Stationers, 6d. each.

**E. G.'S TRACING-PAPER.**—It is warranted to take Ink, Oil, or Water colour, and is sold by MESSRS. ROBERTSON AND CO., SOLE AGENTS, 51, LONG-ACRE, at the following cash prices.—  
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30 by 20, at 7l. 10s. 8s. 0d. "  
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This beautiful and unequalled article is allowed to be the cheapest and most useful Paper hitherto introduced to the public, as will be best proved by a trial.



# SUPPLEMENT TO THE BUILDER.

SATURDAY, NOVEMBER 9TH, 1844.

## A CYCLOPÆDIA

OF

## THE NEW METROPOLITAN BUILDING-ACT,

IN WHICH ALL THE DETAILS OF THE STATUTE ARE ARRANGED ALPHABETICALLY,

SO AS TO BE INSTANTLY FOUND,

AND ACCOMPANIED BY EXTENSIVE REFERENCES AND COUNTER-REFERENCES TO THE SECTIONS OF THE ACT ITSELF, AND ITS MINUTE PROVISIONS.

By ALFRED BARTHOLOMEW, Esq., F.S.A., ARCHITECT.

A.

**ABUTMENTS.** See *Public way, buildings over*; also *Chimneys hereafter built*.

**ACCOUNT** in writing for party-structures, within 21 days after the completion of the work it is the duty of the person by whom the expense has been incurred to deliver, to the adjoining owner of the building or premises in respect of which such expense shall have been incurred, to include all preliminary and incidental operations; and if the work shall have been executed by authority of the official referees, a copy of such account is to be delivered to them at their office, subject to appeal within 10 days to the official referees; and if, within 10 days after the delivery of such account to the party liable to pay the same, such party do not either appeal against such account or pay the same, or if, within 10 days after the demand thereof, in conformity with the certificate of the official referees, the amount thereof, together with the costs of the examination of the account as the official referees shall certify, be not paid, then it shall be lawful for the person entitled thereto to recover the same, or so much thereof as shall be then due, by the summary proceeding provided in this Act. s. 47. See also *Expenses of works*.

**ACT** (This new Building-) to come into operation as to the districts and the officers to be appointed in pursuance hereof, on the 1st September, 1844,—and as to buildings, streets, and other matters, on the 1st January, 1845; and on the said 1st January all the Acts mentioned in the schedule A, annexed to the Act, except so far as in the said schedule is otherwise provided, are repealed. s. 1.

**ACT RULES** of, may be modified by the Commissioners of Works and Buildings after being reported upon by the official referees, either at their own suggestion, or that of any interested party. s. 11.

**CTIONS** for Damages. See *Informalities in Districts*.  
**CTIONS** for penalties, limitation of. Proceedings for penalty or forfeiture incurred under this Act must be brought or commenced within six calendar months next after being incurred. s. 106.  
**CTIONS** against person acting under this Act.—Regulation of. After the expiration of 6 calendar months next after the fact committed it shall not be lawful to bring any action or suit against any person in respect of any act or thing done or intended to be done in pursuance of this Act; and if, 21 days at the least before the commencement of the action or suit, notice in writing of intention to bring such action or suit, and of the grounds of action, be not given to every person against whom such action or suit shall be brought, it shall not be lawful for any person to bring any such action or suit against any person in respect of any such act,—and if the cause or matter of any such action or suit arise within the said city of London or the liberties thereof, such action or suit must be laid in the city of London, and not elsewhere; and if the cause of any action or suit arise in any part of the limits aforesaid out of the said city of London and liberties thereof, then it must be laid and tried in the county of Middlesex, and not elsewhere;—and in every such action or suit the defendant may plead the general issue, and at the trial to be had therefor to give this Act and the special matter in evidence, and to prove that the matter or thing for which such action or suit is brought was done in pursuance and by the authority of this Act;—and if upon the trial of such action it appear that the said matter or thing has been done by the authority or in pursuance of this Act, or if it appear that such action or suit was brought before the expiration of 21 days after such notice as given as aforesaid, or if it appear that sufficient satisfaction has been made or tendered before such action was brought, or if upon plea of payment of money into court it shall appear that the plaintiff

has not sustained damages to a greater amount than the sum paid into court, or if any such action or suit be not commenced within the time herein for that purpose limited, or if it be laid in any other county or place than as aforesaid, then and in every such case it shall be the duty of the jury to find for the defendant; and if a verdict be found for the defendant, or if the plaintiff in any such action or suit become nonsuited, or discontinue or suffer a discontinuance of any such action or suit, or if judgment be given for the defendant therein, on demurrer, or by default or otherwise, then the defendant shall be entitled to have judgment to recover full costs of suit, and to such remedy for recovering the same as any defendant shall have by law. s. 108.

**Security for costs of such action.** If the defendant apply to the superior court at Westminster in which any action in respect of any matter or thing done or intended to be done in pursuance of this Act, is pending, or to any judge of any of the said courts, it shall be lawful for such court or any such judge to require the plaintiff to give such security as such court or judge shall think fit for the payment of all costs, charges, and expenses incurred or to be incurred in and about the said action, and which shall be or become payable by him on the taxation thereof by the proper officer. s. 109.

**ADDITION** to any building. Two days' notice to be given to the district surveyor before the commencement of. s. 13. See *Penalty*.

**ADJOINING OWNER.** s. 20.

**ADJOINING OWNER** liable to pay expense of party fence-walls, if used. s. 32.

**ADJOINING OWNER** to pay for party-walls raised by another party, if used. s. 31.

**ADJOINING AND NEIGHBOURING PROPERTY** not to be injured by raising of party fence-walls. s. 32.

**ADJOINING PROPERTIES**—Execution of Party-structures on, viz.—

Reparation of the party-walls by which premises are parted:

Pulling down and rebuilding of party-walls:

Raising of party-walls:

Reparation of party fence-walls:

Rebuilding of party fence-walls:

Raising of party fence-walls:

Pulling down of timber partitions which party buildings the property of different owners or occupied by different persons, and building in lieu thereof proper party-walls:

Pulling down of buildings built over public ways, or having rooms or stories the property of different persons, or occupied by different persons, lying in common for the purpose of building party-walls or party-arches:

And generally the performance of other necessary works incident to the connection of such party-walls or party fence-walls with the premises adjoining:

If the adjoining owner shall have consented thereto, or if, without such consent, the required notice of such work shall have been given by or on the part of the building owner to such adjoining owner, then, subject to such modification as shall be made by virtue of the provision in that behalf, and subject to the provision for supplying the want of consent of the owners, and subject moreover to the respective conditions hereby prescribed with regard to such works respectively, as well as to the payment of the cost of such works, and to the sanction or to the award of the surveyors or of the official referees, as hereby prescribed in reference thereto, it shall be lawful for every such building owner and he is hereby authorized or required to execute such works. s. 20.

**AGENT** for any owner of houses within the limits of the Act disqualified from being official referee or registrar. s. 95.

**AGREEMENTS AND LEASES** (Building), existing modification of. See *Building-leases, &c.*

**AIR**, free circulation of. s. 32. See *Party fence-walls*.

**AIDERMEN.** See *Lord Mayor*.

**ALLEY** (the word) to include any court, alley, passage, or other public place which can be used as a footway only. s. 2. See *Widths*.

**ALLEYS** and streets made or laid out before 1st January, 1845. See *Already built* (the term).

**ALLEYS** must each have two entrances of the full width of the alley, and one of the two at the least open from the ground upwards. Schedule L.

**ALREADY BUILT** (the term) used in reference to buildings, to apply to buildings built before the 1st January 1845, or commenced before that day, and covered in and rendered fit for use within 12 calendar months thereafter; and, used in reference to streets and alleys, to apply to all streets or alleys made or laid out before that day, and which shall be formed and rendered fit for use within 12 calendar months thereafter. s. 2.

**ALTERATION** of any building. Two days' notice to be given to the district surveyor before the commencement of. s. 13. See *Penalty*.

**ALTITUDE**, buildings of the 2nd or warehouse class are rated by only; the other classes by area and number of stories, as well as by altitude. Schedule C.

**AMENDS**, tender of. See *Informalities in Districts*.

**ANGLES OF FLUES.** See *Flues, angles of*.

**ANGLE-CHIMNEYS.** See *Chimneys hereafter built*.

**APERTURES**, how affecting the thicknesses of external walls. See *Inclosing-walls*.

**APPEAL** to the official referees, any person may, within 10 days from the delivering of an account for party-structure. s. 47.

**APPEAL** of lord mayor and aldermen, or of overseers, against district-surveyor's certificate in case of ruinous buildings. See *Ruinous buildings*.

**APPEAL** from convictions as to penalties. Proceedings thereon. If any party be dissatisfied with the decision of the justices in any case in which such penalty may be proceeded for by conviction for any offence in respect of which a penalty is by this Act imposed, and if within 4 days after such decision notice be given by or on behalf of such party to the party appealed against of his intention to appeal against such decision, and of the grounds of such appeal, and if the appellant enter into a recognizance, with two sufficient sureties, conditioned to prosecute such appeal, and to abide the order of the Court, and to pay to the party appealed against such costs (if any) as shall be awarded against him, it shall be lawful for such party so dissatisfied to appeal against such conviction to the justices of the peace at their general Quarter Sessions of the peace to be holden within 4 calendar months after such conviction; and if within such period of 4 days such appellant have entered into such recognizance as is herein required, then it shall be lawful for such justices and they are hereby empowered to proceed to hear and examine on oath into the cause and matters of such appeal, and to determine the same, and to award such costs to be paid by either of the said parties as they think proper; and the order, judgment, and determination of the said justices shall be binding and conclusive. s. 105.

**APPLICATION** to official referees to modify, in certain cases, the thicknesses of external walls. See *Inclosing-walls*.

**ARCHES** separating buildings from public ways. See *Public way, buildings over*.

**ARCHITECT**, If an official referee act as, to any building within the limits of the Act, some other competent person must be appointed by the Com-



missioners of Works and Buildings to act in that case in conjunction with the other official referees. s. 80.

**ARCHITECT OR BUILDER** of 1st rate buildings of the 2nd class, and of all buildings of the 3rd class, to give notice to the official referees according to the form (No. 6) in the Schedule of Notices, or to the like effect; that all the walls of any building over which they have control are built to their full height, and all the timbers of the floors, roofs, and partitions are fixed:—within 7 days after such notice, the official referees shall survey the same, and shall within 7 days after survey certify to such architect or builder their approval, or if any part of the walls, timbers, roof, or internal supports appear to such official referees defective, insufficient, or insecure, then within the said 7 days after such survey they are to give to such architect or builder notice of such parts as shall so appear to them defective, insufficient, or insecure, which notice must be in writing;—and upon the receipt of such notice it shall be the duty of the said architect or builder to amend and strengthen such defective, insufficient, or insecure parts;—and during or within a period of 7 days after notice has been given to the official referees that such works have been amended or strengthened as aforesaid, it shall be the duty of the official referees and they are hereby required to inspect the same, or in default thereof the said parts may be covered up;—and upon completion of every such building it shall be the duty of the architect or builder to give fresh notice to the official referees, according to the form (No. 7) in the Schedule of Notices, or to the like effect;—and thereupon, or within 7 days after such notice, it shall be the duty of the official referees to survey the same; and if upon such survey it shall appear that such building has been built sufficiently strong, and is sufficiently set to be safe, then within 14 days after such survey it shall be their duty to certify accordingly, which certificate must be under their hands and the seal of office of Registrar of Metropolitan Buildings;—and until such certificate shall have been made, or until 14 days after such survey shall have elapsed without the official referees having given notice in writing that they are not satisfied, it shall not be lawful to use such building for any purpose whatever: without the express authority in writing of the official referees under their hands and the seal of office of the Registrar of Metropolitan Buildings. s. 15. See *Penalty for use*.

**Architect or Builder** to give notice to the official referees before the builder begins to build any building comprised in Schedule B, Part I. (See *Supervision, special*); and also, at the same time, to transmit for their inspection the plans, elevations, and other drawings which have been made for the same;—and forthwith the official referees shall proceed to survey the situation of the intended building, to ascertain whether such building can be erected on such situation with due regard to the security of the public;—and from time to time the official referees shall inspect the same to ascertain the sufficiency thereof; and if such building or any part thereof appear to such official referees defective, insufficient, or insecure, then they are to give to such architect or builder notice of such parts as shall so appear to them defective, insufficient, or insecure, which notice must be in writing;—and upon the receipt of such notice the architect or builder shall amend and strengthen such defective, insufficient, or insecure parts;—and within 7 days after such notice has been given to the official referees that such works have been amended or strengthened, the official referees shall inspect the same, or in default thereof the said parts may be covered up;—and upon completion of such building the architect or builder shall give fresh notice to the official referees;—and within 7 days after such notice the official referees shall survey the same; and if upon such survey it shall appear that such building has been built sufficiently strong, then it shall be their duty to certify accordingly under their hands and the seal of office of Registrar of Metropolitan Buildings;—and until such certificate shall have been made, or until 14 days after such survey shall have elapsed without the official referees having given notice in writing that they are not satisfied, it shall not be lawful to use such building for any purpose whatever: without the express authority in writing of the official referees under their hands and the seal of office of the Registrar of Metropolitan Buildings; and if before the certificate of satisfaction shall have been made, or if such 14 days shall have elapsed without due notice in writing being given as aforesaid, any such building shall be used for any purpose without such express authority, then, on conviction thereof before two justices of the peace, the occupier or other person by whom such building shall be used shall be liable for such offence as a summary offence for every day during which such building shall be so used without having obtained such certificate of satisfaction or such express authority as aforesaid. s. 16. See *Penalty for use*.

**AREA** of building, to be determined by the number of squares contained in the surface of any floor which shall contain the greatest number of squares at or above the principal entrance to such building; including in such surface all the external walls and party-wallings belonging to such building, but excluding from such surface the area of any attached building, or office, area, balcony, or open portico. Schedule C, Part I. s. 6.

**Area**, rates of buildings of the 1st or warehouse class determined by, but become of a higher rate by

increase in altitude or in number of stories. Schedule C, Part II. See *Toll-houses and buildings built for the purposes of trade*.

**Area**. See *Back-yard*.  
**Works and Buildings** have power to modify the strict letter of the Act relative to, in cases of buildings upon old sites, and upon the report of the official referees therein. s. 12.

**Areas**. Every lowermost room or cellar in any existing building used or intended to be used as a separate dwelling, must have an area of not less than 3 ft. wide in every part, from 6 in. below the floor of such room or cellar to the surface or level of the ground adjoining to the front, back, or external side thereof, and extending the full length of such side. And such area, to the extent of at least 5 ft. long and 2 ft. 6 in. wide, must be in front of the window of such room or cellar, and must be open, or covered only with open iron gratings. Schedule K.

**ASSISTANT-DISTRICT-SURVEYOR**. If at any time it appear to the official referees that on account of the pressure of business in any district or on any other account, the surveyor of that district cannot discharge his duties promptly as regards the builders and others engaged in building operations, and efficiently as regards the purposes of this Act, such official referees shall appoint any other district surveyor to assist the surveyor of such district in the performance of his duties, or if no district surveyor can be spared from his own district, the applicant or some other competent person to give such assistance;—and such assistant-surveyor shall make returns and act in all respects as if he had been appointed by the Lord Mayor and aldermen, or by the justices, to be the surveyor of such district; and every such person shall be entitled to receive the fees payable in respect of the services performed by him. s. 75.

**ASSISTANT SURVEYOR** in any county may not act as justice of the peace for the same county. s. 69.

**ATTACHED** buildings and offices now built or hereafter built (except greenhouses, vinerias, aviaries, or such like buildings), whether such buildings or offices be attached to or detached from the buildings to which they belong, to be deemed, in respect of the walls thereof, and all other requisites, as buildings of the rate to which they would belong if they had been built separately. Schedule C, Part VII. District-surveyor's fee for attached or detached building, distinctly rated (except any such attached or detached building built at the same time as the building to which it belongs, and carried up and covered in within 21 days after such building shall have been covered in within the meaning of this Act), is such fee as is imposed in respect of additions to or alterations of buildings of the rate to which such attached or detached buildings shall belong.

**ATTENDANCE** of district-surveyor, or of some other person in his behalf, at his office, to be from 10 o'clock in the morning till 4 o'clock in the afternoon, daily, Sundays, Christmas-day, and Good Friday excepted. s. 72.

**ATTIC ROOMS**, in the roof of any building hereafter built or rebuilt, there must not be more than one floor of; and such rooms must not be of a less height than 7 ft., except the sloping part, if any, of such roof, which sloping part must not begin at less than 3 ft. 6 in. above the floor, nor extend more than 3 ft. 6 in. on the ceiling of such room. Schedule K.

**AVIARIES**. See *Attached buildings and offices*.

**AWARD**, official referees', relative to ruinous buildings. See *Ruinous buildings*.

**Awards** exempt from stamp-duty. s. 119.

**Awards**, certificates, and other documents, to be deposited in the registrar's office chronologically and in classes, according to their subjects. s. 93.

**Awards, recovery of money under—Distress—Imprisonment**. If any party claim any sum of money by this Act, or by any award or certificate or other proceeding in pursuance of or in accordance with this Act, charged upon any person in respect of any work done in pursuance of or in accordance with this Act, it shall be lawful for any one justice of the peace to summon the person on whom such sum is alleged to be charged before any two justices, or, if the matter arise within the district of the metropolitan police, then before any police magistrate having jurisdiction within that district; and if such award or certificate be produced, or if such other proceeding be proved by the oath of the party claiming or of any other or other witnesses, and if it be proved by the oath of such party or other witness that such sum of money is still due, then it shall be lawful for such justices or such police magistrate, and they respectively are hereby required, to issue a warrant to levy the amount thereof, and also the costs of the proceeding, to be levied by distress of the goods and chattels of the person in default; and if such person have no goods and chattels whereon to distrain, or if such goods and chattels be insufficient for that purpose, then it shall be lawful for such justices or police magistrate, or for any other justice or police magistrate, to commit the person in default, until the amount of such sum so due, and of such costs, shall have been fully paid, or until the party shall be discharged by or in accordance with the provisions of any Act for the relief and discharge of insolvent debtors. s. 102.

**B.**

**BACK-YARD**. Every house hereafter built or rebuilt must have an inclosed or open space of at least one

square, exclusive of any building thereon, unless all the rooms of such house can be lighted and ventilated from the street, or from an area of the extent of at least three-quarters of a square above the level of the second story, into which the owner of the house to be rebuilt is entitled to open windows for every room adjoining thereto. And if any house already built be hereafter rebuilt, then, unless all the rooms of such house can be lighted and ventilated from the street, or from an area of the extent of at least three-quarters of a square, into which the owner of the house to be rebuilt is entitled to open windows for every room adjoining thereto, there must be above the level of the floor of the third story an open space of at least three-quarters of a square. Schedule K.

**BALCONIES**. See *Roof-coverings*.

**BANK OF ENGLAND** is under special supervision. Schedule B, Part I.

**BARONS OF THE EXCHEQUER**, one of, to administer declaration of official fidelity to official referees. s. 87; and Registrar, s. 90.

**BASEMENT**. See *Lowermost rooms*.

**BETHLEHEM HOSPITAL** is under special supervision. Schedule B, Part I.

**BODIES OF PERSONS** to be understood as meant by the Act, although an individual only be mentioned. s. 2.

**BOILER-FURNACES**. See *Chimney-shafts*.

**BOOK** for registering all notices, informations, and complaints, district-surveyor to keep at his office, and to enter therein every notice, information, or complaint which shall be delivered or made to him, and any proceeding thereon by him taken. s. 65.

**BOUNDARY-WALL**. s. 32. See *Party fence-walls*.

**BREAST-SUMMERS** fixed to carry any front wall of a building, if bearing at one end upon a party-wall, must be laid upon a template or model of stone or iron, built at least two-thirds through such wall; and such end must not be fixed into, and must not have its bearing solely upon, such party-wall, but must be supported by a sufficient pier built of brick or stone, or by an iron column, or iron or timber story-post fixed on a solid foundation. And if any such breast-summer have its bearing at each end upon a party-wall, it must be supported by at least two sufficient piers built of brick or stone, or by iron columns, or by iron or timber story-posts fixed on solid foundations, and standing within and clear of the party-walls. Or any such breast-summer may bear upon constructed returns in the direction of its length of 4 ins. at least, coursed and banded with the substance of the party-wall or party-walls; and such constructed returns must be increased 1 in. at least for every 6 ft. in length that the breast-summer may be otherwise unsupported. And if the height of the under side of any breast-summer laid from party-wall to party-wall to carry any external wall exceed 15 ft. from the surface of the public foot pavement in front of the building, there must be constructed returns in the direction of the length of the breast-summer from the inside of each party-wall of 8 ins. at the least, and at the least of the full thickness of such breast-summer; and every such return must be increased 1 in. at the least for every foot or part of a foot the breast-summer may be in height from the surface of the public foot pavement more than 15 ft., whether otherwise supported or not. Schedule D, Part II.

**BREWERY**. See *Chimney-shafts*.

**BRIDGES** are under special supervision. Schedule B, Part I.

**BRITISH MUSEUM** is under special supervision. Schedule B, Part I.

**BROMLEY PARISH** (Middlesex) included within the operation of the Act. s. 3.

**BUILDER** whose duty it shall be to give two days' notice to the district-surveyor at his office before commencing or altering any building is to be understood, both in this provision and elsewhere throughout this Act, as the master builder or other person employed to execute any work; or if there be no master builder or other person so employed, then the owner of the building or other person for whom or by whose order such work is to be done. s. 13.

**Builder**, in relation to special supervision of first-rate buildings of the second class and of buildings of the third or public building class. See *Architect or builder*, *Official referees*, and *Penalties for use*.

**Builders** who shall refuse to cut into or pull down any work for the inspection of district-surveyors are to be required by the official referees to open and amend the same. See *District-surveyor*, s. 14.

**BUILDINGS**, streets, and other matters regulated according to this new Act, from 1st January, 1865, s. 1.

**Building**, new and old. And upon sites of former buildings, and the enlarging and altering of buildings of what nature soever, within the limits of the Act, hereafter to be built (except the buildings comprised in schedule (B), and except sewers made by or under the direction of any Commissioners of Sewers), so far as relates to building the same, and with regard to every such building either already or hereafter built (except the said buildings comprised in the said schedule (B), and except the sewers), so far as relates to the rebuilding and enlarging or altering the same, and whether such buildings be built or rebuilt on old or new foundations, or partly on old and partly on new foundations, notwithstanding any thing contained to the contrary in any Act of Parliament now in



force, every such building shall be built, rebuilt, enlarged, or altered in reference to the walls, whether external or party, and to the number and height of the stories or rooms therein, the chimneys, the roofs, the timbers, the drains, the projections, and to any other parts or appendages of every such building, and in the manner of the materials, and in every other respect in conformity with the several particulars, rules, and directions which are specified and set forth in the several clauses (C), (D), (E), (F), (G), (H), (I), (K), according to the classes of buildings; and the rates of such classes to which such buildings are by the schedule (C) declared to belong; subject to any other rules and directions in this Act contained in the same behalf; and subject in every case of doubt, difference, or dissatisfaction in respect thereof, either between any parties concerned or between any party concerned and the surveyor of the district, to the determination of the official referees, upon a reference of the matter in question, according to the provisions of this Act in that behalf. s. 5.

**Building**, before any is begun, and after 3 calendar months' suspension of the work, and in case of a change of the builder, 2 days' notice to be given by the builder to the district surveyor at his office, under penalty of him in the first case only of treble the amount of his fees, and also under penalty in each of the three cases not exceeding 20l. s. 13.

**BUILDING-CONTRACTS** (Existing), modification of. It shall not be lawful to execute any such contract otherwise than in conformity with the provisions of this Act; but either party may deviate from such contract so far as any party thereof may wish to be executed after the Act shall have come into operation; and the alterations rendered necessary by this Act shall be performed as if this Act had been in force when such contract was entered into; and if the parties thereto shall disagree about the difference of the costs and expenses of the works when performed according to the provisions of this Act, the surveyor as stipulated for in such contract, upon notice being given in writing by one party to the other, either may refer the matter to the district surveyor, who shall determine the same, subject to appeal to the official referees; and the award of such referees shall be final and binding on all the parties, as if such award had formed part of the contract; and the costs of the reference shall be borne by all or any or either of the parties in such manner and proportion as the surveyor, or in case of appeal, as the referees shall appoint.

**BUILDING-LEASES** and agreements for leases (Existing), modification of. If it be made to appear to the official referees that any rules by this Act prescribed will prevent the due observance of or be at variance with any such lease or agreement, and that the objects of this Act may be obtained by modifying such rules, either entirely or partially, in conformity with such lease or agreement, it shall be lawful for the said official referees by their award to authorize such modification, subject to the approbation of the Commissioners of Works and Buildings; and subject to such modification, (or in default thereof), it shall be the duty of such person (so bound) to erect every building agreed to be built by such lease or agreement according to the conditions rendered necessary by this Act, in the same or like manner as if this Act had been passed and in operation at the time of making such lease or agreement; and on such completion of the works, and on giving to the lessor or other owners of such building 14 days' notice of his intention to apply to the official referees on this behalf, the lessee or tenant may require the official referees to ascertain what loss, present and prospective, has been occasioned thereby, and having regard to the respective terms and interests of the lessee or tenant, the lessor and other owners of such building, and to whom compensation is to be paid, and in what proportions, and their decision in the matter shall be final. s. 10.

**BUILDING-OWNER**. s. 20.

**CALENDAR** month to be always understood under the Act by the word *Month*. s. 2.

**CAMBERWELL** parish included within the operation of the Act. s. 3.

**CARRIAGE-WAY**, the existence of, brings public places within the denomination of *Streets*. s. 2.

**CASHIER** of the Commissioners of Works and Buildings to receive annually from the Chamberlain of London and the county treasurers of Middlesex, Surrey, and Kent, the contributions towards the expenses of the official referees and registrar. s. 96.

**CEILING**, plastered, not to be formed over any public way. See *Public way, buildings over*.

**CELLARS**. See *Lowermost rooms*.

**CERTIFICATES**, awards, and other documents to be arranged in the registrar's office chronologically, and in classes according to their subjects. s. 93.

Certificate, district-surveyors' and official referees' relative to ruinous buildings. See *Ruinous buildings*.

Certificate of qualification from examiners to be produced to the town clerk of London, or to the county clerk of the place, one week before the election of *district-surveyor*. s. 66.

Certificate, official referees', of work done by builder contrary to Act, s. 18. See *Nuisance*.

**CERTIORARI**. See *Removal of orders, &c.*

**CESSPOOLS**. If there be a common sewer within 50 ft. from any front of or from the inclosure about any house or other building, then a cesspool must not be made for the reception of drainage from such house or other building, unless there be, or shall be built, a good and sufficient drain from such cesspool to such sewer. And cesspools under houses or other buildings must be air-tight. Schedule H.

**CHAMBERS**. See *Inns of Court*.

**CHAMBERLAIN** to receive and return, if claimed within 6 years, surplus arising from sale of materials of ruinous buildings within the city and liberties of London. s. 41.

Chamberlain of London to pay annually 100l. towards the expenses of the official referees and registrar. s. 96.

**CHANGE** of builder, in case of, two days' notice to be given to the district-surveyor at his office under penalty of not exceeding 20l. s. 13. See *Builder*, for definition of the term.

**CHAPEL-DOORS**. See *Official referees and Overseers of parishes*.

**CHARGING-CROSS**. The council has power to extend the operation of the Act to any place within 12 miles from. s. 4. See *Gazette, Districts included, &c.*

**CHARLTON** parish included within the operation of the Act. s. 3.

**CHARGES** and recesses. In every story, recesses may be formed, but only with the consent and authority of the official referees, and so that such recesses be arched over, and the back of any such recess be full 7 ins. from the centre of the party-wall in the first or lowest story, and full 4 ins. from the centre of the party-wall in any other story, and so that the stability and sufficiency of such party-wall be not injuriously affected thereby. Chases required for the insertion of ends of walls, piers, chimney jambs, withes of flues, metal pipes, or iron story-posts, must not be left or be cut nearer to the centre of a party-wall than 4 ins. at least, nor within a distance of 9 ins. at least from any front or back wall, and no two such chases must be made within a distance of 7 ft. 6 ins. at least from each other on the same side of a wall, and no such chase must be formed wider than 9 ins. Schedule D., Part IV.

**CHELSEA** parish entirely included within the operation of the Act. s. 3.

**CHIMNEYS** HEREAFTER BUILT OR REBUILT:—*Rules concerning construction.* The foundations and footings of every chimney and chimney-stack (except angle-chimneys) must be built similar to those of the wall in or adjoining to which it shall be. And every chimney and chimney-stack must be built from the foundation to the top thereof without any corbelling over, whereby any upper part of the brick-work thereof shall overhang any lower part of the brick-work on the front thereof. But in buildings of the 1st rate and extra 1st rate, the jambs, breast, and flue of any single chimney may be built up with brick, stone, or iron corbels, above the ceiling of the 3rd story; and in buildings of the 2nd and 3rd rates, the jambs, breast, and flue in any single chimney may be built upon brick, stone, or iron corbels above the ceiling of the 2nd story thereof; but the projection both of such jambs and breasts must not in any case exceed 9 ins. before the face of the wall or stack to which the same shall adjoin. And angle-chimneys may be built in the internal angle of any building, with the breast thereof not wider than 5 ft.; and properly supported on iron girders, with brick arches, or on strong stone loadings, not less than 4 ins. thick, laid at least 9 ins. into each of the two walls forming an angle.

*Dimensions and materials.* The jambs of every chimney must not be less than 8½ ins. wide on each side of the opening. The breast of every chimney, and the front, back, wither, or partition thereof, must be at the least 4 ins. thick of sound bricks, properly bonded, and the joints of the work must be filled in with good mortar or cement, and all the inside thereof, and also the outside or face thereof next the interior of any building, must be rendered or parge-plastered. And no flue may be used for a smoke-flue which is in any section of less internal diameter than 8½ ins.

*Timber or wood-work.*—No timber must be placed over any opening for supporting the breast of any chimney, but there must be an arch of brick or stone over the opening of every such chimney, to support the breast thereof, and an iron bar or bars must be built into the jambs, at the least 9 ins. on each side, to tie in the abutments when the breast projects more than 4½ ins. from the face of the wall, and the jamb on either side is of less width than two-thirds of the opening. And no timber or wood-work must be placed or laid in any wall under any chimney-opening within 18 ins. at least of the surface of the hearth to the fireplace of such chimney-opening. If timber or wood-work be affixed to the front of

any jamb or mantel, or to the front or back of any chimney or flue, it must be fixed by iron nails or holdfasts, or other iron fastenings, not driven nearer than 4 ins. to the inside of any flue or to the opening of any chimney; and such timber or wood-work must not be nearer than 9 ins. to the opening of any chimney. And no timber must be laid or placed within 3 ins. of the face, or breast, back, side, or jamb of any flue, or of any chimney-opening, where the substance of brick-work or stone-work shall be less than 8½ ins. thick; nor must any flooring-board, battens, ground, skirting, or other lining or fitting of wood, nor any wood staircase, nor any thing else of wood, be fixed or placed against or near to the face, or breast, back, side, or jamb of any flue, fireplace, or chimney-opening, unless and until the brick or stone-work constituting the same shall have been thoroughly and efficiently rendered or parge-plastered with proper mortar or stucco, and such rendering must be in every case in addition to 4 ins. at least of solid fire-proof structure. Schedule F, s. 5.

**Chimney** (Open), with proper flue, every underground room or cellar let as a separate dwelling must have. Schedule K.

**Chimneys**, repairs, repair of, &c. If a chimney-shaft, chimney-pot, or other thing thereon, the eaves, or parapet or coping, or slates or tiles on the roof, or any projection from the front walls of any building, be in danger of falling, the district-surveyor shall require the occupier of such building, or if there be no occupier the owner thereof, to take down or secure the same within 36 hours after notice;—and if within the time specified such occupier, or some other person interested in such building, do not begin to take down or secure the same, and as soon as the nature of the case will admit complete such taking down or securing of the same, then such surveyor shall give information thereof to a justice of the peace, who shall proceed to direct such chimney-shaft, chimney-pot, or other thing thereon, or the eaves, or parapet or coping, or slates or tiles on the roof, or projection from the front or side wall of such building as shall be considered by such surveyor in danger of falling, to be forthwith taken down or secured; and if there be no occupier or known owner, then such justice shall direct that the reasonable expenses, to be certified by the official referees, be paid by the overseers of the parish or place in which such building shall be situated; and if thereafter the owner of such building become known, or if the building become occupied, then the overseers of the poor shall recover the amount of such expenses from such owner or from such occupier as in the case of ruinous buildings;—and if within the time limited the occupier, or some other person interested in such building, do not take down or secure the same, then for every day's default such occupier, or the owner if there be no occupier, shall forfeit and pay a sum not exceeding 5l.; and such occupier or owner shall also pay the surveyor's fees, and all other costs, charges, and expenses attendant upon any such taking down or securing the building; and all such surveyor's fees, and other costs, charges, and expenses, may be recovered and levied in the same manner as such penalty;—but if the occupier of such building be not found by any lease or other instrument to repair, reinstate, or secure the premises, such occupier may retain out of the rent payable in respect of such premises all penalties, costs, charges, and expenses attendant upon or arising out of the taking down or securing, or the repairing or rebuilding the same, as in the case of any other works the costs of which he is hereby required to pay in the first instance. s. 43.

**Chimneys**, recovery of costs of. See *Expenses of works*.

Chimneys, if raised at the expense of one party, to be paid for by the adjoining party if afterwards used by him to a raised building. s. 31.

**Chimneys, &c.** Compensation for injury by fall of.

If at any time any injury or damage be caused to any part of an adjoining building, or to the internal decorations and furniture, goods, wares, and merchandise in such building, by the falling down from any other building of any chimney-shaft, chimney-pot, parapet, coping, or other thing (except any such part of a party-wall as shall belong to and be used conjointly by the owners or occupiers of the buildings parted thereby), then the owner of the building from which such part shall fall shall reimburse the expense to which the owner or occupier may be put in making good such injury or damage, in like manner as herein directed concerning the reimbursement of the expenses of ruinous party-walls; and such costs shall be recoverable in the manner hereinafter directed for the recovery of the costs and expenses of executing works in pursuance of this Act. s. 44.

**CHIMNEY-BACKS**. The back of every chimney-opening of every building (except backs of chimneys in the lowest story of buildings of the 4th rate) in the lowest story to be at the least 13 ins. thick, and in every other story at the least 8½ ins. thick from the hearth to the height of 12 ins. above the mantel. And the backs of chimney-openings in the lowest story of buildings of the 4th rate, to be at least 8½ ins. thick. But chimney-backs in walls not party-walls may be 4½ ins. less in thickness. If two chimneys be built back to back, the thickness between them is to be at least of the thickness hereinbefore directed for the back of one chimney-opening. Schedule F.

**CHIMNEY-BREASTS, &c.** in new party-walls. Instructions for, by adjoining owner. When the owner



of any piece of vacant ground shall have obtained the consent of the adjoining owner to build a party-wall on the line of junction of their respective premises, then, 10 DAYS at the least before beginning to build such party-wall, it shall be the duty of the building owner to give the adjoining owner notice thereof, according to the form (No. 16) in the Schedule of Notices, or to the like effect; and if in due time the adjoining owner give instructions in writing, or by a plan and elevations or other sufficient drawings, then it shall be the duty of the building-owner to construct, IF PRACTICABLE, such and so many chimney jambs, breasts, and flues of chimneys in all such parts of such party-wall as shall be by such instructions required, and to leave such recesses in every such wall as may be so required, but so that they be conformable with the directions of this Act concerning party-walls and chimneys; and thereupon the building owner may claim and recover from the adjoining owner the expenses of such work. s. 39. District-surveyor's fees for attending to the cutting away of chimney-breasts for external walls,—

	£	s.	d.
1st rate . . . . .	3	3	0
Ditto extra . . . . .	3	0	0
2nd ditto . . . . .	2	2	0
3rd ditto . . . . .	2	2	0
4th rate, containing more than 2 stories . . . . .	1	1	0
4th rate, not containing more than 2 stories . . . . .	0	10	6

Not chargeable where the ordinary fees for building, or addition, or alteration are paid. Schedule L.

**CHIMNEY-POTS, ruinous.** See *Chimneys, ruinous*. Chimney-pots, tubes, &c. Earthen or metal chimney-pots, tubes, funnels, or cowls of any description whatsoever, higher than 4 ft. above the brick or stone-work, must be fixed 2 ft. at least into the brick or stone-work of the supporting flue. Schedule F.

**CHIMNEY-SHAFTS.** Every chimney-shaft or flue hereafter built, raised, or repaired must be carried up in brick or stone-work all round, at least 4 ins. thick, to a height of not less than 3 ft. above the highest part of the portion of the roof, flat, or gutter adjoining thereto, measured at the point of junction. And the brick or stone-work of any chimney-shaft (except that of a steam-engine, brewery, distillery, or manufactory), must not be built higher than 8 ft. above the slope, flat, or gutter of the roof which it adjoins, measured from the highest point of junction, unless such chimney-shaft be built of increased thickness, or be built with and bonded to another chimney-shaft, or be otherwise rendered secure. And the chimney-shaft for the boiler-furnaces of any steam-engine, or for any brewery, distillery, or manufactory, may be erected of any height, so that it be built in such manner and of such strength and dimensions as shall be satisfactory to the official referees, upon special application in each case. Schedule F.

**CHIMNEY-SHAFTS, ruinous.** See *Chimneys, ruinous*. Chimney-shafts, jambs, breasts, or flues of, already built, or hereafter built, shall not be cut into for any purpose other than the repair thereof, or for the formation of soot-doors, or for letting in, removing, or altering stove-pipes or smoke-jacks, except as directed for building an external wall against an old sound party-wall. Schedule F.

**CHIMNEY-SLABS AND HEARTHS.** A slab or slabs of brick, tile, stone, slate, marble, or other proper and sufficient substance, at least 12 ins. longer than the opening of every chimney when finished, and at least 18 ins. in front of the arch over the same, must be laid before the opening of every chimney. And in every floor, except the lowest floor, such slab or slabs must be laid wholly upon stone or iron bearers, or upon brick trimmers; but in the lowest floor they may be laid on a brick fender, or bedded on the solid ground. And the hearth of every chimney must be laid and bedded wholly on brick or stone, or other incombustible substance, which must be solid for a thickness of 9 ins. at least beneath the surface of any such hearth. Schedule F.

**CHIMNEY-STACK.** Two days' notice to be given to the district-surveyor at his office before begun to be built, pulled down, rebuilt, cut into, or altered. s. 13. See *Penalty*.

**CHRISTMAS-DAY.** District-surveyor's office not required to be attended on. s. 73.

**CHRONOLOGICALLY,** as well as classed, all awards, certificates, and documents, to be arranged in the registrar's office. s. 93.

**CHURCH-DOORS.** See *Official referees and Overseers of Parishes*.

**CHURCHWARDENS.** See *Parish* (the word).

**CIRCUS,** for meaning of, see *Street*.

**CLASSED,** alteration of. If any room, whether constructed within any other building or not, or included in the aforesaid classes or not, be used at any time for the public or general congregation of persons, then the building containing such room is to be deemed a building of the 3rd or public building class. Or if a building originally built, or subsequently altered, so as to bring it within any one class, be subsequently converted into or used as a building of another class, then it is to be deemed to belong to such other class; and, as to it, all the conditions prescribed with regard to buildings of the same rate of such other class must be fulfilled, as if it had been originally built of such class; subject to such modifications as shall be sanctioned by the official referees on a special supervision thereof. Or if a building be used partly as a dwelling-house

and partly for any purpose which would bring it within the 2nd or warehouse class, then it is to be deemed to belong to the 2nd class; and as to it all the conditions prescribed with regard to buildings of the same rate of such class must be fulfilled as if it had been originally built of such class, subject to such modifications as shall be sanctioned by the official referees on a special supervision thereof. Schedule C, Part I. s. 5.

**CLASSES and rates of buildings,** to be, in cases of doubt, difference, or dissatisfaction, determined by the official referees. s. 5.

**CLASSES or Rates, buildings not within.** Buildings not by this Act expressly assigned to any class or rate of a class, shall be built in accordance with such class and rate as shall be directed by the surveyor, subject, as in other cases of doubt, difference, or dissatisfaction, to an appeal to the official referees. s. 8.

**Classes of Buildings are three—First, or Dwelling-house class; second, or Warehouse class; third, or Public Building class, which articles see.**

**CLASSED,** in order, of the subjects, as well as chronologically, all awards, certificates, and documents, to be in the registrar's office. s. 93.

**CLERK of the Peace for the county to receive one week before the election of a district-surveyor the examiner's certificate of due qualification.** s. 66.

**CLOSE FIRES.** Every oven, furnace, coke, or close fire used for the purpose of trade or manufacture, must be distant 6 ins. at least from any party-wall, and must not be upon nor within a distance of 18 ins. of any timber or wood-work. And the floor on or above which such oven, furnace, coke, or close fire shall be built or fixed, shall be formed and paved under, and for a distance of 2 ft. all round the same, with stone, brick, tile, or slate, at least 2 ins. thick, or other proper incombustible and non-conducting materials. Schedule F.

**COCKLE.** See *Close fires*.

**COMMISSIONER, for any owners of houses within the limits of the Act, disqualified from being official referee or registrar.** s. 95.

**Commissioners of Sewers.** See *Drainage of houses, also Buildings, new and old*.

**Commissioners of the Treasury to appoint such fees to be paid in respect of the services to be performed by the official referees or by the Registrar of Metropolitan Buildings, as shall be deemed requisite to defray the expenses of office, or incident to such services, and the salaries or other remuneration of any persons employed under the registrar in the execution of the Acts with the sanction of the Commissioners of the Treasury, and which are not otherwise provided for by this Act; and the balance, if any, shall be carried to the consolidated fund of the United Kingdom, and be paid accordingly into the receipt of her Majesty's Exchequer at Westminster; and the said commissioners to regulate the manner in which such fees are to be received, and in which they are to be kept, and in which they are to be accounted for; and the registrar to cause a list of the fees so appointed to be fixed up in some conspicuous part of his office.**

**Commissioners (the) of Works and Buildings.** The expression to mean the Commissioners of her Majesty's Woods, Forests, Land Revenues, Works, and Buildings. s. 2.

**Commissioners of Works and Buildings to appoint, during their pleasure, a Registrar of Metropolitan Buildings, and to appoint, if he be ill, or otherwise unable to discharge the duties of office, or be absent, some other person to act temporarily in his behalf, remunerated out of the registrar's salary, or otherwise, as the Lords of the Treasury shall appoint.** s. 89.

**Commissioners of Works and Buildings to make rules for regulating the execution of the duties of the office of Registrar of Metropolitan Buildings.** s. 89.

**Commissioners of Works and Buildings.** If it shall appear to the Registrar of Metropolitan Buildings that any documents made by the official referees are contrary to law, or not complete in any of the requisite forms, or beyond the competence of the said referees, either with regard to the provisions of this Act, or any rules or regulations prescribed for their guidance by the said commissioners, then it shall be the duty of the said registrar to refuse to affix the seal, and thereupon, if the said referees shall so require, he shall report the matter, and the particular grounds and reasons for his refusal, to the said commissioners; and upon the receipt of such report the said commissioners shall authorize the said registrar to affix the seal, or to confirm his refusal. s. 89.

**Commissioners of Works and Buildings, Cashier of, to receive annually from the Chamberlain of London, and the county treasurers of Middlesex, Surrey, and Kent, the contributions towards the expenses of the official referees and registrar.** s. 96.

**Commissioners of Works and Buildings are, in case an official referee act as architect to any building, to appoint some other competent person to act in that case in conjunction with the other official referee.** s. 80.

**Commissioners of Works and Buildings to appoint three or more architects, surveyors, or builders to examine, together with the official referees, candidates for the office of district-surveyor, and from time to time to prescribe such course of examination as to them may seem fit, and to make any other rules for the regulation of such examination, and the granting of certificates, subject to the approval of the said Commissioners of Works**

and Buildings; and when such rules shall have been registered by the Registrar of Metropolitan Buildings, they shall continue to be in force until they shall be amended, altered, or rescinded by other rules to be made by such examiners and so registered as aforesaid. s. 66.

**Commissioners of Works and Buildings to determine, in case of appeal, if the official referees are liable to the special supervision of the official referees.** s. 5.

**Commissioners of Works and Buildings, (subject to the restrictions and regulations of) the official referees may appoint one of their number, under their hands and seal of the Registrar of Metropolitan Buildings, to make any inquiry or any survey which shall appear to them either necessary or expedient in order to enable them to determine any matters in reference.** s. 85.

**Commissioners of Works and Buildings, with the sanction of the official referees, may modify the rules of the Act either entirely or partially, in conformity with an existing building-lease or agreement.** s. 10.

**Commissioners of Works and Buildings, or any two of them, empowered to modify rules of the Act generally for the purpose of preventing its express provisions from hindering the adoption of improvements, and of providing for the adoption of expedients either better or equally well adapted to accomplish the purposes thereof, if in the opinion of the official referees the rules by this Act imposed shall be inapplicable, or will defeat its objects, and that by the adoption of any modification of such rules such objects will be attained either better or as effectually, such official referees reporting their opinion thereon, stating the grounds of such opinion to the Commissioners of Works and Buildings; and although such official referees shall be of opinion that such modifications are not requisite or admissible, yet if any party interested present to the official referees a representation, setting forth the grounds whereon such modification is claimed, the official referees are to report such representation, as well as their opinion thereon, to the said commissioners, with the grounds of such their report and opinion; and thereupon, if the said commissioners think fit, it shall be lawful for them or any two of them to direct the official referees to make such order in the matter as may appear to them to be requisite.** s. 11.

**Commissioners of Works and Buildings have power to modify the provisions of this Act as to existing buildings to be rebuilt in respect of the required area, or in any other respect than the required height and thickness of walls, if a full compliance with its provisions would be attended by great loss and inconvenience,—subject to the report of the official referees, and to such terms as the said commissioners may impose in that behalf, and provided such buildings erected on the site of the old buildings be as near as may be practicable to statute.** s. 12.

**COMMIT, justices may, such persons as have no goods, &c. upon which sufficient distress can be made. See Awards, recovery of money under.**

**COMPANIES to be understood as meant by the Act, although an individual only be mentioned.** s. 2.

**COMPENSATION by neighbours, parts of whose buildings may fall. See Chimneys, ruinous.** Compensation, reasonable, the official referees may award to be paid to adjoining parties by parties who rebuild a sound party-wall not condemnable. s. 26.

**COMPLAINTS (all) and proceedings thereon to be entered by district-surveyor in his office register-book.** s. 68.

**CONCRETE-WORK, cost of, may be claimed from adjoining parties.** s. 47.

**CONDEMN (The district-surveyor is to) party-walls made ruinous or dangerous by cutting away.** s. 29.

**CONSENT of adjoining owners.** See *Notice to, &c.* Consent of adjoining owners, supplying want of. If adjoining premises be unoccupied, or if the owner thereof cannot be found, or if the owner although found cannot, by reason of legal disability or otherwise, consent to the work, or if the owner will not consent thereto, or if differences arise amongst the parties concerned, then the notice required to be given in respect of such work must be served both on the district-surveyor and on the official referees, in addition to such other parties entitled to notice under this Act upon whom such notice can be served, which must be according to the form (No. 9) in the Schedule of Notices, or to the like effect; and on the receipt of such notice the district-surveyor shall give notice to the parties by whom such work is to be executed, and to any one or more surveyors or agents by them appointed, as to the day and hour when he will view the premises, according to the form (No. 10) in the Schedule of Notices, or to the like effect; and at such time the surveyor of the district shall proceed to inspect such premises accordingly, and to certify to the official referees,

FIRST, whether such work ought to be done or not;

SECONDLY, if the same ought to be done, whether it ought to be done in the proposed manner;

THIRDLY, the site whereon the party-wall should be built; and, with regard to intermixed buildings, what party-arches may be necessary over or under any rooms of such buildings so intended to be rebuilt;

FOURTHLY, the quantity of the soil or ground or other parts of the premises (if any) neces-



sary to be laid to or taken from the house of the person desirous to rebuild to the house of the person permitting him to erect a party-wall or party-arch;

FIFTHLY, the compensation (if any) which should be made and paid by either the building owner or the adjoining owner to the other in lieu of the lessening either of the said buildings by such party-wall or party-arch, or as a satisfaction for such other injury (if any) as shall be done or occasioned thereby to any of the said parties;

And upon receipt of such certificate the official referees shall cause notice thereof to be given to the parties or to such of them as are known; and if within 7 days after such notice to the parties the certificate be not appealed against, and if the official referees be of opinion that the work is proper to be done, and the compensation is fair, then the official referees shall confirm such certificate, and authorize the building owner to proceed with the works after the consent of the adjoining owner had been obtained;—and if any party concerned shall appeal against the certificate of the surveyor as to the work to be done, or as to the compensation, or as to any other matter referred to in such certificate in pursuance of the above provisions, then the official referees shall appoint one of their number to survey the building in question; and for that purpose the official referee so appointed shall give notice to the parties, and to any one or more surveyors or other agents by them appointed, as to the time when he will view the premises,—and at that time it shall be the duty of such referee to view such premises accordingly, and to inquire into the matters appealed against, and to certify to the official referees his opinion thereon;—and upon such certificate being made it shall be lawful for the official referees to make their award, thereby either confirming or reversing or modifying as to them the award which seems to require, the certificate of the surveyor, and appointing by whom and in what proportions the expenses of the surveys and of the reports thereon are to be paid, and such award shall be final;—and with regard to any works by such award authorized, so far as relate to the proceedings of the building owner, if upon the making of the award the periods of the notices by this Act prescribed with regard to works of that nature have elapsed, then immediately upon the making of the award, but if such period have not elapsed, then as soon after the making of the award as such periods shall have elapsed, it shall be lawful for the building owner, his agents, servants, and workmen, to proceed to execute the works. s. 24.

Consent of one of the principal Secretaries of State requisite to render valid magistrates' appointment of district and district-surveyors. s. 64, 65.

Consent of all proper parties, in default of, the official referees may authorize the pulling down of party-structures and the laying together parts of intermixed buildings. s. 34.

Consents by incapacitated persons. Consents by this Act required to be given by the owner or occupier of any building or ground on behalf of incapacitated persons, if such owner or occupier be a married female, not being a cestuique trust in regard to the property to which such consent relates, must be given by her husband; or if such owner or occupier be an infant, idiot, or lunatic, or cestuique trust, then by his or her guardian, trustee, or committee; or if such owner or occupier be a husband, trustee, guardian, or committee, he not known or cannot be found, then to protect the interests of such parties, as well as to facilitate the purposes of this Act, the official referees are, by writing duly sealed by the Registrar of Metropolitan Buildings, to give such consent as may be requisite, upon such terms and subject to such conditions as may seem fit to them, having regard alike to the nature and purpose of the subject-matter in respect of which such consent is to be given, and to the fair claims of the parties on whose behalf such consent is to be given. s. 117.

CONSTABLES. See Parish (the word).

CONSTRUCTION and meaning of terms, used in this Act, when not altered by the context. s. 2.

CONTRACTS. See Building contracts (existing) modifications of.

CONTRIBUTIONS of parties liable to bear the expense of party structures, official referees to settle the proportions of. s. 50.

COPIES of the awards, certificates and other documents of the official referees, the registrar is to give under his hand and seal to parties requiring the same, upon their tendering the expenses and fees relative thereto. s. 91.

DANGERS in danger of falling. See Chimneys, ruinous.

DEPOSIT-HOLDER. s. 50. See Expenses of works.

DISCREPANCIES to be understood as meant by the Act although an individual only be mentioned. s. 2.

DRY-CELLS of 3rd class buildings, floors of, must be fire-proof. Schedule C, Part VI.

AWARDS. See Awards, recovery of money under.

EMPOWERMENT (her Majesty in) has power to extend the operations of the Act to any place within 12 miles from Charing Cross, one month's notice being given to the Council before any such extension, and notice being affixed by official referees

and overseers on the doors of the churches and chapels of the locality 3 weeks before any such extension be taken into consideration by the Council. s. 4.

COUNTING-HOUSES. See Inns of Court.

COUNTY-RATES to be raised for defraying the contribution towards the expenses of the official referees and registrar. s. 96.

COURTS, and other public places which can be used as footways only, are by this Act denominated alleys. s. 2.

Court of Mayor and Aldermen of the city of London. All the powers and authorities by this Act vested in, may be exercised by the Court of Mayor and Aldermen in the outer chamber of the Guildhall of the said city. s. 45.

Court (Inns of). The rooms or chambers in Sergeants', Chancery-lane, or in any of the four Inns of Court, or any of the Inns of Chancery, or any other inns set apart for the study or practice of the law, and other buildings divided into rooms or chambers, offices, or counting-houses, let out or to be let in separate suites or sets, so far as relates to the building of party-walls, the walls or divisions between the several rooms and chambers in such inns, or such buildings, belonging to and communicating with each separate and distinct tenement, shall be deemed to be party-walls within the meaning of this Act, and as such must be built in conformity with the regulations and clauses herein contained relating to party-walls. s. 35.

COVENANTS to repair. See Chimneys, ruinous.

COVENT GARDEN MARKET is under special supervision. Schedule B, Part I.

COVERED in, when roof is. See District-surveyor, relative to fees becoming due.

CRESCENT, for meaning of, see Street.

CROSS-WALLS, how affecting the thicknesses of external walls. See Inclosing walls.

CUTTING into and pulling down work. The district-surveyor may order, for his inspection; and on refusal thereof by the builder, he is to give information to the official referees, who are to hear the matter, and determine relative thereto, and as to the expenses thereof, and of application to them. s. 14.

CUTTING away, party-walls made ruinous or dangerous by, district-surveyor is to condemn. s. 29.

D.

DAMAGE caused by the work of party fence-wall to be made good by the person performing the same. s. 32.

Damage to be made good by neighbours, parts of whose buildings may fall. See Chimneys, ruinous.

Damage arising from erection of external wall against party-wall—Cutting into footings and chimneys.

If it be necessary to cut the ground against the wall of any adjoining building for the purpose of erecting a wall thereon, or for any other purpose, it shall be lawful for the building owner so to do, on condition that he at his own costs shore up and underpin such wall, or such part thereof, to its full thickness and to the full depth of such excavation, with good and substantial bricks and tiles or slates bedded in cement, or with other proper and sufficient materials, in a workmanlike and substantial manner; and if for the purpose of erecting such external wall it be necessary to cut away part of the footings of such party-wall on the side next to the wall so to be built, and any part of the chimney-breasts and chimneys shafts belonging to the building about to be rebuilt as shall project beyond the perpendicular face of such party-wall in the lowest floor thereof; on giving notice of such intention in writing to the owner of the adjoining building at least one calendar month before commencing operations, according to a form (No. 15) in the Schedule A, attached to or to the like effect, and on the expiration of such notice, it shall be lawful for the building owner and he is hereby authorized to cut away such portions of the footings, breasts, and chimney shafts aforesaid, but so that the same be done, and the brick-work where cut be again made good in cement, under the superintendence and to the satisfaction of the surveyor. s. 25.

DAMAGED party-wall, making good of. If a party-wall be so damaged and injured by such cutting away as in the opinion of the adjoining owner or occupier to be ruinous or dangerous, then, upon application for that purpose, the district-surveyor shall survey such wall; and if, upon the survey thereof, it be found ruinous or dangerous, then, notwithstanding that it shall be the duty of the building owner to pull down and rebuild such party-wall,—and if in the opinion of the district-surveyor or of the official referees such damage or injury shall have been occasioned by want of due care on the part of the building owner, then it shall be the duty of such building owner, and he is hereby required, to pull down and rebuild such party-wall, at his own costs and charges, including therein all the costs and expenses incident to such survey, and the pulling down and rebuilding of such party-wall, and the reinstating and making good all the internal finishings and decorations damaged thereby; and if the owner of the building to be rebuilt do not proceed with all despatch to pull down and rebuild such party-wall, and to reinstate and make good all the internal finishings and decorations of the adjoining premises, and to pay the costs and charges and expenses of the survey, it shall be lawful for the adjoining owner so to do, and to recover all the costs and expenses in respect thereof from such owner, his heirs, executors, administrators, or assigns. s. 29.

DECLARATION of official fidelity, district-surveyors to make, before acting, under penalty of 5*l.* per day. s. 71; official referees, s. 87; registrar, s. 90.

Declaration, before lord mayor or justices of peace, of notice to repair or pull down ruinous building not being complied with. See Ruinous buildings.

DECORATIONS, internal, to be made good by neighbours, parts of whose buildings may fall. See Chimneys, ruinous.

Decorations, internal, to be made good by a party who rebuilds a sound party-wall not condemnable. s. 26.

DELAY of work to suit adjoining owner. If the adjoining owner, at any time within 3 calendar months after the receipt of notice from the building owner, give notice of his desire that work be delayed, so as to cause it to be executed at a more seasonable or a more convenient time in reference to the business or to the family or domestic arrangements of such adjoining owner or his tenants, according to the form (No. 18) in the Schedule of Notices, or to the like effect, then, within 7 days after the receipt of the notice thereof, the building owner shall signify his consent to or dissent from such modification or delay; or if the building owner do not within such 7 days signify his consent to such modification or delay, then it shall be lawful for the adjoining owner and he is hereby entitled to require the building owner to delay the work until the official referees shall have determined thereon; and if within 7 days thereafter application be made in writing to the official referees, according to the form (No. 19) in the Schedule of Notices, or to the like effect, and notice thereof be given to the building owner, according to the other form (No. 20), then within 10 days after such application it shall be the duty of the official referees to signify their decision thereon, and it shall be the duty of the building owner to delay the same till the decision of such official referees shall have been given; and if within the period of 3 calendar months from the date of the first notice such adjoining owner do not make any objection or any requisition in conformity with this enactment, then, subject to the provisions of this Act with regard to such works, it shall be lawful for the building owner to proceed to execute the same. s. 22.

DEPUTY party included within the operation of the Act. s. 3.

DEPUTY official referees. See Architects, also Commissioners of Works and Buildings.

Deputy district-surveyor. If any surveyor be prevented by illness or unavoidable circumstances from attending to the duties of his office, it is his duty, subject to the previous consent and approval of the official referees, to appoint some other surveyor, duly qualified as, to perform his duties for so long a time as he shall be so prevented from executing them; and during such time such deputy shall perform all the duties of such surveyor, in all respects as if he were the surveyor appointed or confirmed under this Act; and such deputy surveyor shall receive the fees payable in respect of the services so performed by him. s. 73.

Deputy surveyor, in any county, may not act as justice of peace in the same county. s. 69.

DETACHED buildings, district-surveyor's fees for. See Attached buildings.

DIGGING, cost of, may be claimed from adjoining parties. s. 47.

DISCHARGED or fined, district-surveyor, upon the complaint of any person in writing under his hand to the lord mayor and aldermen of the city of London, or to the justices of the county, may be, who demands or lawfully receives any higher fee than entitled to under this Act, or if in his capacity of surveyor he receive a fee for any act or omission in respect of which he is not entitled to receive any remuneration, or if he refuse to refund any fee wrongfully received by him in respect whereof the official referees shall have made an order to that effect, or if at any time he wilfully neglect his duty, or behave himself negligently or unfaithfully in the discharge thereof. s. 79.

DISTILLERIES. See Use of buildings; also Chimney-shafts.

DISTRESS, informalities in. See Informalities in.

Distress, justices to issue, in case of default of payments under awards or certificates. See Awards, recovery of money under.

DISTRICTS parochial. See Parish (the word).

Districts included within the operation of the Act.—All such places lying on the north side or left bank of the river Thames as are within the exterior boundaries of the parishes of Fulham, Hammer-smith, Kensington, Paddington, Hampstead, Hornsey, Tottenham, Saint Pancras, Islington, Stoke Newington, Hackney, Stratford-le-Bow, Bromley, Poplar, and Shadwell.

Such part of the parish of Chelsea as lies north of the said parish of Kensington:

All such parts and places lying on the south side or right bank of the said river as are within the exterior boundaries of the parishes of Woolwich, Charlton, Greenwich, Deptford, Lee, Lewisham, Camberwell, Lambeth, Streatham, Tooting, and Wandsworth:

And all places lying within two hundred yards from the exterior boundary of the district hereby defined, except the eastern part of the said boundary which is bounded by the river Lea. s. 3.

If, from the growing increase of the population, or otherwise, it shall appear to her Majesty in Council to be expedient that the provisions



of this Act should be extended to any place within twelve miles from Charing Cross in the city of Westminster, then it shall be lawful for her Majesty in Council to direct, by order in Council, that at or from a time to be named in such order the provisions of this Act shall apply to such places; and at or from such time all such provisions, of whatever nature, whether penal or otherwise, so far as they shall be capable of application to such places, shall be and are hereby declared to apply thereto as if such places were expressly named herein; and notice of the time that any such extension, is to be taken into consideration by the Privy Council, shall be published in the *London Gazette* one calendar month at least before such extension shall be so taken into consideration; and 3 weeks at least before such matter shall be so considered it shall be the duty of the official referees, and the overseers of the parishes within which such parts or places are situate, to cause copies of such proclamation to be fixed on the doors of the churches and chapels within such parishes; and every order in Council made in pursuance of this enactment shall be published in the *London Gazette*.

**Districts and officers to be appointed, this new Act to come into operation relative thereto on the 1st September, 1844.** s. 1.

**Districts.** At any time after this Act shall come into operation, and from time to time, the lord mayor and aldermen of the city of London, with reference to the city of London and the liberties thereof, and the justices of the peace for the county of Middlesex, the county of Surrey, the county of Kent, the city and liberties of Westminster, and the liberty of her Majesty's Tower of London, in their General Quarter Sessions respectively, or any adjournment thereof, with reference to their respective counties, city, and liberties shall, subject to the consent of one of her Majesty's principal Secretaries of State, appoint the districts to which the respective places within their jurisdiction shall belong for the purposes of this Act, and may unite, enlarge, and alter such districts for the more convenient distribution of business. s. 64. (No provision is made for the appointment of districts within the county of Essex, although a portion of the county is included within the extent to which the Council may cause the Act to operate.)

**Districts:** If the official referees so deem, they are to make representation to the justices that they are too extensive, and are to transmit with such representation copies of the *Register of Notices*. s. 75. Districts, in cases where any building, matter, or thing may be deemed to be in several, or the district may be doubtful, the official referees are to determine which is to be considered the district. s. 82.

**DISTRICT-SURVEYORS** must be discreet persons, educated and skilled in the art and practice of building, and full 30 years old (s. 64), to be appointed by the lord mayor and aldermen of the city of London, with reference to the city of London and the liberties thereof, and by the justices of the peace in their General Quarter Sessions respectively, or any adjournment thereof, with reference to their respective counties, subject to the consent of one of her Majesty's principal Secretaries of State. s. 65. Unless candidates for the office of district-surveyors hereafter appointed, except present district-surveyors appointed to new districts, one week before the election of a surveyor for any district created by this Act, or for any district in respect of which the office of surveyor may become vacant, produce a certificate, certifying that they have been examined, and found to be duly qualified for such office, to the town clerk of the city of London, or to the clerk of the peace for the county, city, or liberty, it shall not be lawful for any justices to appoint any such person to be surveyor. s. 66.

**Tenure of office.** District-surveyor to hold office during the pleasure only of the said lord mayor and aldermen and of the said justices respectively. s. 67.

**Functions generally.** Every district-surveyor shall see that all the rules and directions of the Act are well and truly observed in and throughout his district; and for that purpose, proceed from time to time, upon the receipt of notice, or if from ignorance or neglect, or from any other circumstance, notice of any work intended to be done have not been given, then upon such work being observed by or being made known to him, to inspect the works intended to be done, or which shall have been commenced, and to cause all the rules and directions of this Act in respect thereof to be strictly observed; attend and perform every thing required of him by this Act, whether with or without notice; inspect ruinous buildings and projections in danger, at all times when needful, and take all necessary measures thereupon; survey all buildings built, rebuilt, enlarged, or altered by or under the superintendence of a district-surveyor within any other district to which he shall be appointed by the official referees for that purpose; cause a book to be kept containing notices, informations, and complaints to be at all times kept at his office, and enter in such book every notice, information, or complaint which shall be delivered or made to him, and any proceeding thereon by him taken. s. 68.

**Disqualifications.** During the time any person shall act as a justice of the peace for the county in which his district shall be situated, it shall not be lawful for him to hold the office of surveyor or

of deputy or assistant-surveyor for any district. s. 69.

**Continuance of present surveyors.** 14 Geo. 3, c. 78. The surveyors who at the time of this Act coming into operation shall have been appointed under the Act 14 Geo. 3, mentioned in the schedule (A) to continue to be the surveyors for the purposes of this Act, and for the districts assigned to them at the time this Act shall come into operation, subject to such alteration of such districts as may be made by virtue of any power in that behalf, and to act in all respects as if they had been appointed under this Act; and every provision in this Act applicable to district-surveyors, so far as relates to the exercise of the office of surveyor, and to their remuneration in that behalf, shall apply to them. s. 70.

**Declaration of official fidelity.** Penalty for acting without. Surveyors before acting in pursuance of this Act shall make a declaration of official fidelity, administered by the lord mayor and aldermen in their Court of Aldermen, or by the said justices of the peace in their respective General Quarter Sessions. s. 71. (See form of declaration in same section); and if before making such declaration any such surveyor act in pursuance of this Act, he shall pay for every day's offence 5l. s. 71.

**Regulation of Duties: Offices—Attendance—Return of name and residence.** Every surveyor for the city of London and the liberties thereof, to have an office at his own expense, in such public situation as shall be approved by the lord mayor and aldermen; and it shall be the duty of every other surveyor and he is hereby required to have an office at his own expense in some central part of the district to which he shall be appointed, as shall be approved by the justices of the peace in Quarter Sessions within whose jurisdiction he shall act; and every such surveyor shall by himself, or by some other person in his behalf, attend at his office every day (Sundays, Christmas Day, and Good Friday excepted) from 10 o'clock in the morning till 4 o'clock in the afternoon; and immediately upon his appointment, and from time to time upon every change of his residence or of his place of business, or otherwise if required, every surveyor shall make a return to the Registrar of Metropolitan Buildings, and to the overseers of the poor of every parish, of the place within his district, of his name and place of abode, and the place where such office shall be. s. 72.

**Surveyor pro tempore—Duty of deputy—Fees.** If any surveyor be prevented by illness or any other unavoidable circumstances from attending to the duties of office, then forthwith he shall (subject to the previous consent and approval of the official referees) appoint some other surveyor, duly qualified as aforesaid, as his deputy, to perform his duties for so long a time as he shall be so prevented from executing them; and during such time aforesaid, such deputy-surveyor shall perform all the duties of such surveyor, in all respects as if he were the surveyor appointed or confirmed under this Act; and such deputy-surveyor shall receive the fees payable in respect of the services so performed by him in such district. s. 73.

**Vacancies—Occasional services—Fees for services.** If any vacancy happen through the death or removal of any surveyor, then, within one calendar month thereafter, it shall be the duty of the lord mayor and aldermen, or of the justices of the peace in General Quarter Sessions or adjournment thereof, as aforesaid, to appoint a successor; and in the meantime the official referees shall direct the surveyor of any one or more of the other districts to perform the duties of surveyor for the vacant district, or if no district-surveyor can be spared from his own district, appoint some other competent person duly qualified as aforesaid for that purpose; and every such surveyor is hereby entitled to receive the fees payable in respect of the services so performed by him in such vacant district. s. 74.

**Regulation of business—Assistant surveyors—Duties of assistants—Fees.** If it shall appear to the official referees that the district appointed for any surveyor is too extensive for the prompt discharge of his functions, it shall be their duty to represent such their opinion to the lord mayor and aldermen of the city of London, or to the justices of the peace with whom the appointment of a surveyor for that district may rest, and for that purpose to transmit with their letter of representation a transcript of their Register of Notices, with the results; and if at any time it appear to such official referees that on account of the pressure of business in any district, or on any other account, the surveyor of that district cannot discharge his duties promptly and efficiently, they shall appoint any other district-surveyor to assist the surveyor of such district in the performance of his duties, or if no district-surveyor can be spared from his own district, then appoint some other competent person to give such assistance; such assistant-surveyor to make returns and to act in all respects as if he had been appointed by the said lord mayor and aldermen, or by the said justices, to be the surveyor of such district; and every such person shall be entitled to receive the fees payable in respect of the services so performed by him. s. 75.

**Superintendence of surveyors.** It shall not be lawful for any district-surveyor to survey for the purposes of this Act any building built, rebuilt,

enlarged or altered by or under his professional superintendence, but such building must be surveyed by another district-surveyor, or by another surveyor to be appointed by the official referees for that purpose. s. 76.

**Surveyor's fees—Fees to be paid only for work done agreeably to Act.** Upon the expiration of one calendar month after the roof of any building erected and surveyed under this Act shall have been covered in, and all the walls thereof have been built to their full heights, and the principal timbers and floors shall have been fixed in their places, and upon the expiration of 14 days after the completion of any addition, alteration, and repair, and upon the expiration of 14 days after each special service shall have been performed, and upon delivering to the owner of the building an account of the fees incurred, and upon tendering a receipt, signed with his christian and surname, and stating the amount of such account, and the work done, it shall be lawful for the surveyor and he is hereby entitled to receive from the builder, or from the owner or from the occupier of the building, for his time and trouble and expenses in causing the rules, regulations, and direction of this Act to be observed, the several fees specified in the schedule of fees (L); and if on tender of such receipt any builder, owner, or occupier who shall become liable to pay any such fee shall refuse to pay the same, then, upon application, a justice of peace shall summon the party complained of in the first instance, and if he do not appear, or fail to satisfy the justices as to the refusal of payment, such justice shall issue his warrant to levy the amount of such fee by distress and sale of the goods of the party so refusing, and if such fee be paid by the occupier, he shall be entitled to recover the amount thereof from the owner: but if the work have not been done in every respect agreeably to this Act, it shall not be lawful for any surveyor to receive such fee; and if he shall so receive it, upon application to the official referees by any party interested in the building in respect of which such work shall have been executed, and upon its appearing that such fee has been received wrongfully, it shall be lawful for such official referees and they are hereby authorized (if they think fit) to order the said surveyor to refund such fees. s. 77.

**Surveyor's returns—Inspection of—Authentication and effect of returns.** Within 7 days after the first day of every calendar month, every surveyor shall make a return to the Registrar of Metropolitan Buildings, enumerating therein the number and nature of all the several works executed within the previous calendar month under his supervision, and the fees paid to him for the same, and a copy of the list or Register of Notices served upon him, with the results thereof, and keep in his office a copy of such return; and if any person shall apply to inspect the same, then on the payment of one shilling it shall be open for inspection at all reasonable times. Every such return must be signed by such surveyor, and if it signify that it shall be deemed to be a certificate that all the works enumerated therein have been done in all respects agreeably to this Act, according to the best of his knowledge and belief, and that they have been duly surveyed by him; but no such return shall be any protection from or hindrance to any future proceedings in respect of works not executed according to the provisions of this Act, though the same may have been done before the making of such return. s. 78.

**Penalty for extortion, negligence, or unfaithfulness.** If any district-surveyor demand or wilfully receive any higher fee than he shall be entitled to under this Act, or if in his capacity of surveyor he receive a fee for any act or omission in respect of which he is not entitled to receive any remuneration, or if he refuse to receive any fee wrongfully received by him in respect whereof the official referees shall have made an order to that effect, or if at any time he wilfully neglect his duty, or behave himself negligently or unfaithfully in the discharge thereof, then and in every or any such case it shall be lawful for any person to present a complaint in writing under his hand to the lord mayor and aldermen of the city of London, or to the Court of Quarter Sessions having jurisdiction over the district for which such surveyor shall act for the time being, at any sessions of the peace, quarter or general, either original, intermediate, or adjourned, and which complaint shall set forth the nature and particulars of the offence charged by the complainant against any such surveyor; and the said lord mayor and aldermen or Court of Sessions, as the case may be, shall by order of court appoint a time for hearing the said complaint, and a copy of which order and of the said complaint shall be served by or for the said complainant on the said surveyor 10 days at least before the time appointed for hearing such complaint; and the said surveyor shall appear before the said lord mayor and aldermen or Court of Sessions, as the case may be, at the time and place so appointed for hearing the said complaint, to answer the same; and if, upon the hearing of the complainant and of the surveyor, and the evidence respectively produced by or for them, it shall appear to the said lord mayor and aldermen or Court of Sessions, as the case may be, that such complaint in whole or in part is well founded, then it shall be lawful for the said lord mayor and aldermen, or the said Court of Quarter Sessions, as the case may be, and they are hereby



respectively required, either to fine such surveyor in such sum of money not exceeding 50*l.* as they shall think fit; or to discharge him forthwith from his said office; and if for any such cause such surveyor be discharged, he shall be incapable of acting as such surveyor for the purposes of this Act. s. 79.

District-surveyor to have 2 days' notice given to him by the builder—(by which term it is to be understood, both in this provision and elsewhere throughout this Act, the master builder or other person employed to execute any work, or if there be no master builder or other person so employed, then the owner of the building, or other person, for whom or by whose order such work is to be done), and he is hereby required to give to the surveyor, at his office, notice in the terms specified in the form (No. 1) contained in the Schedule of Notices annexed to this Act, or to the like effect, *before the following acts or events, that is to say,—before any building shall be begun to be built,—and also before any addition or alteration, which by this Act is placed under the supervision of the surveyor, shall be made to any building;—and also before any party wall, external wall, chimney-stack, or flue shall be begun to be built, pulled down, rebuilt, or altered;—and also before any opening shall be made in any party-wall;—and also before any other matter or thing shall be done which by this Act is placed under the supervision of the surveyor, except as herein is provided:—and if any builder neglect to give such notice, or begin to build, or alter, or pull down, or rebuild, or cut into, or put up, or alter, or change, then 2 days before such notice or before the expiration of such period of 2 days, in every such case the party offending shall for every such default forfeit and pay to such surveyor treble the amount of the fees which such surveyor would have been entitled to receive for his trouble in inspecting the same, and shall also forfeit for every such default a sum not exceeding 20*l.*; and if for any period exceeding 3 calendar months any builder, having duly begun any building requiring compliance with the provisions of this Act, suspend the progress of such building, and again go on with the same, or if during the progress thereof the builder be changed, then 2 days before such builder shall enter upon the performance of the work, it shall be the duty of such builder to give notice to the surveyor, and such notice must be in the terms specified in the forms (Nos. 2 and 3) contained in the Schedule of Notices annexed to this Act, or to the like effect, and must be given to the surveyor, or left at the surveyor's office, in like manner as is required upon beginning any new building;—and if any builder make default, or neglect to give or leave such notice, he shall forfeit for every such offence a sum not exceeding 20*l.*;—and if any such building, chimney or wall be begun to be built, pulled down, rebuilt, cut into, or altered as aforesaid, or be proceeded with after any suspension of the progress thereof before such notice has been given; or if such surveyor or the official referees be refused admittance to inspect the same premises,—then such building or work shall be liable to be abated as a nuisance under the provisions herein contained;—and if by reason of any emergency any act, matter, or thing placed under the supervision of the surveyor be required to be done immediately, or before notice can be given to him, it shall be lawful for the builder or any person to do such act, matter, or thing so requisite, upon condition, that within 48 hours after beginning to execute such work notice thereof be given to the surveyor. s. 13.*

District-surveyor (in case of irregular building) to give 48 hours' notice according to the form (No. 4) in the Schedule of Notices, or to the like effect, to the builder, foreman, or principal workman on the premises, to amend any irregularity which he shall have been previously notified in building, pulling down, rebuilding, cutting into, or altering any part of any building, or party-wall or external wall, or chimney-stack or flue, drains, cesspools, or any work or other thing, and forthwith after the expiration of such notice to proceed to inspect the work;—and if the work be so far advanced that he cannot ascertain thereof the irregularity has been committed or not, or exists or not, it shall be lawful for him and he is hereby empowered to order any work to be cut into, laid open, or pulled down, which shall in his opinion prevent his ascertaining whether any such irregularity exists or not;—and if within 48 hours the builder to which any such notice shall have been given, or fail to remedy any irregular work, or if any such builder, when ordered by the surveyor, refuse to cut into, lay open, or pull down any work which shall in his opinion prevent his ascertaining whether such irregular work exists or not, then, as soon as conveniently shall be, it shall be the duty of the surveyor to give information thereof to the official referees;—and upon the receipt of such information it shall be the duty of such official referees and they are hereby required to proceed to hear the matter, and if any breach of the rules, regulations, and directions of this Act be found to have been committed, or if there appear good reason to suppose any such breach has been committed, or if it is concealed, it shall be lawful for the official referees to direct by their award that such building, party-wall, external wall, chimney-stack, flue, or other thing, or such part thereof as they shall deem necessary, shall be amended, removed, cut into, laid open, or pulled down;—and all the costs, charges, and expenses of the said work, and of the said application to the official referees shall be borne by such party or parties as the official referees shall determine. s. 14.

District-surveyor, in case any doubt, difference or dissatisfaction arise with any parties relative to the classes and rates of buildings, as determined by,—the official referees are to decide. s. 5.

District-surveyors, official referees may not act as. s. 30.

District-surveyors as well as official referees to have the supervision of buildings of the 1st rate, of the 2nd or warehouse class, and buildings of the 3rd or public building class. s. 6. See for exceptions Schedule B, Part II.

District-surveyors may enter on premises. See Enter on premises.

District-surveyors, refusal to admit, to inspect premises, renders work liable to be abated as a nuisance. s. 13.

District-surveyor and the overseers for the time being of the parish or place in which the same shall be, upon receiving information of any building being in a ruinous and dangerous condition, shall apply forthwith to the official referees to authorize a survey to be made thereof;—and thereupon the official referees shall direct the surveyor to make such survey;—and then it shall be the duty of such surveyor to act in all respects as in the case of a survey of party-walls;—and upon the receipt of the certificate of the surveyor the official referees shall cause a copy thereof to be transmitted, if the premises be within the city of London, to the Court of Lord Mayor and Aldermen, and if they be elsewhere, then to the overseers of the poor of the parish or place in which such premises shall be.

District-surveyor, if a chimney-shaft, chimney-pot or other thing thereon, or the eaves, or parapet or coping, or slates or tiles on the roof, or any projection from the front walls of any building, be in danger of falling, shall require the occupier of such building, or if there be no occupier that the owner thereof, to take down or secure the same within 36 hours after notice thereof shall have been given;—and if within the time specified such occupier, or some other person interested in such building, do not begin to take down or secure the same, and as soon as the nature of the case will admit complete such taking down or securing of the same, then it shall be the duty of such surveyor to give information thereof to a justice of the peace;—and thereupon it shall be the duty of such justice of the peace to proceed to cause such chimney-shaft, chimney-pot or other thing thereon, or the eaves, or parapet or coping, or slates or tiles on the roof, or projection from the front or side wall of such building as shall be considered by such surveyor in danger of falling, to be forthwith taken down or secured;—and if there be no occupier or known owner, it shall be lawful for such justice to direct that the reasonable expenses, to be certified by the official referees, be paid by the overseers of the parish or place in which such building shall be situated;—and if thereafter the owner of such building become known, or if the building become occupied, then it shall be lawful for the overseers of the poor and they are hereby entitled to recover the amount of such expenses from such owner or from such occupier as in the case of ruinous buildings hereinbefore provided for;—and if within the time limited the occupier, or some other person interested in such building, do not take down or secure the same, then for every day during which the same shall so remain unrepaired or not sufficiently secured such occupier, or the owner or from such occupier as in the case of ruinous buildings hereinbefore provided for, shall forfeit and pay a sum not exceeding 5*l.*;—and such occupier or owner shall also pay the surveyor's fees, and all other costs, charges, and expenses attendant upon any such taking down or securing the building;—and all such surveyor's fees, and other costs, charges, and expenses, may be recovered at a level or in the same manner as such penalty.—But if the occupier of such building be not bound by virtue of any lease or other instrument to repair, reinstate, or secure the premises, then such occupier is hereby entitled to retain out of the rent payable in respect of such premises all such penalties, costs, charges, and expenses attendant upon or arising out of the building the same, as in the case of any other works the costs of which he is hereby required to pay in the first instance. s. 43.

District-surveyor, upon application for that purpose by an adjoining owner, to survey and condemn a party-wall in the same manner as such person by cutting away, and thereupon the party who has injured the wall is to rebuild it at his own expense, is to make good internal finishings and decorations, and is to pay all attendant fees and costs; and if he neglect promptly to rebuild such wall, the adjoining owner may do so, and recover of the other all the like expenses. s. 29.

District-surveyor, separations between buildings and public ways to be approved of by. See Public way, buildings over.

District-surveyors to determine between parties, subject to appeal to the official referees, the difference of costs and expenses of performing works according to this Act, and which may be done contrary to any existing building-contract. s. 9. See Building-contracts, existing.

Dividing buildings for separate occupation. See Party-walls for dividing buildings.

Division, after, how affecting insulated buildings. See Insulated buildings.

Dock Company, St. Katharine, warehouse buildings of, in New-street, Cutler-street, and Haydon-

square, are under special supervision. Schedule B, Part I.

Dock Companies, St. Katharine, near the Tower of London, London, East and West India, and others, by Act of Parliament, warehouses of, exempt from supervision. Schedule B, Part II.

Documents and official records to be registered by the Registrar of Metropolitan Buildings. s. 89; to be arranged in the registrar's office chronologically, and in classes according to their subjects. s. 93.

Door-cases of warehouses to be recessed 2 ins. Schedule D, Part II.

Doors and Door-frames of turrets, dormers, lantern-lights, and other erections on roofs may be of wood. See Roof-coverings.

Drainage of houses. With regard to the drains, cesspools, and privies to buildings heretofore built, so far as relates to the making thereof, from the passing of this Act all the conditions, regulations, and directions contained in the schedule H, shall be duly observed and performed; and any person offending in respect thereof shall be liable to all the penalties and forfeitures by this Act imposed in respect of any buildings either built contrary thereto, or without due notice to the surveyor appointed in pursuance of this Act to inspect such buildings;—such drains are to conform (so far as relates to the communication thereof with the sewers under the jurisdiction of the Commissioners of Sewers), to the regulations of such commissioners; not or heretofore in force unless repugnant to the directions contained in such schedule, and to the extent to which such regulations are not so repugnant. s. 51. Schedule H.

Drained properly, every under-ground room or cellar left as a separate dwelling must be. Schedule K.

Drains into sewers, of buildings of any class, and of every addition thereto. Before the several walls of any such building shall have been built to the height of 10 feet from their foundations, the drains thereof must have been properly built and made good (that is to say), if there be within 100 feet from any front of the building, or from the inclosure about the building, a common sewer into which it is lawful and practicable to drain, then into such common sewer;—and if there be not in such situation and within such distance any such common sewer, then to the best outlet that can be obtained,—so as to render in either case such drains available for the drainage of the lowest floor of such building, or addition thereto, and also of its areas, water-closets, privies, and offices (if any).—And the inside of the main drains under and from every building for carrying off soil must be in transverse section at least equal to a circular area of 9 ins. diameter. And every such drain must be laid to a fall or current of at the least half an inch to 10 feet, and so that the whole of every such drain within the walls of such building shall be wholly covered over under the lowest floor, and independently thereof.—And every such drain within the walls of such building must be built and covered over with brick, stone, or slate, so as to render the drain airtight. And every part of such drain inside and outside the walls of every building must be built of brick, tile, stone, or slate, set in mortar or cement. Schedule H.

Drawings of buildings comprised in Schedule B, Part I., to be by the architect or builder transmitted for inspection, with notice, to the official referees. s. 16. See Architect or Builder, also Official referees, and Chimney-breasts.

Dwelling-houses. See First class.

E.

Eaves in danger of falling. See Chimnies, ruinous.

Election of District-surveyor, void, if he have not one week previously produced to the town clerk of London, or to the county clerk of the peace, the examiners' certificate of due qualification. s. 66; or unless consented to by one of the Principal Secretaries of State. s. 65.

Embankment-walls are under special supervision. Schedule B, Part I.

Enter on premises. The district-surveyor and official referees may, at any time whilst any building is in course of construction, demolition, alteration, or re-construction;—and if any person refuse to admit them, during the customary working hours, to inspect such building, or refuse or neglect to afford such surveyor or official referees every assistance which may be reasonably required in and about such inspection, then in every such case on conviction thereof the party offending shall forfeit for every such offence a sum not exceeding 20*l.*; and if at any time during such customary working hours the surveyor or the official referees be refused admittance to make inspection of any work, then for that purpose it shall be lawful for such surveyor or for such official referees, accompanied by a peace officer, to enter upon the ground, building, and premises where the same shall be. s. 17.

Entry on premises to effect works. For the purpose of facilitating and regulating the execution of any works authorized by this Act, at any time between the hours of six in the morning and seven in the afternoon (Sundays excepted), the building owner, or any other person acting in his behalf, may, accompanied by a constable or other officer of the peace, enter on the premises of the adjoining owner, so far as may be necessary for executing such work; and if the outer door of such building be shut, and being thereunto required the person therein refuse



to open the same, or if such building be empty and unoccupied, may break open such outer door;—and if any fixtures, goods, furniture, or other thing obstruct the building of an intended party-wall or party-arch, or the pulling down any wall, partition, or other thing necessary to be pulled down and removed in order to the building such intended party-wall or party-arch, remove such fixtures, goods, furniture, and things to some other part of the same premises, or if there be no room on the premises sufficient for that purpose, to remove them to some other place of safe custody;—and from and after such entry, and at all usual times of working, it shall be lawful for the builder employed to erect such intended party-wall or party-arch, and for his servants and all others employed by him, to enter into and upon the premises, and abide therein the usual times of working, as well for the shoring up of the said building so broken into and entered upon, and for taking down and removing any party-wall, partition, wainscot, or other thing necessary to be taken down and removed for the purpose aforesaid, as to build such intended party-wall or party-arch;—and if in any manner any such owner or other person hinder or obstruct any workman employed for any of the purposes aforesaid, or wilfully damage or injure the said works, every such person so offending shall forfeit for every such offence a sum not exceeding 10*l*. s. 36.

**EVIDENCE.** The official referees may, by their summons in writing sealed with the seal of office of the Registrar of Metropolitan Buildings, require the attendance of any person who may be able to give evidence in any matter of any reference to them, and may require by such summons the production of any documents to be mentioned therein;—and if in addition to the service of such summons, an appointment of the time and place of attendance in obedience thereto, signed by one at least of the official referees before whom the attendance is required, be also served either together with or after the service of such summons, then, if the party so summoned do not attend in obedience thereto, such party shall be liable to be proceeded against as for a contempt of court;—and every person whose attendance shall be required shall be entitled to the like conduct-money and payment of expenses as for and upon attendance at any trial;—and no person shall be compelled to produce under any such summons any writing or other document that he would not be compelled to produce at a trial,—or to attend on more than two consecutive days to be named in such summons.—The official referees are respectively authorized and required to administer an oath to such witnesses as may come before them, or, in cases where affirmation is allowed by law instead of an oath, to take their affirmation and swear upon such oath or affirmation any person making the same wilfully and corruptly give false evidence, then every person so offending shall be deemed to be guilty of perjury. s. 85.

**Evidence, effect of awards as.** If on the trial or hearing of any cause or matter in any court of law or equity, or elsewhere, any copy of an award, signed and sealed with the seal of the registrar, be produced, then all judges, justices, and others, are to receive the same as *prima facie* evidence of the matters therein contained. s. 86.

**EXAMINERS** appointed by the Commissioners of Works and Buildings, being three or more architects, surveyors, or builders, together with the official referees, are to examine any persons who may present themselves for the purpose of obtaining certificate of qualification, to become candidates for the office of district surveyor; and the purpose such examiners shall from time to time appoint such times as to them may seem fit, and from time to time prescribe such course of examination as to them may seem fit, and to make any other rules for the regulation of such examination, and the granting of certificates in respect thereof, subject to the approval of the Commissioners of Works and Buildings; and when such rules are registered by the Registrar of Metropolitan Buildings they shall continue in force until they shall be amended, altered, or rescinded by other rules to be made by such examiners and so registered as aforesaid; and unless, one week before the election of a surveyor for any district created by this Act, or for any district in respect of which the office of surveyor may become vacant, there be (by or on the part of any person being candidate for the said office) a certificate of such examiners, certifying that he has been examined, and that he was thereby found to be duly qualified for such office, produced to the town clerk of the city of London, or to the clerk of the peace for the county, city, or liberty, it shall not be lawful for any justices to appoint such person to be such surveyor, and if such person be so appointed his election to such office shall be void. s. 66.

**EXCHARGE,** one of the barons of, to administer the declaration of official fidelity to the official referees. s. 87; to the Registrar of Metropolitan Buildings. s. 90.

**EXCHARGE, See Commissioners of the Treasury.**  
**EXAMINATION OF BUILDINGS** from special supervision of official referees. See Supervision, special.

**EXPENSES** of all buildings, making good, and sustaining, to be paid by a party who rebuilds a sound party-wall or party-arch. s. 26.

**EXPENSES** of the owners and occupiers for. The owners of any building, fence, ground, land, or other thing, in which such expenses, whatever may be the nature of the interest in any such premises of the person entitled to the immediate possession

thereof, or of the occupier thereof, shall in the first instance bear all costs and expenses by this Act imposed on the owner, and shall perform all duties by this Act imposed on such owner; subject to any right or claim which such person or such occupier may have to be repaid such costs and expenses, and to be indemnified in respect of such duties, according to the provisions of this Act, according to the nature and extent of the covenants or agreements under which such person or occupier may hold such premises, as fully and effectually as if such covenants or agreements were herein recited. s. 111.

**EXPENSES** of cutting into and altering works, and of application to official referees, upon the information of district surveyor, to be borne by such parties as the official referees shall determine. s. 14.  
**EXPENSES**, persons summoned by the official referees to give evidence entitled to. s. 85. See Evidence.  
**EXPENSES** of surveying, condemning, shoring, boarding, repairing, and demolishing ruinous buildings. See Ruinous buildings.

**EXPENSES OF WORKS IN PARTY-STRUCTURES:—**  
(Repayment of). s. 46, viz:—

**FIRST.** Any party-wall hereafter built on the line of junction of any two buildings;

**SECONDLY.** Any party-wall hereafter built on the line of junction of any building and any vacant ground or of vacant premises belonging to different owners or occupiers;

**THIRDLY.** A ruinous and defective party-wall pulled down and rebuilt, either with the consent of the adjoining owner, or in pursuance of the condemnation thereof according to this Act;

**FOURTHLY.** One or more timber partitions between any two or more buildings pulled down, and a party-wall built in lieu thereof;

**FIFTHLY.** A new party-wall or party-arch built in lieu of any party-wall or party-arch between intermixed properties pulled down, either with the consent of the adjoining owner, or in pursuance of the condemnation of such party-wall or party-arch;

**SIXTHLY.** Any party-wall built on the site of a party fence or party fence-wall, and used otherwise than as a party fence-wall by the person who shall not have built the same;

**SEVENTHLY.** Every other case of reimbursement in respect of any party-structure.

The building owner at whose expense such work shall have been executed may claim and recover from the person who is entitled to the immediate possession of the adjoining building or ground, or who is in the immediate occupation thereof, the following compensations:

If a new party-wall or party-arch built on the line of junction by one owner, made use of either wholly or partially by the adjoining owner, then the sum of money proportionate to the value of so much of such party-structure so made use of;

If chimney-jambs, chimney-breasts, and flues, set up in any party-wall, in pursuance of the instructions of the owner of any adjoining vacant ground, then a sum equal to the value thereof;

If an unsound party-wall or other party structure pulled down and rebuilt, then a sum of money equal to a proper proportion of the value of the new party structure, deduction being made for a due proportion of the old materials, and also a proportionate part of all expenses which shall be necessary for pulling down the old party structure in lieu of which such new party structure shall be built;

If a party-wall built in lieu of a timber partition or other party structure, and made use of by the adjoining owner, then a sum of money proportionate to the value of so much of such new party-wall as shall be so made use of, and also a proportionate part of all expenses which shall be necessary for pulling down the old timber partition or other party structure;

If a party-wall or party-arch already built or hereafter rebuilt be used by any adjoining owner, then a sum of money proportionate to the value of so much of such party structure as the adjoining owner shall use, deduction being made, where proper, for the value of old materials;

In every case the whole of the reasonable expenses of shoring up the adjoining building, and of removing any goods, furniture, or other things therein, and of pulling down any wainscot or partition thereof;

And such surveyor's fees and any other fees payable in respect of any acts performed by the official referees, and also such other costs (if any) as may have been awarded by the official referees as aforesaid in any of the cases provided for by this Act;

And until such expenses shall be so paid every person at whose expense such party structure shall have been built is hereby entitled to and shall be possessed of the sole property thereof, and of the ground whereon it stands, and the same shall be vested entirely in such person. s. 45.

**Recovery of costs.** (s. 47).—Account. Within 21 days after the completion of the work it shall be the duty of the person by whom such expense shall have been incurred to deliver to the adjoining owner an account in writing of the expenses of the work, including all preliminary and incidental operations; and if the work shall have been executed by the authority of the official referees, a copy of such account shall also be delivered to the official referees at their office; and every such account must contain—

**FIRST.** the number of rods and parts of rods of brickwork, and all digging, and concrete, stone-

work, and other requisite materials, and the labour required in executing so much of the work as the owner of the adjoining building shall be liable to pay, and of the respective prices thereof;

**SECONDLY.** any deduction which such adjoining owner shall be entitled to make thereon on account of the old materials of so much of the wall or other structure pulled down which shall have belonged to him;

Also a true account of the expenses of all other preliminary and incidental operations;

And all such works must be estimated and valued at such rates and prices as shall from time to time be fixed by the official referees;

And if within 10 days from the delivery of such account any party dissatisfied with the proportion of the amount thereof charged to him appeal to the official referees, then upon the receipt thereof (or if in cases of want of due consent as aforesaid, such account be delivered to the official referees as aforesaid), the official referees shall examine such account, and certify whether they approve or disapprove of the items thereof, and whether the rates and prices are duly charged, and whether the proportion of the account charged to the party appealing be duly charged, and also appoint how and by whom the expenses of such examination are to be borne, and also appoint the time or times at which the amount of such account and of such expenses payable by any party are to be paid;—and if they certify their disapproval, or that the charges are not duly made, or the amount fairly apportioned with regard to the party appealing, then, before any demand be made or any proceedings be taken thereon, the account must be amended, and again examined by the official referees, and certified as aforesaid; and if the official referees certify their approval, then at the time or times appointed by the said official referees it shall be lawful for the person entitled to such costs and expenses to demand the amount thereof;—and if, within 10 days after the delivery of such account to the party liable to pay the same, such party do not either appeal against such account or pay the same, or if, within 10 days after the demand thereof, in conformity with the certificate of the official referees, the amount thereof, together with the costs of the examination of the account as the official referees shall certify, be not paid, then it shall be lawful for the person entitled thereto to recover the same, or so much thereof as shall be then due, by the summary proceeding hereby provided. s. 47.

**Reimbursement to occupiers.** Unless there be some covenant or agreement to the contrary between the parties, the occupier may deduct from the rents due or becoming due from him to his lessor or landlord the amount of any such costs, charges, and expenses payable by his lessor or landlord, and the costs and charges, and expenses of any distress and sale made on him through the default of his lessor or landlord; and the receipt for such payment shall be a sufficient discharge to any occupier for so much money as he shall have so paid, or which shall have been so levied on his goods and chattels in pursuance of this Act, and shall be allowed by such lessor or landlord in part or full payment (as the case may be) of the rent due to him by such occupier. s. 48.

**Recovery of expenses from different party owners.** When costs and expenses shall have been ascertained and paid by the owner upon whom the payment thereof shall have first fallen, then, as to any building or tenement held under any lease or agreement for a lease, or other agreement for the occupation thereof, made before the coming into operation of this Act, such owner may recover the same from the persons now bound or liable by law or by any existing contract to maintain and repair such buildings in respect of which such costs and expenses have been incurred;—but if any dispute or difference arise as to the persons so bound or liable, then every such dispute shall be referred to the official referees, who shall ascertain and determine the persons bound or liable to pay such costs and expenses, and in what proportions they are to be paid, and their decision shall be final;—and as to any building or tenement to be held under any lease or agreement for a lease, or other agreement for the occupation thereof, made after the coming into operation of this Act, except a lease renewable for ever on a fixed fine or other customary payment, all such costs and expenses shall be charged upon the lessor granting such lease or making such agreement, and not upon any lessee or sub-lessee holding under any such lease or agreement, subject, nevertheless, to any express covenant or agreement made between any such lessor and lessee in that behalf;—and in case of such excepted lease such costs and expenses shall be charged upon the lessee instead of the lessor, subject, as aforesaid, to any express covenant or agreement in that behalf between any such lessor and his sub-lessee holding under such lease upon other than a fixed fine or customary payment as aforesaid;—and in default of such costs and expenses being duly paid it shall be lawful for the party to whom the same shall be payable and he is hereby entitled to receive from the occupier thereof the rents and profits of such building or tenement, and for that purpose to give notice to such occupier to pay over to him such rents and profits; and thereupon, if such occupier fail to pay such rent and profits accordingly, then it



shall be lawful for the person to whom such costs and expenses shall be payable to recover the same from such occupier by the summary proceeding hereby provided, in such proportions and at such times as shall be appointed by the award of the said official referee in that behalf;—and after such notice shall be given, and before such costs and expenses shall be paid, it shall not be lawful for any person otherwise entitled to receive such rents and profits and he is disabled from bringing any action, and from taking any proceeding at law or in equity to recover such rents and profits;—but if on the hearing of the application for the warrant to levy such costs and expenses by distress, according to the provision of this Act in that behalf, the occupier, not being an owner, shew that he is not bound to pay in respect of such building or tenement any rent or profit, or that the amount of the rent or profit payable by him is not sufficient, then it shall not be lawful to issue such warrant, if there be no rent due or accruing, or, if there be rent due or accruing, then to the extent only of the amount of such rent;—and if such costs and expenses or any part thereof remain unpaid, and if the same or any future occupier do or become liable to pay rent in respect of such building or tenement, then, from time to time until the same be paid, it shall be lawful to levy the same by distress, according to the provisions of this Act in that behalf, upon the same or any such future occupier. s. 49.

**Official Referee to determine proportional contributions—Recovery of excess paid by any contributor.** With regard to such costs and expenses of works executed under this Act, so far as relates to contribution thereto by persons bound or liable to make contribution, for the purpose of enabling the party upon whom the payment of such costs and expenses shall fall, either in the first instance or subsequently, to obtain contribution from other persons, being owners according to the meaning of this Act, in like degree, and so bound or liable to make contribution, every such first-mentioned person, (whether he be freeholder, copyholder, leaseholder, mortgagee in possession, and whatever may be his interest, or the nature and extent of such his interest, and whether he hold in his own right or in right of others, and whatever may be the kinds and degrees of their respective interests), is entitled to a contribution from every other person having as owner an interest in the premises, of whatever kind or degree,—which contribution is to be computed according to the amount of his interest in proportion to that of other persons interested, so far as such persons may be known, or can be reached by process of any court of law or equity;—and it shall be lawful for any party so interested to require the official referee to settle and determine the same by their award, and their decision shall be final;—and if the person upon whom the payment of such costs and expenses shall have failed to have paid in respect of the interest of another or others, either unknown or who could not be reached by process of any court of law or equity, more than his own just proportion, then, on the production of such award, duly made, signed, and sealed, it shall be lawful for such person to have and exercise against such other parties against whom such award shall be made the like remedies to compel payment of money as are given for compelling the first payment of such costs and charges of such expenses. s. 50.

**EXTERNAL-WALL (the term)** to apply to every outer wall of buildings now built or hereafter to be built, which (excepting the footing thereof on one side) shall stand wholly upon ground of the owner of such buildings, and shall not be used or intended to be used as a party-wall under the definition thereof contained in this Act, whether the same shall adjoin or not to other outer or to party-walls. s. 2.

**External-wall against a party-wall.** If the owner of one of the buildings joined by a party-wall rebuild such building of a higher rate, and do not pull down such party-wall and build a proper wall in lieu thereof, then it shall be his duty to build up an external-wall against such party-wall. s. 27.

**External-wall, 3 days' notice to be given to the district-surveyor, at his office, before begun to be built, pulled down, rebuilt, cut into, or altered. s. 13. See Penalty.**

**External-walls, stopping illegal openings in. See Openings in external walls.**

**External-walls to buildings of whatever class must be built of sound bricks or of stone, or of such bricks and stone together, laid in and with mortar or cement, in such manner as to produce solid work; and every such wall must be carried up of its full thickness to the under side of the plate under the roof.—Nevertheless, in such walls, besides all requisite openings for doors and windows, recesses may be formed, so that the back thereof be 9 in. at least thick, and so that the thickness and sufficiency of the work be not injuriously affected by making such recesses in such walls.—There may be such wood and iron as shall be necessary.—Every plate, lintel, bond, corbel, being of wood, and every wood-joint, of the heads and sills of partitions running into any external wall, must be fixed at a distance from the external face of the wall of 4 in. at least.—The frames of doors and windows must be fixed in reveals at a**

distance from the external face of the wall of 4 in. at least.—And shop-fronts must be fixed in such manner as herein specially directed.—The tiers of door-cases to warehouses must be fixed in the openings left in such walls at a distance from the external face of the walling of 2 ins. at least.—But no timber must be laid into any external wall in such manner of such length as to render the part of the wall above it wholly or in great part dependent upon the wood for support, or so that any such wood might not be withdrawn without endangering the safety of the superincumbent structure, except in the case of breast-summer. Schedule D, Part II.

**External-wall used as a party-wall to any building adjoining thereto (except an attached building or office):** If the external wall of any building have not such footings, or be not of such heights and thicknesses, or be not built in such manner and of the materials directed for party-walls of buildings of the highest rate to which such wall shall adjoin, then such external wall must not be used as a party-wall for any such building; but there must be a distinct external wall, built as herein described for external walls, of the rate to which it shall belong.—But if such external wall to any building already built be at least 13 in. thick in every part, and be of sound and proper materials, and in good condition, then such wall may be used as a party-wall;—but if the house of which such wall forms a part be rebuilt within 5 years from the time at which the wall shall have been so first used as a party-wall, then such wall must become subject to the provisions of this Act in respect of party-walls, according to the class and rate to which the said wall did first belong. Schedule D, Part II.

**EXTRA-PAROCIAL places. See Parish (the word).**

## F.

**FAMILIES, different, occupation of buildings by, brings separating walls within the denomination and regulations of party-walls. s. 2. See Party-walls (the term).**

**FEE.** If any district-surveyor demand or wilfully receive any higher fee than he shall be entitled to under this Act, or if in his capacity of surveyor he receive a fee for any act or omission in respect of which he is not entitled to receive any remuneration, or if he refuse to refund any fee wrongfully received by him in respect whereof the official referees shall have made an order to that effect, he shall be fined in such sum of money not exceeding 50*l.* as the justices shall think fit, or be discharged forthwith; and shall be incapable of being again appointed a surveyor for the purposes of the Act. s. 79.

**Fees of district-surveyor to be paid by party rendering ruinous or dangerous a party-wall by cutting away. s. 29.**

**Fees, deputy district-surveyors, duly appointed, entitled to receive. s. 73.**

**Fees, assistant district-surveyors to receive all, payable in respect of their services performed. s. 75.**

**Fees of district-surveyors and official referees in respect of party structures recoverable. s. 46.**

**Fees appointed by the Commissioners of the Treasury to be paid for the services of the official referees and Registrar of Metropolitan Buildings, the registrar to cause a list of, to be fixed up in some conspicuous place of his office. s. 98.**

**FEMININE gender to be taken as intended by the Act, although the masculine may alone be mentioned. s. 2.**

**FENCES and FENCE-WALLS, how affecting insulated buildings. See Insulated buildings.**

**FENDERS brick. See Chimney-slabs.**

**FILE, notices to the official referees the registrar is to. s. 92.**

**FINISHINGS, internal, to be made good by a party who rebuilds a sound party-wall, not condemnable. s. 26.**

**FIRE-PROOF, questions relative to the meaning of the term official referees are to decide, being thereto required in writing. s. 82.**

**Fire-proof access and stairs to buildings of the First and Third Classes.** Internal stairs of stone or other incombustible substance to buildings of the first class must be set in, or fixed to, and be wholly upborne by, fire-proof constructions, and must be connected internally by landings, the floors of which are fire-proof, and wholly upborne and supported by fire-proof constructions, and must be connected with the exterior entrance by passages, the floors of which are fire-proof, and wholly upborne and supported by fire-proof constructions.—And in buildings of the third class, the floors of the halls, vestibules, lobbies, corridors, passages, and the stairs and landings, and all other ways of ingress and egress within the building to and from all rooms or apartments used for public congregation, and to and from all galleries being part of, or being connected with, any such room or apartment, must be wholly supported, constructed, formed, made, and finished fire-proof. Schedule C, Part VI.

**FIRE-PLACES required to under-ground rooms and cellars let as separate dwellings. See Chimneys, open.**

**FIRST or DWELLING-HOUSE Class.** Buildings built originally as dwelling-houses, or occupied, or intended to be occupied as such. Schedule C, Part I. s. 5. See Class, alteration of. Every building of, must be built with some roadway, either to it or to the street, and about it, of such width as will admit to one of its fronts of the access of a scavenger's cart of the ordinary size of such carts. Schedule K.

**FIRST-RATE, 1st or dwelling-house class (district-surveyor's fee, new building, 3*l.* 10*s.*; addition or alteration, 1*l.* 15*s.* Schedule L)**

covering more than 10 squares, and not more than 14 squares,	if containing 7 stories,	if in height more than 70 feet, and not more than 85 feet,
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thickness of the external walls (subject to modification, as *Incloding walls to stories*, which article see) must be at the least 21½ inches from the top of the footing up to the under side of the floor next but three below the topmost floor; and at least 17½ inches from thence up to the underside of the floor next below the topmost floor; and at least 13 inches from thence up to the top of the wall;—the thickness of the party-walls must be at least 21½ inches from the top of the footing up to the under side of the floor next but three below the topmost floor; and at least 17½ inches from thence up to the under side of the floor next below the topmost floor; and at the least 13 inches from thence up to the top of the wall. Schedule C, Part II.

**First-rate, (Extra) 1st or dwelling-house class (district-surveyor's fee, new building, 5*l.* 5*s.*; addition or alteration, 2*l.* 10*s.* Schedule L)**

covering more than 14 squares,	if containing 14 stories,	if in height more than 85 feet,
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thickness of the external walls (subject to modification, as *Incloding walls to stories*, which article see), must be at least 21½ inches from the top of the footing up to the under side of the floor next but two below the topmost floor, and at least 17½ inches from thence up to the top of the wall;—thickness of the party-walls must be at the least 21½ inches from the top of the footing up to the under side of the floor next but two below the topmost floor; and at the least 17½ inches from thence up to the under side of the topmost floor; and at the least 13 inches from thence up to the top of the wall. Schedule C, Part II.

**First-rate buildings of the 2nd or warehouse class are subject to provisions of schedule C, placed under the special supervision of the official referees as well as of the district-surveyors. s. 6.**

**First-rate, 2nd or warehouse class, in height more than 66 feet (district-surveyor's fee, new building, 3*l.* 10*s.*; addition or alteration, 1*l.* 15*s.* Schedule L)** thickness of the external walls (subject to modification, as *Incloding walls to stories*, which article see), must be at the least 26 inches from the top of the footing up to the level of 76 feet below the topmost ceiling; and at the least 21½ inches from thence to the level of 36 feet below the topmost ceiling; and at the least 17½ inches from thence up to the level of the topmost ceiling; and at the least 13 inches from thence up to the top of the wall. Schedule C, Part III.

**FIT, question relative to the meaning of the term, official referees are to decide, being thereto required in writing. s. 82.**

**FLAT. See Roof coverings.**

**FLOOR (the word)** to mean the horizontal platform forming the base of any story, and to include the timber or bricks or any other substance constituting such platform. s. 2. [We apprehend that as floors are frequently placed purposely out of level, the dispensing power of the Commissioners of Works and Buildings will, on the requisite occasions, direct the word "horizontal" to be omitted as tending to defeat the obvious intention of the Act; and we apprehend the medium level should be taken in ad-measurements of altitude.]

**Floor (basement). Areas must extend 6 in. below. Schedule K.**

**Floors separating buildings from public ways. See Public way, buildings over.**

**FLUES, two days' notice to be given to the district-surveyor at his office before begun to be built, pulled down, rebuilt, cut into, or altered. s. 13. See Penalty.**

**Flues, angles of.** If any flue be built with sufficient openings in it of size not less than 9 in. square, and with proper close iron doors and frames inserted in such openings, so that every part of such flue may be swept by machinery, then every angle in such flue may be of any degree. But if it be not so built, then every such angle must be at least 135 degrees at least. And every salient or projecting angle within a flue must be rounded off 4 in. at least, and be protected by a rounded stone or iron bar. Schedule F.

**FOOTINGS. See Foundations of walls.**

**FOOTWAY, unaccompanied by carriage-way, brings a public place within the denomination of an alley. s. 2. See Alleys, also Widths.**

**FOUNDATIONS, old, buildings erected upon. See Buildings, new and old, for general regulations relative thereto.**

**FOUNDATION OF WALLS.** Every external wall, party-wall, and party fence-wall, must be built upon a constructed footing, based upon solid ground, or upon other sufficient foundation.

## FOOTINGS.—

**Materials.** Sound bricks or stone, or such bricks and stone together, laid in and with mortar and cement in such manner as to produce solid work.



**Width.** The bottom of the footing of every external wall and party-wall of the first rate at least 17½ in. wider than the wall standing thereon; and the bottom of every footing of every external wall and party-wall of the second and third rates at least 13 in. wider than the wall standing thereon; and the bottom of the footing of every external wall and party-wall of the fourth rate, and of every party fence-wall, at least 8½ in. wider than the wall standing thereon. The top of the footing of every party fence-wall, and of every external wall and party-wall, must be at the least 4 in. wider than the wall standing thereon.

**Height.** The footing of every external wall and party-wall of the first rate at least 11 in. high above the foundation. Of every external wall and party-walls of the second and third rates, at least 8 in. high above the foundation. The footing of every party fence-wall, and of every external wall and party-wall of the fourth rate at least 5 in. high above the foundation.

**Depth below ground.** The top of the footing of every party fence-wall and of every external wall and party-wall at least 3 in. below the surface of the lowest adjoining area or ground.

**Depth below surface of lowest floor.** The top of the footing of every external wall and party-wall at least 3 in. below such surface; and any building of the first class the surface of the earth or of any paving on the outside (except the pavement of any public way) must not at any time be raised to within 6 in. of the surface of the lowest or first floor of such building. Schedule D, Part I.

**FOURTH-RATE, 1st or dwelling-house class (district-surveyor's fees, new buildings more than 2 stories, 2l. 2s.; less, 1l. 10s.; addition or alteration to buildings more than 2 stories high, 15s.; 2 stories high, or less, 10s. Schedule L):**

not covering	if not contain-	ing more than	more than 38
			squares,
		4 stories,	ft.,

thickness of the external walls (subject to modifications, as *Inclosing walls of stories*, which article see) must be at least 13 in. from the top of the footing up to the under side of the floor next below the topmost floor; and at least 8½ in. from thence up to the top of the wall;—thickness of party-walls must be at least 13 in. from the top of the footing up to the under side of the floor next but one below the topmost floor; and at least 8½ in. from thence up to the top of the wall. Schedule C, Part II.

**Fourth rate, 2nd or warehouse class in height not more than 22 ft. (district-surveyor's fee, new buildings, 2l. 2s.; addition or alteration, 1l. 1s., Schedule L), thickness of the external walls (subject to modification, as *Inclosing walls of stories*, which article see) must be at least 13 in. from the top of the footing up to the level of 9 ft. below the topmost ceiling; and at least 8½ in. from thence up to the top of the wall;—thickness of the party-walls must be at least 13 in. from the top of the footing up to the level of 16 ft. below the topmost ceiling; and at least 8½ in. from thence up to the top of the wall. Schedule C, Part III.**

**FREEHOLDER.** s. 50. See *Expenses of works*.

**FRONT,** one of a building if taken down the height of one story, or from the level of the second floor upwards, party timber partitions, and the walls under and over the same, are to be taken down and party-walls substituted, notice being given to adjoining owner. s. 33.

**FULHAM** parish included within the operation of the Act. s. 3.

**FURNACE.** See *Close fires*.

**FURNITURE,** expenses of removal of, for performing party structures, recoverable. s. 46.

**Furniture** to be made good by neighbours, parts of whose buildings fall thereon. See *Chimneys, ruinous*.

#### G.

**GAOLS** are under special supervision. Schedule B, Part I.

**Gaol** workmen, labourers, and servants to be sent to, for any term not exceeding a calendar month, in default of paying fine. s. 19. See *Penalty*.

**GAS-WORKS.** See *Use of buildings*.

**GAZETTE** (the London), publication to be made in, 3 weeks before extending the operation of the Act to any other places within 12 miles from Charing-Cross, be taken into consideration by the Council, and every order in Council pursuant thereto to be published in the London Gazette. s. 4.

**GOOD,** questions relative to the meaning of the term, official referees are to decide, being thereto required in writing. s. 82.

**GOODS,** furniture, wainscot, partitions, and other things, expenses of the removal of, for performing party structures, recoverable. s. 46.

**Goods,** damage to, to be made good by neighbours, parts of whose buildings fall thereon. See *Chimneys, ruinous*.

**Goods,** distress upon. See *Awards, recovery of money under*.

**GOOD Friday,** district-surveyor's office not required to be attended on. s. 72.

**GRATINGS,** iron, to areas. See *Areas*.

**GREEN-HOUSES.** See *Attached buildings and offices*.

**GREENWICH** parish included within the operation of the Act. s. 3.

**GROUND,** as well as party structures standing thereon, sole property of, vests in the persons at

whose expense the work has been performed, till due contribution of the expenses and of the fees of the district-surveyor and official referees. s. 46.

**GUILDHALL** is placed under special supervision. Schedule B, Part I.

**GUTTER.** See *Roof-coverings*.

#### H.

**HACKNEY** parish included within the operation of the Act. s. 3.

**HALLS** of third-class buildings, floors of, must be fire-proof. Schedule C, Part VI.

**HAMMERSMITH** parish included within the operation of the Act. s. 3.

**HAMPSTEAD** parish included within the operation of the Act. s. 3.

**HEARTHS.** See *Chimney-slabs*.

**HEIGHT.** How affecting insulated buildings. See *Insulated buildings*.

**HEIGHTS** of stories, how affecting thicknesses of external walls. See *Inclosing walls*.

**Heights** of buildings to be ascertained by measuring from the surface of the lowest floor to the under side of the ceiling of the topmost story, at the highest part thereof, whether within the roof or not. And if there be no ceiling made, or intended to be made, to the topmost story, then to the under side of any tie-beam, collar-beam, or other substitute for a tie-beam, to or within the roof of the building, and to the highest part of such roof; and the level of the under side of such tie-beam, or such substitute for a tie-beam, is in such case to be taken to mean the ceiling of the topmost story. And if there be no tie-beam, collar-beam, or other substitute for a tie-beam to or within the roof of any building, then up to 3 feet below the under side of the ridge-piece, or substitute for a ridge-piece, to the roof of such building. Schedule C, Part I. s. 5.

**HEREAFTER** to be built (the term), used in reference to buildings, to apply to all buildings to be built or commenced after 1st January, 1845, or which, being commenced, shall not be covered in within 12 calendar months thereafter;—and, used in reference to streets and alleys, to apply to all streets or alleys not laid out before the said 1st January, or which, being laid out, shall not be rendered fit for use within 12 calendar months thereafter. s. 2.

**HOARDING** or shoring. Lord Mayor and Court of Aldermen, and overseers without the city and liberties, to cause to be done to ruinous buildings immediately upon receiving from the official referees a copy of the district-surveyor's certificate, or to appeal to the referees for confirmation or annulling thereof. See *Ruinous buildings*.

**HORIZONTAL** platform. See *Floor*.

**HORNSEY** parish included within the operation of the Act. s. 3.

**HOUSES** of Correction are under special supervision. Schedule B, Part I.

#### I.

**ILLNESS** of Registrar of Metropolitan Buildings. s. 89. See *Deputy-registrar*.

**Illness** or unavoidable circumstances, in case of, district-surveyor may appoint as his deputy some other duly qualified surveyor (subject to the consent and approval of the official referees), who is to act and receive fees as a district-surveyor. s. 73.

**INCLOSING-WALLS** to stories of buildings of whatever rate (thicknesses of). Of the first and second classes, each wall of any such story throughout the whole height thereof, from the top of the footing up to the top of such story, and with all the sets-off in addition required for such wall, to whatever rate or whichever class it may belong, and throughout at the least one-third of the whole length of such wall, in *piers properly distributed*, must be of the following dimensions (unless cross or return walls, *crossed and bonded* with the inclosing walls, shall in the opinion of the official referees, upon special application to them in each particular case, give sufficient strength with less thickness in such inclosing walls); to first-class buildings (—story more than 11 feet high, at least 13 inches; story more than 15 feet high, at least 17½ inches. To second-class buildings (—story more than 9 feet high, at least 13 inches; story more than 12 feet high, at least 17½ inches; story more than 15 feet high, at least 21 inches; story more than 18 feet high, at least 26 inches. **NEVERTHELESS** as to any external wall of any building of the first class in which there are no apertures or recesses, and if there be another external wall and a cross-wall of not less than 8½ inches thick coursing and bonding with such external wall, or if two such cross-walls occur within a length of 24 feet of such wall, such external wall may be built of the thickness of 13 inches, of any height not exceeding 18 feet, within any story, although the rate of the wall may require a greater thickness, but always upon condition that the substructure of such wall be 4 inches thicker at the least than such superstructure, and vertically under it.—And also if any such wall be abutted by cross or return walls within a length of 12 feet, and if not more than one aperture or recess occur within such length of 12 feet, and not more than one-half the quantity in length be taken out of such compartment of a wall by any such aperture or recess, such external wall may be built of any thickness not less than 13 inches, notwithstanding the rate of such wall may require a greater thickness. Schedule D, Part I.

**INCLOSURE.** See *Toll-house*.

**INFORMALITIES** in distress. Notwithstanding

any defect of form in the proceedings relative to any distress for any sum of money to be recovered by virtue of this Act, neither the distress itself shall be deemed unlawful, nor shall the party making the same be deemed a trespasser *ab initio*; but if any irregularity be committed by any party, then, subject to the conditions in this Act prescribed with regard to actions brought for any thing done in pursuance thereof, the person aggrieved by such irregularity is to recover full satisfaction for the special damage only, and that by action on the case, and not by any other action whatsoever. s. 100.

**Tender of amends.** If, before any action for any irregularity or other proceeding be brought, the party who committed or caused to be committed any such irregularity or wrongful proceeding make or cause to be made tender of sufficient amends, then the plaintiff shall not be entitled to recover in such action; and although such tender shall not have been made, yet if at any time before issue joined the court in which such action shall be depending, or a judge of any of the superior courts, grant leave, it shall be lawful for the defendant to pay into court any sum of money, by way of compensation or amends, in such manner, and under such regulations as to the payment of costs and the form of pleading, as is and are customary and in force in the said superior courts. s. 101.

**INFORMATIONS** (all), and proceedings thereon, to be entered by district-surveyor in his office register-book. s. 68.

**INFORMATION** (district-surveyors to give) to justices of the peace, of chimney-shafts, chimney-pots, or other thing thereon, or the eaves, or parapet, or coping, or slates, or tiles on the roof, or any projections from the front walls of any building in danger of falling, not begun to be secured within 36 hours after notice. See *Chimneys, ruinous*.

**INJURY** to be made good by neighbours, parts of whose buildings fall. See *Chimneys, ruinous*.

**INNS** of Court, exempt from rules with regard to party-arches between intermixed buildings. s. 34.

**INSOLVENT** debtors. See *Awards, recovery of money under*.

**INSPECTION** of the awards, certificates, and other documents of the official referees, the registrar is to give to parties requiring the same, upon their tendering the office-fees. s. 91.

**INSPECTORS** of prisons, places of confinement under the inspection of, are under special supervision. Schedule B, Part I.

**INSULATED** buildings of the first or dwelling-house class, and of the second or warehouse class, are such as are distant from any public street or alley one-third of the height thereof at the least; and if the building do not exceed 24 feet in height, and be distant at the least 8 feet; or distant from any other building, or from ground not in the same possession or occupation therewith, or connected therewith only by a fence or fence-wall, at the least 30 feet; such buildings are not liable in respect of the dimensions and materials thereof to the rules and directions of the Act. Schedule C, Part VII.

**Insulated** buildings afterwards divided. But if any such building be hereafter divided into two or more distinct buildings, and the several parts of such buildings so divided be not at the aforesaid distance from each other, and from other buildings and ground, then such several parts must be separated from each other by such party-walls as are herein prescribed for the rates to which such several parts, if adjoining, would belong. And if such requisites be not observed, then such several parts of such buildings in respect of which they are not so observed shall be deemed a public nuisance, and as such be taken down, according to the provisions of this Act in that behalf. Schedule C, Part VII.

**INTERMIXED** buildings, pulling down. Buildings built over public ways, or having rooms or stories, the property of different persons lying intermixed (except Inns of Court herein provided for), so far as relates to the pulling down and laying the parts thereof to each other, if a party-wall or party-arch cannot be built without pulling down such buildings, and so laying parts thereof to each other, and if in default of the consent of all proper parties the official referees authorize such works, then it shall be lawful for the owner of either of the said buildings to execute the same, but so that the provisions of this Act, and the directions of the said official referees in their award made in that behalf. s. 34.

**INTERNAL** finishings and decorations of adjoining building to be made good by the party who, injuring a party-wall, causes its condemnation by the district-surveyor. s. 29.

**IRON** girders. See *Public way, buildings over*.

**Iron** gratings to areas. See *Areas*.

**ISLINGTON** parish included within the operation of the Act. s. 3.

#### J.

**JOINT** expense—Repairation and rebuilding of any party-wall, party-arch, or external wall, used wholly or in part as a party fence-wall, of the owners of the buildings parted thereby, if such party structure be so defective or so far out of repair as to render it necessary to pull down or rebuild the same, or any part thereof, then the notice being given by the owner of one of the buildings to the adjoining owner, according to the form (No. 8.) in the Schedule of Notices, or to the like



effect, it shall be lawful for the building owner to require a survey, certificate, and award, authorizing the execution of such reparation or rebuilding, according to the provisions in that behalf s. 25.

**JUSTICE OF THE PEACE** (the expression) to mean a justice of the peace for the county, division, or liberty within which a building or other subject-matter, or any part thereof, is situate; unless it be situate within the city of London or the liberties thereof, in reference to which any matter or thing elsewhere required or authorized to be done, either by one or by two or more justices of the peace, may be done, either by the lord mayor of the city of London, or by any one, two, or more justices of the peace for the said city; or unless the subject-matter be situate in the district of any police-court of the metropolis, in reference to which any matter or thing elsewhere required or authorized to be done by two or more justices may be done by one magistrate. s. 2.

Justices of the peace to appoint, alter, and change as they deem fit (subject to the approval of the principal Secretary of State) the districts and district-surveyors under this Act. s. 64. *See Districts, also District-Surveyors.*

Justices. The official referees to represent to, if they think any district too extensive, and to send them a copy of the Register of Notices relating thereto. s. 75.

Justices, viz.—The lord mayor and aldermen of the city of London, with reference to the city of London and the liberties thereof, and the justices of the peace in their General Quarter Sessions respectively, or any adjournment thereof, with reference to their respective counties, are at any time after this Act shall come into operation, and from time to time, subject, nevertheless, to the consent of any of her Majesty's Justices of the Peace, to nominate and appoint as surveyors discreet persons, of the full age of thirty years, and properly educated and skilled in the art and practice of building. s. 65.

Justices of peace. Within one calendar month after vacancy in any district by the death or removal of any surveyor, the lord mayor and aldermen, or the justices of the peace in General Quarter Sessions or any adjournment thereof, shall appoint a successor;—and in the meantime the official referees shall direct the surveyor of any one or more of the other districts to perform the duties of surveyor for the vacant district, or if no district-surveyor can be spared from his own district, appoint some other competent person duly qualified;—and every such surveyor shall receive the fees payable in respect of the services so performed by him. s. 74.

Justice of peace, no district-surveyor, or assistant or deputy surveyor, may act as, in the same county. s. 69.

Justices, lord mayor, and aldermen, district-surveyors to hold office only during the pleasure of. s. 67.

Justices of peace for counties to approve of in quarter sessions of situation of district-surveyor's office, in public, central parts of districts. s. 72.

Justices of peace for counties and lord mayor and aldermen of the city of London shall, if any surveyor demand or wilfully receive any higher fee than he shall be entitled to under this Act, or if in his capacity of surveyor he receive a fee for any act or omission in respect of which he is not entitled to receive any remuneration, or if he refuse to refund any fee wrongfully received by him in respect whereof the official referees shall have made an order to that effect, or if at any time he wilfully neglect his duty, or behave himself negligently or unfaithfully in the discharge thereof, if any person present to them a complaint in writing, under his hand and seal to the Court of Quarter Sessions having jurisdiction over the district for which such surveyor shall act for the time being, at any sessions of the peace, quarter or general, either original, intermediate, or adjourned, and which complaint shall set forth the nature and particulars of the offence charged by the complainant against any such surveyor;—and the said lord mayor and aldermen or Court of Sessions, as the case may be, shall by order of Court appoint a time for hearing the said complaint, and a copy of which order and of the said complaint shall be served by or for the said complainant on the said surveyor 10 days at the least before the time appointed for the hearing of such complaint;—and the said lord mayor and aldermen or the lord mayor and aldermen or Court of Sessions as the case may be, at the time and place so appointed for hearing the said complaint, to answer the same;—and if, upon the hearing of the complainant and of the surveyor, and the evidence respectively produced by or for them, it shall appear unto the said lord mayor and aldermen or Court of Sessions, as the case may be, that such complaint in whole or in part is well founded, then the said lord mayor and aldermen, or the said Court of Quarter Sessions, as the case may be, shall either fine such surveyor in such sum of money not exceeding 50*l.* as they shall think fit, or discharge him forthwith from his said office;—and if for any such cause such surveyor be discharged, he shall be incapable of being again appointed a surveyor for the purposes of this Act. s. 79.

Justice of peace, the district-surveyor is to give information to, if within 36 hours after notice, the occupier, or other person interested in a building, do not begin to take down or secure a chimney-shaft, chimney-pot, or other thing thereon, or the eaves, or parapet or coping, or slates or tiles on the roof, or any projection from the front walls of any building in danger of falling, and as soon as

the nature of the case will admit, complete such taking down or securing of the same;—and thereupon it shall be the duty of such justice of the peace to proceed to cause such chimney-shaft, chimney-pot, or other thing thereon, or the eaves, or parapet or coping, or slates or tiles on the roof, or projection from the front [or side] wall of such building as shall be considered by such surveyor in danger of falling, to be forthwith taken down or secured;—and if there be no occupier or known owner, then it shall be lawful for such justice to direct that the reasonable expenses, to be certified by the official referees, be paid by the overseers of the parish or place in which such building shall be situated;—and if thereafter the owner of such building become known, or if the building become occupied, then the overseers of the poor are to recover the amount of such expenses from such owner or from such occupier as in the case of ruinous buildings;—and if within the time limited the occupier, or some other persons interested in such building, do not take down or secure the same, then for every day during which the same shall so remain unrepaired or not sufficiently secured such occupier, or the owner if there be no occupier, shall forfeit and pay a sum not exceeding 5*l.*; and such occupier or owner shall also pay the surveyor's fees, and all other costs, charges, and expenses attendant upon any such taking down or securing the building; and all such surveyor's fees, and other costs, charges, and expenses, may be recovered and levied in the same manner as such penalty. s. 43.

Justices of peace, if upon builders being summoned by district-surveyors they do not appear, are to issue warrants to compel their attendance, and if they fail to enter into recognizances to amend the work, they are to be committed to gaol till they do enter thereto, or till the building is amended, and expenses and costs are paid;—justices may order district-surveyor or other persons to demolish irregular buildings, sell materials, and pay costs, charges, and expenses,—return surplus to such owner as official referees shall direct, and to recover deficiency, if any, from occupier. s. 18.

Justice of peace, if, on tender of a receipt, to any builder, owner, or occupier liable to pay any fee, he shall refuse to pay the same to a district-surveyor, is to summon the party complained of in the first instance, and if he do not appear, or if he fail to satisfy the justice as to the refusal of payment as aforesaid, such justice to issue his warrant to levy the amount of such fee by distress and sale of the goods and chattels of the party so refusing, in like manner as poor's rates are by law recoverable, and if such fee be paid by the occupier, he shall be entitled to recover the amount thereof from the owner: But if the work in respect of which such fee shall become payable have not been done in every respect agreeably to the directions of this Act, it shall not be lawful for any surveyor to receive such fee, and if he receive it, then, upon application to the official referees by any party interested in the building in respect of which such work shall have been executed, and upon its appearing that such fee has been received wrongfully, it shall be lawful for such official referees, and they are hereby authorized (if they think fit) to order the said surveyor to refund such fees. s. 77.

Justices, two, may levy by distress on goods of owner or occupier, present or future, the amount of deficiency after the sale of materials, to defray the expense of surveys, appeal, hoarding, repairing, securing, and pulling down ruinous buildings. s. 42.

Justices may fine, and, in default, commit to gaol, workmen, labourers, or servants. *See Penalty.* Justices of Peace may fine not exceeding 100*l.* per day, persons who occupy or use buildings in Schedule B, Part I. before certified or authorized by the official referees for use. s. 16. *See Supervision, special.*

Justices to fine persons occupying or using buildings of the first rate of the second class, and of the third or public building class, before duly certified by the official referees, or in default thereof, before the lapse of certain time. *See Penalties for use, Official referees, and Architect or builder.*

Justices to summon defaulters under any award, certificate, or other proceedings; issue warrant of distress, and, if levy be insufficient, commit to prison. s. 102. *See Awards, recovery of money under.*

## K.

KENSINGTON parish included within the operation of the Act. s. 3.

KENT, the county of, to contribute by way of rate, annually, the sum of 80*l.* towards the expenses of the official referees and registrar. s. 96.

## L.

LABOURERS may be fined, and in default, be committed to gaol. *See Penalty.*

LAMBETH parish included within the operation of the Act. s. 3.

LANE, for meaning of, *See Street.*

LEA, (the River). No extra extension of 200 yards from the boundaries of parishes under the operation of the Act, to apply to the eastern boundary, next the River Lea. s. 3.

LEASES AND AGREEMENTS, building, modification of existing. *See Building leases, &c.* Leases, repairs under. *See Chimneys, ruinous.*

LEASER/OLDER. s. 50. *See Expenses of works.*

LEE parish (Kent) included within the operation of the Act. s. 3.

LESSEES and TENANTS under any existing lease or agreement, on giving 14 days' notice to lessors and other owners of their intention, may require the official referees to ascertain what loss, present and prospective, has been occasioned by the observance of the provisions of this Act, and having regard to the respective terms and interests of the lessee or tenant, the lessor and other owners of such building, and having regard to any profit, benefit, or advantage which may have accrued to such lessee or tenant since the execution of such lease or agreement, and which may appear to the said official referees not to have been in the contemplation of the parties to such lease or agreement at the time of such execution thereof as aforesaid, to determine whether he is entitled to any and what compensation, whether by payment of money or reduction of rent, or both, or otherwise;—and on the receipt of such requisition, and on proof of due notice thereof having been given to the lessor and other owners of such building, the official referees to proceed to ascertain if any and what loss has been so occasioned, and, having regard, as aforesaid, to such terms and interest as aforesaid, and to such profit, benefit, or advantage as aforesaid, to determine if any and what compensation as aforesaid is to be paid in respect thereof, and by whom the same is to be paid, and in what proportions;—and their decision in the matter shall be final. s. 10.

LESSORS and other OWNERS to have 14 days' notice before the application of lessees and tenants to the official referees to award compensation for loss in complying with the Act, or in modifying any existing building-lease or agreement. s. 10.

LETTING as separate dwellings under-ground rooms and cellars. *See Lowermost rooms.*

LEVY, on goods of owner or occupier, present or future, two justices may, the amount of deficiency after sale of materials, to defray the expense of surveys, appeal, hoarding, repairing, securing, and pulling down ruinous buildings. s. 42.

LEWISHAM parish included within the operation of the Act. s. 3.

LOBBIES of 3rd class buildings, floors of must be fire-proof. Schedule C, Part VI.

LOCAL jurisdiction. *See Officers, having, &c.*

LONDON, city, liberties, and suburbs of, to contribute annually 100*l.* towards the expenses of the official referees and registrar. s. 96.

LORD MAYOR and ALDERMEN to appoint, alter, and change as they deem fit (subject to the approval of the principal Secretary of State) the districts and district-surveyors within the city and liberties of London. s. 64. *See Districts.*

Lord Mayor and Aldermen to approve of public situation of district-surveyors' offices for the city of London. s. 72.

Lord Mayor and Aldermen, proceedings of relative to ruinous buildings. *See Ruinous buildings.*

LOSS and inconvenience (great), in case of by compliance with the provisions of the Act, on rebuilding upon old sites, the Commissioners of Works and Buildings have power, after the report of the official referees, to permit modification, except with regard to heights and thicknesses of walls. s. 12.

LOWERMOST rooms of houses, being rooms of which the surface of the floor is more than 3 feet below the surface of the footway of the nearest street or alley, and cellars—of buildings hereafter to be built or rebuilt, if any such room or cellar be used or intended to be used as a separate dwelling, then the floor thereof must not be below the surface or level of the ground immediately adjoining thereto, unless it have an area, fireplace, and window as required for rooms and cellars of existing buildings let separately and used as a separate dwelling, and unless it be properly drained. And every such lowermost room or cellar in any existing building used or intended to be used as a separate dwelling; must have an area not less than 3 feet wide in every part, from 6 inches below the floor of such room or cellar to the surface or level of the ground adjoining to the front, back, or external side thereof, and extending the full length of such side. And such area, to the extent of at least 5 feet long and 2 feet 6 inches wide, must be in front of the window of such room or cellar, and must be open, or covered only with open iron gratings. And there must be made for every such room or cellar an open fireplace, with proper flue therefrom. And there must be a window-opening of at the least 9 superficial feet in area, which window-opening must be fitted with a frame filled with glazed sashes, of which at the least 4½ superficial feet must be made to open for ventilation. Schedule K.

## M.

MANSION-HOUSE, the, is under special supervision. Schedule B, Part I.

MANUFACTORIES. *See Chimney-shafts.*

MASCULINE gender, when used in this Act, to apply also to the feminine gender. s. 2.

MATERIALS, questions relative to, official referees are to decide, being thereto required in writing. s. 82. Materials of ruinous buildings, sale of. *See Ruinous buildings.*

MEANING and construction of terms used in this Act. s. 2.

MERCHANTIZE, damage to, to be made good by neighbouring party whose building may fall thereon. *See Chimneys, ruinous.*

METROPOLITAN Police. *See Awards, recovery of money under.*

MEWS, for meaning of the term, *see Street.*



Mews. See *Alley*, also *Widths*.

MIDDLESEX, the county of to contribute by way of rate annually the sum of 1,000*l.* towards the expenses of the official referees and registrar. s. 96.

MODIFICATION of work. In suit adjoining owner. If the adjoining owner, at any time within 2 calendar months after the receipt of notice from the building-owner, give notice of his desire that any modification be made in the work, so as to render it suitable to his premises, according to the form (No. 18) in the Schedule of Notices, or to the like effect, then within 7 days after the receipt of such notice it shall be the duty of the building owner to signify his consent to or dissent from such modification or delay;—and if the building-owner dissent from, or do not within such 7 days signify his consent to such modification, then the adjoining-owner may require the building-owner not to commence the work until the official referees have determined thereon;—and if within 7 days thereafter application be made in writing to the official referees, according to the form (No. 19) in the Schedule of Notices, or to the like effect, and notice thereof be given to the building-owner, according to the other form (No. 20), then within 10 days after such application it shall be the duty of the official referees to signify their decision thereon, and it shall be the duty of the building-owner not to commence the work till the decision of such official referees shall have been given;—and if within the period of 3 calendar months from the date of the first notice such adjoining-owner do not make any objection or any requisition in conformity with this enactment, then, subject to the provisions of this Act with regard to such works, the building-owner may proceed to execute the same. s. 22.

MONTH—the word to mean a calendar month. s. 2.

MORTGAGEE in possession. s. 50. See *Expenses of works*.

## N.

NEW and old buildings. See *Buildings new and old*, relative to general regulations.

NEIGHBOURING or adjoining property not to be injured by raising of party fence-walls. s. 32.

NOTICE, though neglected to be given, the district-surveyor shall act as usual. s. 68.

Notice, 36 hours', district-surveyor to give to the occupiers of buildings, or to the owners in case of vacancy, to secure chimney-shafts, chimney-pots, or other things thereon, or the eaves or parapet, or coping, or slates or tiles on the roof, or any projection from the front walls of any building. See *Chimneys, ruinous*.

Notice, in writing, any party may give to another, of his intention to refer to the district-surveyor any disagreement relative to the costs and expenses of works performed according to the provisions of this Act, differing from the works stipulated for in any existing contract,—subject to final appeal to the official referees. s. 9.

Notices to official referees, the registrar to receive, file, and number. s. 92.

Notice, 14 days', from Lord Mayor and Court of Aldermen, or from overseers to be given to owner, to repair or pull down ruinous buildings. See *Ruinous buildings*.

Notice, 14 days', to be given by lessees and tenants to lessors and other owners before requiring the official referees to award compensation for loss in complying with the Act, or in modifying any existing building lease or agreement. s. 10.

Notice, 1 calendar month's may be given by the owner of any premises parted by a fence-wall, to the adjoining-owner, of his intention to repair, pull down, and rebuild the same; and if the wall be below the height of 9 feet from the ground on either side, then he may either raise it to that height or pull it down and rebuild it to that height, upon condition that he pay all the expenses thereof. s. 32.

Notice to, or consent of, adjoining owner. Unless the adjoining owner consent, it shall not be lawful for the building-owner to execute works until he have given notice thereof to such adjoining owner;—and every such notice with regard to the pulling down, rebuilding, or repairing of party-walls or party fence-walls must be given 3 calendar months at least before the work is to be commenced;—and every such notice with regard to the pulling down and rebuilding intermixed walls and timber partitions must be given 3 calendar months at the least before such work is to be commenced;—and every such notice must be in the form or to the effect of the notice (No. 8) for that purpose contained in the Schedule of Notices. s. 21.

NOTICES (all) and proceedings thereon to be entered by district-surveyor in his office register-book. s. 68.

## NOTIFICATIONS:—

Married females—Infants, idiots, or lunatics—Owners unknown—Buildings unoccupied—Immediate landlord—Part ownership—Service of notices—Damage arising from defective service—Requisites of notice. Notices by this Act required to be served upon the owner or occupier of any building, fence, land, ground, or tenement, must be given as follows:—If such owner be a married female, other than a cestuque trust in regard to such property, then to the husband of such married female. If such owner be an infant, idiot, or lunatic, or cestuque trust, then to the guardian, trustee, or committee of such infant, idiot, or lunatic, or cestuque trust. If such owner, husband, trustee, guardian, or committee is not known, or cannot be found, then to the occupier

of such building, fence, land, ground, or tenement to which it shall relate. If such building, fence, land, ground, or tenement be unoccupied, then such notice must be affixed to some conspicuous part of such building, fence, land, ground, or tenement, at a height of not more than 9 feet from the ground. And if the person in the occupation of any building, fence, land, ground, or tenement, in respect of which notice is to be given, allege that he is a tenant from year to year, or for any less term, or a tenant at will, and not the owner thereof, within the intent and meaning of this Act, then such notice must be given to the immediate landlord of such occupier; and such occupier is to inform any person by whom such notice shall be required to be given, or any other person applying on his behalf, of the name, place of residence, or place of business of such owner or landlord, or of his agent or other person by whom the rent of such building, fence, land, ground, or tenement shall be received;—and if such owner or landlord be not in the receipt of the whole of the rents or profits of such building, fence, land, ground, or tenement, and if any notice shall be served upon such owner or landlord, then, immediately upon the receipt thereof, it shall be his duty, and he is hereby required, to transmit to his immediate landlord or his agent, and also to any other person being party owner in such building, fence, land, ground, or tenement, or in receipt of the rents or profits thereof under the same immediate landlord, or to the agent of such person, a copy of such notice;—and so on in like manner, it shall be the duty of every landlord, agent, or other person by whom such notice shall be received to transmit it to any such landlord, agent, or other person, being party owner of any such building, fence, land, ground, or tenement, to the intent that every person affected by the work or proceeding to which such notice relates may have due notice thereof. But if it be served upon the immediate landlord of the occupier, or upon his agent, by or on behalf of the person by whom it is hereby required to be served in the first instance, then, although it may not be served by such immediate landlord upon any other landlord or owner, such service is to be deemed to be sufficient service;—nevertheless, if any owner suffer damage by the failure of any other person, being either the occupier or any person holding under such owner, to serve such notice, then such owner shall be entitled to recover the amount thereof against such person by whom such damage shall have been occasioned; and every notice served under this clause on any person must contain a copy of the provisions thereof, so far as they require him to transmit the same to his immediate landlord, or the agent of such landlord. s. 112.

Mode of service upon occupier. If such notice be intended for the occupier of any building or ground, it must be given either personally or by leaving the same with some inmate at the premises, or it must be affixed as aforesaid. s. 113.

Mode of service upon owners by delivery—Effect of notice. Every such notice (except such notice as may according to the provision in that behalf be sent by post) must be given either personally or by leaving the same with some inmate at the usual place of abode of such party, or if that be not known, then at his last known place of abode;—and every such notice, when so given to such persons respectively as aforesaid, or left at the last known place of their respective abodes, or when so affixed as aforesaid, according to the cases herebefore mentioned, shall have the same effects and consequences as if given to the actual owner. s. 114.

Mode of service upon owners by transmission. If any owner upon whom notice is required to be served be not within the limits of this Act, or have not within the limits of this Act any agent acting in his behalf in the matter of the premises to which the notice refers, then it shall be lawful to give notice by post letter, duly registered according to the practice for the time being adopted with regard to letters transmitted by post, but so that nevertheless such letter be posted in such time as will afford to the person addressed, after the receipt of such letter, the full period of notice required in the case. s. 115.

Notices for surveyors and official referees. If the notice relate to the surveyor, then such notice must be served at the office of the surveyor; and if to the official referees or any of them, such notice must be left at the office of the Registrar of Metropolitan Buildings. s. 116.

NUISANCES, all buildings not according to Act declared to be, viz. buildings, drains, timber buildings, chimneys and flues, party-walls, party fence-walls, external walls and projections, and every other part of every building of every class, or rate of any class, which shall be hereafter built, rebuilt, enlarged, or altered within the limits of the Act, contrary to the provisions hereof: if the same be not built, rebuilt, enlarged, or altered in the manner and of the materials, and in every other respect according to and in conformity with the several rules and directions which are in this Act particularly specified; and if any person build or begin to build, or cause the building or beginning to build, or alter or cause to be altered, or use or cause to be used, any part of any ground or building, projection, drain, or other thing, contrary thereto, and if in either of such cases it so appear by the certificate of the official referees, then the said building, projection, drain, or other thing, or such part

thereof so irregularly built or begun to be built, or so irregularly altered or begun to be altered, or so used, shall be deemed a nuisance; and thereupon it shall be the duty of the district-surveyor to summon the builder before any two justices of the peace;—and if at the time and place appointed on such summons such builder fail to appear, then the said justices, are authorized, to issue a warrant under their hands and seals to compel such builder to appear before such justices, or any other two justices; and thereupon such builder shall enter into a recognizance, in such sum as the said justices shall appoint, for abating and taking down the same within such convenient time as the said justices shall respectively appoint, or otherwise for amending the same and also for paying the costs, charges, and expenses incurred by the surveyor in laying the information and obtaining the conviction, including such compensation for the surveyor's loss of time as the said justices shall think fit;—and if the party so required fail to enter into such recognizance, then such justices or any justice shall commit such builder to the common goal of the city, county, or liberty where the offence shall be committed, and there to remain without bail or mainprize until he shall have entered into such recognizance as aforesaid, or until such irregular building shall have been abated or demolished or otherwise amended, or such nuisance shall be abated or demolished by order of such justices respectively, and until the costs, charges, and expenses thereof, and of all operations and proceedings in relation thereto, shall have been paid; and further, if application be made to any two or more justices, then thereupon it shall be their duty, and they are hereby empowered, to order the surveyor or any other person to abate or demolish such nuisance, and to order the persons authorized by them so to abate or demolish the same, to sell and dispose of the materials thereof, and out of the moneys arising by such sale to pay to themselves, and all persons by them employed for such purpose, the reasonable charges for abating or demolishing such nuisance, and also such costs and expenses as aforesaid, and to pay the surplus moneys arising by such sale (if any) to such owner of the building as the official referees shall determine to be entitled thereto;—and if the moneys arising by such sale be not sufficient to pay such charges, then it shall be the duty of the person entitled to the immediate possession of such building, or the occupier, to make good the deficiency, subject to reimbursement as hereinafter provided; and if he fail, then he shall be liable to the same remedies for the recovery thereof as are by this Act provided concerning the expense of taking down ruinous buildings, and putting up hoards for the safety of passengers. s. 18.

Nuisances. See *Use of buildings*.

## O.

OCCUPATION of buildings by different families, brings their separating walls within the denomination of, and under the regulations of, party-walls. s. 2.

Occupation, separate, of buildings. See *Party-walls for dividing buildings*.

Occupation of ground or tenement otherwise than as a tenant from year to year, or for any less term, or as a tenant at will, constitutes the tenant an owner for the purposes of the Act. s. 2.

Occupation of different grounds and buildings, how affecting insulated buildings. See *Insulated buildings*.

OCCUPIERS and persons using first-rate buildings of the second class and buildings of the third class before duly certified by one official referee, to be subject to fine. See *Penalties for use*.

OCCUPIERS of buildings (or if vacant, owners) to secure chimney-shafts, chimney-pot, or other thing thereon, or the eaves, or parapet or coping, or slates or tiles on the roof, or any projection from the front walls of any building, if in danger of falling, under penalty and liability to make good all damage. See *Chimneys, ruinous*.

OFFENCES, prosecution of. Complaint—Summons—Compulsory appearance—Process—Imprisonment.

It shall be lawful to proceed by complaint before any one justice of the peace or before a police magistrate, with regard to all offences against the provisions of this Act for which no other proceeding is provided;—and it shall be lawful for such justice to summon the party against whom such complaint shall be made; who failing to appear in pursuance thereof, it shall be lawful for such justice or magistrate, or any other justice or magistrate, to issue a warrant under his hand and seal to compel the appearance of such party;—and on conviction of the offender before two justices or before any police magistrate, such justice or magistrate shall cause the amount of the penalty imposed in respect of such offence, and of the costs of any such proceeding in respect thereof, to be levied by distress of the goods and chattels of the offender; and if such offender have no goods and chattels whereon to distrain, or if they be insufficient for that purpose, such justices or magistrate, or any other justice or magistrate, shall, either on failure of such distress, or in the first instance, commit the offender, for any period not exceeding 3 calendar months, or till he shall have paid the full amount of such penalty and such costs. s. 103.

OFFENSIVE objects and neighbourhoods. Party fence-walls may, with consent of official referees, be raised to screen from view. s. 32.

OFFICE, district surveyor's, to be at surveyor's expense, in such public situation as shall be approved by the lord mayor and aldermen; and in each district with-



out the city and liberties of London in some central part of the district to which he shall be appointed, as shall be approved by the justices of the peace in Quarter Sessions within whose jurisdiction he shall act; and every surveyor shall, by himself, or by some other person in his behalf, attend at his office every day (Sundays, Christmas Day, and Good Friday excepted) from 10 o'clock in the morning till 4 o'clock in the afternoon;—and immediately upon his appointment, and from time to time upon every change of his residence or of his place of business, or after if required, surveyor shall make a return to the Registrar of Metropolitan Buildings, and to the owners of the poor of every parish or place within his district, of his name and place of abode, and the place where such office shall be. s. 72.

Office of Registrar of Metropolitan Buildings, list of fees to be fixed up in. s. 98.

Offices. See *Laws of court*.

Offices, attached. See *Attached buildings and offices*.

OFFICERS having local jurisdiction are intended by this Act whenever referred to, without mention of the locality to which the jurisdiction extends, and such reference is to be understood to include the officer having jurisdiction in that place within which is situate the building or other subject-matter, or any part thereof, to which such reference applies. s. 2.

Officers and districts, this new Act to come into operation relative to the appointments of, on the 1st Sept. 1844. s. 1.

Officers generally, appointments of, subject to regulation by any future Act. The officers appointed by virtue of this Act, so far as relates to their functions, appointment, and tenure of office, are subject to any provision that may be made by any Act of Parliament hereafter to be passed for assigning other duties than those to be imposed by virtue of this Act; and such officers shall be held not only subject to the pleasure of the officers and justices by whom such appointments shall be made, but also subject to the provisions of any future Act of Parliament in relation thereto. s. 99.

OFFICIAL fidelity, to make declaration of before acting, district-surveys under penalty of 5*l.* per day. s. 71; official referees, s. 87; registrar, s. 90.

OFFICIAL REFEREES (the term) to mean the persons appointed in pursuance of this Act to be official referees of metropolitan buildings. s. 2.

#### OFFICIAL REFEREES.—

*Appointment of.*—One of her Majesty's principal secretaries of state, to appoint two persons, being of the profession of an architect or surveyor, to be official referees of metropolitan buildings, and from time to time, as he shall think proper, to remove such official referees, and in their place to appoint other persons so qualified;—and while any person shall hold the office of official referee he shall not act as district-surveyor, either alone or with any partner or by an agent, or act as official referee in the case of any building or matter in which he shall act as architect;—and if an official referee be employed as architect as to any building or matter within the limits of the Act, he shall report thereon to the Commissioners of Works and Buildings, who shall appoint some other competent person to act in conjunction with the other official referee as to such building or matter. s. 80.

*Their functions.*—The official referees shall superintend the execution of this Act by the several district-surveysors, and perform the several matters to them respectively assigned by the provisions of this Act, and determine all questions referred to them, whether expressly by this Act or at the instance of any one or more of the parties concerned. s. 81.

*Remuneration, Disqualification, Fees.*—See *Registrar, Matters of reference*.—One referee may act.—If any doubt, difference, or dissatisfaction in respect of any matter within the limits of this Act arise between any parties concerned, or between any party and any surveyor, or between any two surveyors, as to any act done or to be done in pursuance of this Act, or as to the effect of the provisions thereof, in any case, or as to the mode in which the provisions and directions of this Act are or ought to be carried into effect,—and particularly as to whether the requirements implied in terms of qualification applied to sites, soils, materials, or workmanship, or otherwise, and denoting good, sound, fire-proof, fit, proper, or sufficient, are fulfilled in certain cases,—or as to the district in which any building, matter, or thing is to be deemed to be situate, especially in cases where such building, matter, or thing is partly in one district and partly in another,—or as to any expense to be incurred by the respective owners of premises parted by the same party-walls, or the proportions thereof,—or as to the proportions of the expense to be borne by the occupier or by the owners of premises in respect of any work executed, or any other matter whatever,—THEN it shall be lawful for any party concerned to require the official referees to determine such matter, but so that such requisition be made in writing, and that it set forth, either generally or otherwise, the matters in respect of which the determination of the official referees is required;—and the determination of such referees, or of one of such referees, with the assent of the Registrar of Metropolitan Buildings, as to all or any of the points in difference to which such referees shall make their award, and as to the costs, charges, and expenses of such reference, shall be binding on all parties to such reference. s. 82.

*Award and powers of referees.*—The official referees shall exercise all such powers of arbitrators as they would have had in cases they had been appointed under an order of her Majesty's Court of Queen's Bench at Westminster; and if such award be given in writing, and be sealed by the official seal of the Registrar of Metropolitan Buildings, it shall be as effectual as if made under an order of the said court in all respects as if made under an order of such court;—and it shall be binding and conclusive against every person, including the Queen's Majesty, her heirs and successors, claiming any estate, right, title, trust, use, or interest in, or out of the said premises or any part thereof, either in possession, reversion, remainder, or expectancy, and against every other person whomsoever. s. 83.

*Revocation of authority not to affect their award.*—The power and authority of the official referees shall not be revocable by any party to any reference, without the consent of all parties thereto, although any party shall not attend upon such reference;—and it shall be lawful for such official referees to proceed with the reference, and to make their award. s. 84.

*Taking of evidence.*—The official referees may, by summons in writing sealed with the seal of office of the Registrar of Metropolitan Buildings, require the attendance of any person who may be able to give evidence in the matter of any reference to them, and to require by such summons the production of any documents to be mentioned therein;—and if, in addition to the service of such summons, an appointment of the time and place of attendance in obedience thereto, signed by one or more of the official referees before whom the attendance is required, be also served, either together with or after the service of such summons, then, if the party so summoned do not attend in obedience thereto, such party shall be liable to be proceeded against as for a contempt of court;—and every person whose attendance shall be required shall be entitled to the like conduct-money and payment of expenses as for and upon attendance at any trial;—and no person shall be compelled to produce under any such summons any writing or other document that he would not be compelled to produce at a trial, or to attend on more than two consecutive days to be named in such summons;—and the official referees shall administer an oath to such witnesses as may come before them, or, in cases where affirmation is allowed by law instead of an oath, take their affirmation; and if upon such oath or affirmation any person making the same wilfully and corruptly give false evidence, then every person so offending shall be deemed to be guilty of perjury. s. 85.

*Effect of awards as evidence.*—If on the trial or hearing of any cause or matter in any court of law or equity, or elsewhere, any copy of an award, by the official referees, signed and sealed with the seal of the said registrar, be produced, then it shall be the duty of all judges, justices, and others, and they are hereby required, to receive the same as *prima facie* evidence of the matters therein contained. s. 86.

*Declaration of official fidelity.*—Before any official referee shall act in pursuance of his appointment, he shall make and subscribe an official fidelity, to be administered by the Chief Baron or any other one of the Barons of her Majesty's Court of Exchequer. For form see s. 87.

*Regulation of business—Delegation of powers.*—Any matter by this Act required, directed, or permitted to be done by the official referees may be done by either of them, or by the Registrar of Metropolitan Buildings, unless express provision to the contrary be made, and if done by any one of them with such assent, it shall be as valid and effectual as if done by both of them; and, subject to such restrictions and regulations as may be made in that behalf by the Commissioners of Works and Buildings, it shall be lawful for the official referees to appoint one of their number, under their hands and the seal of the Registrar of Metropolitan Buildings, to make any inquiry or any survey which shall appear to them either necessary or expedient in order to enable them to determine any matters referred to them. s. 88.

Official referees and overseers of parishes to cause copies of proclamation made in the *London Gazette* to be fixed on the doors of the churches and chapels within parishes 3 weeks before the Council take into consideration the extending of the limits of the operation of the Act to any other place within 12 miles from Charing-cross. s. 4.

Official referees, if they think any district too extensive, are to represent the same to the magistrates, sending them also a copy of the district register of notices, with the result;—and if the official referees are of opinion any district-surveyor, on account of the pressure of business in any district, or any other cause, is unable to discharge his duties properly, they may, after consulting the builders and others engaged in building operations, and efficiently as regards the purposes of this Act, they shall appoint any other district-surveyor to assist the surveyor of such district in the performance of his duties, or if no district-surveyor can be spared from his own district, then appoint some other competent person to give such assistance. s. 75. See *Assistant-surveysors*.

Official referees by their award may authorize such modification (subject to the approbation of the Commissioners of Works and Buildings) in the

rules of the Act as they may deem fit, in cases of existing building-leases and agreements. s. 10.

Official referees have power, on application to them, to modify in certain cases the thicknesses of external walls. See *Including walls*.

Official referees to report to the Commissioners of Works and Buildings relative to the propriety of modifying the strict provisions of the Act relative to areas and other matters (except the height and thickness of walls) where buildings are to be rebuilt on old sites. s. 12.

Official referees to determine whether buildings are liable to their special supervision, subject to appeal to the Commissioners of Works and Buildings.

Official referees to determine in case of doubt, difference, or dissatisfaction relative to the classes and rates to which buildings belong. s. 5.

Official referees, in case of appeal from the district-surveyor, to determine the classes and rates according to which buildings not comprised by the Act within any class or rule shall be erected. s. 8.

Official referees to report to the Commissioners of Works and Buildings if modifications should be made in the strict rules of the Act; whether from their own suggestion, or from that of any interested party. s. 11.

Official referees, immediately on any district becoming vacant, and until the justices appoint a successor, are to direct the surveyor of any one or more of the other districts to perform the duties of surveyor therein, or if no district-surveyor can be spared from his own district, to appoint some other competent person duly qualified;—and every such surveyor is hereby entitled to receive the fees payable in respect of the services performed by him in such vacant district. s. 74.

Official referees' approval requisite for the due appointment of deputies by district-surveysors. s. 73.

Official referees may order district-surveysors to refund fees wrongfully received, under pain of discharge or fine by the justices. s. 79.

Official referees, on the information of district-surveysors, in cases of irregular building, to proceed to hear the matter, and if any breach of the rules, regulations, and directions of this Act be found to have been committed, or if there appear good reason to suppose any such breach has been committed and is concealed, to direct by their award the building, party-wall, external wall, chimney-stack, flue, or other thing, or such part thereof as they shall deem necessary, to be amended, removed, cut into, laid open, or pulled down; and all the costs, charges, and expenses of the said work, and of the said application to the official referees, shall be borne by such party or parties as the official referees shall determine. s. 14.

Official referees may enter on premises. See *Enter on premises*.

Official referees, refusal to admit, to inspect premises renders work liable to be abated as a nuisance. s. 13.

Official referees, in default of the consent of all proper parties, may authorize the pulling down of party structures and laying together parts of intermeddling buildings. s. 34.

Official referees, if any party desire to raise a party fence-wall so as to screen from view any offensive object or neighbourhood, may authorize the same, but not so as to obstruct the free circulation of the air, or to injure the property adjoining to or in the neighbourhood of such wall. s. 32.

Official referees, consent of, relative to materials of floors and arches separating buildings from public ways. See *Public way, buildings over*.

Official referees, buildings under supervision of, all buildings of the 1st rate of the 2nd or warehouse class, and all buildings of the 3rd or public building class (except the buildings excepted by Schedule B, Part II.), subject to the provisions in Schedule C, and elsewhere in this Act made in respect thereof; as well as under the ordinary supervision of the surveyor; and if any difference arise as to whether any such building be liable to such special supervision, the same shall be determined by the official referees; subject to an appeal, at the instance of any party interested, to the Commissioners of Works and Buildings, whose decision in the matter shall be final. s. 6.

Official referees, Special supervision of 1st-rate buildings of the 2nd or public building class, and of buildings of the 3rd class (except buildings excepted by Schedule B, Part II.). When all the walls of any such building are built to their full height, and all the timbers of the floors, roofs, and partitions are fixed, it shall be the duty of the architect or builder, and he is hereby required, to give notice thereof to the official referees, according to the form (No. 6) in the Schedule of Notices, or of the like city; and if the official referees be of opinion that such building is subject to special supervision, then, within 7 days after such notice, it shall be their duty to survey the said building;—and if they approve of the same, then, within 7 days after such survey, to certify such approval, under their hands, to the architect or builder;—or if any part of the walls, timbers, roof, or internal supports appear to such official referees defective, insufficient, or insecure, then, within the said 7 days after such survey, they are to give to such architect or builder notice of such parts as shall so appear to them defective, insufficient, or insecure, which notice must be in writing;—and upon the receipt of such notice it shall be the duty of the said architect or builder to amend and strengthen such defective, insufficient, or insecure parts;—and, during or within a period of 7 days after notice has been given to the official referees that such works have been amended



or strengthened as aforesaid, it shall be the duty of the official referees, to inspect the same, or in default thereof the said parts may be covered up;—and upon completion of every such building, it shall be the duty of the architect or builder to give fresh notice to the official referees, according to the form (No. 7) in the Schedule of Notices, or to the like effect;—and thereupon, or within 7 days after such notice, it shall be the duty of the official referees to survey the same;—and if upon such survey it shall appear that such building has been built sufficiently strong, and is sufficiently set to be safe, then within 14 days after such survey it shall be their duty, and they are hereby required, to certify accordingly, which certificate must be under their hands and the seal of office of Registrar of Metropolitan Buildings;—and until such certificate shall have been made, or until 14 days after such survey shall have elapsed without the official referees having given notice in writing that they are not satisfied, it shall not be lawful to use such building for any purpose whatever without the express authority in writing of the official referees under their hands and the seal of office of the Registrar of Metropolitan Buildings;—and if, before the certificate of satisfaction shall have been made, or if such further 14 days as aforesaid shall have elapsed without due notice being given in writing as aforesaid, any such building subject to special supervision shall be used for any purpose without such express authority in writing, then, on conviction thereof before two justices of the peace, the occupier of such building or other person by whom such building shall be so used, shall forfeit for such offence a sum not exceeding 200*l.* for every day during which such building shall be so used without having obtained such certificate of satisfaction, or such express authority as aforesaid;—and in determining the amount of any such penalty, the justices shall have regard to the size and character of the building, and to the nature and extent of danger involved in the use of such building, and to the amount of profit which might be derived from such use thereof. s. 15.

**Official referees.** Special supervision of buildings in Schedule B, Part I.—Before the builder begins to build it shall be the duty of the architect or the builder to give notice thereof to the official referees, and also, at the same time, to transmit for their inspection the plans, elevations, and other drawings which have been made for the same; and forthwith the official referees shall proceed to survey the situation of the intended building, to ascertain whether such building can be erected on such situation with due regard to the security of the public; and during the progress of such building, such official referees shall inspect the same to ascertain the sufficiency thereof; and if such building or any part thereof appear to such official referees defective, insufficient, or insecure, they shall give to such architect or builder notice of such parts as shall appear to them defective, insufficient, or insecure, which notice must be in writing;—upon the receipt of such notice it shall be the duty of the said architect or builder to amend and strengthen such defective, insufficient, or insecure parts; and during or within a period of 7 days after notice has been given to the official referees that such works have been amended or strengthened, the official referees shall inspect the same, or in default thereof the said parts may be covered up;—and upon completion of every such building it shall be the duty of the architect or builder to give fresh notice to the official referees; and thereupon, or within 7 days after such notice, the official referees shall survey the same; and if upon such survey it shall appear that such building has been built sufficiently strong, then it shall be their duty to certify accordingly, which certificate must be under their hands and the seal of office of Registrar of Metropolitan Buildings;—and until such certificate shall have been made, or until 14 days after such survey shall have elapsed without the official referees having given notice in writing that they are not satisfied, it shall not be lawful to use such building for any purpose whatever without the express authority in writing of the official referees under their hands and the seal of office of the Registrar of Metropolitan Buildings;—and if before the certificate of satisfaction shall have been made, or if such 14 days shall have elapsed without due notice in writing being given, any such building be used for any purpose without such express authority in writing, then, on conviction thereof before two justices of the peace, the occupier or other person by whom such building shall be so used, shall forfeit for such offence a sum not exceeding 100*l.* for every day during which such building shall be so used without having obtained such certificate of satisfaction or such express authority as aforesaid;—and in determining the amount of such penalty, it shall be the duty of the justices to have regard to the nature and extent of danger involved in the use of such building, and to the amount of profit which might be derived from such use thereof. s. 16.

**Official referees to determine between parties, in cases of appeal from the district-surveyors, the difference of costs and expenses of performing works according to this Act, and which may be contrary to any existing building contract.** s. 9.

**Official referees are, upon the requisition of any lessee or tenant, under any existing building lease, or agreement (14 days' previous notice being given to the lessors and other owners), to ascertain what loss, present and prospective, has been occasioned by the observance of the provisions of this Act, and having regard to the respective terms and interests of the lessor or tenant, the lessor or other owners of such building, and having regard to any profit,**

**benefit, or advantage which may have accrued to such lessee or tenant, since the execution of such lease or agreement, and which may appear to the said official referees not to have been in the contemplation of the parties to such lease or agreement at the time of such execution thereof as aforesaid,—to determine whether he is entitled to any and what compensation, whether by payment of money or reduction of rent, or both, or otherwise;—and on the receipt of such requisition, and on proof of due notice thereof having been given to the lessor and other owners of such building, it shall be the duty of such official referees to proceed and ascertain if any and what loss has been so occasioned, having regard to such terms, interest, profit, benefit, or advantage as aforesaid, to determine if any and what compensation is to be paid in respect thereof, and by whom, and in what proportions;—and their decision in the matter shall be final.** s. 10.

**Official referees to fix from time to time the rates and prices according to which accounts for work and materials in party structures are to be made out.** s. 47.

**Official referees to have delivered to them at their office a copy of every account for party structures done by their authority.** s. 47.

**Official referees to settle contributions of all parties liable to bear the expenses of party structures.** s. 50.

**Official referees, if within 10 days from the delivery of any account for party structures any party dissatisfied with the proportion of the amount thereof charged to him, appeal to,—or if in cases of want of due consent, such account be delivered to the official referees, it shall be their duty to examine such account, and to certify whether they approve or disapprove of the items thereof, and whether the rates and prices are duly charged, and whether the proportion of the account charged to the party appealing be duly charged, and also to appoint how and by whom the expenses of such examination are to be borne, and also to appoint the time or times at which the amount of such account and of such expenses payable by any party are to be paid;—and if they certify their disapproval, or the charges are not duly made, or the amount fairly apportioned with regard to the party appealing, then, before any demand is made or any proceedings are taken thereon, the account must be amended, and again examined by the official referees, and certified as aforesaid;—and if the official referees certify their approval, then at the time or times appointed by the said official referees it shall be lawful for the person entitled to such costs and expenses to demand the amount thereof.** s. 47.

**Official referees to settle, in case of dispute, the proportions of the materials of party-walls when pulled down, and of the site, belonging to each owner where an external wall has been built against such party-wall.** s. 30.

**Official referees to order district-surveyor to survey and certify state of ruinous buildings, upon the respective application of himself and of the overseers,—to cause copy of certificate to be transmitted to the Court of Lord Mayor and Aldermen of the city of London, or to the overseers in other places,—and if the Lord Mayor and Aldermen, or the overseers, appeal against such certificate, the official referees are themselves to survey, certify, and award in the case as they deem fit.** s. 40.

**Official referees to award reasonable compensation to be paid to adjoining parties for loss by reason of the rebuilding of a sound party-wall not condemnable.** s. 26.

**Official referees, on application of either party, are to determine and certify the expense which an owner may claim of an adjoining party who, after notice, has himself neglected to stop up any opening in an external wall made without consent in writing.** s. 37.

**Official referees to decide proportions and recipients of division of surplus arising from sale of materials of ruinous buildings.** s. 41.

**Old and new buildings.** See Buildings, new and old, relative to general regulations.

**Old foundations, buildings erected upon.** See Buildings, new and old, for general regulations relative thereto.

**Old materials, value of, to be allowed for in claims for the recovery of costs of party structures.** s. 46.

**OPENINGS in external walls abutting on other premises, stoppage of.** If, without the consent in writing of the owner of any ground or building, any opening be made in any such wall, it shall be lawful for such owner to require the owner of the premises in which such opening shall be made to stop up the same with brick or stone-work, as the case may be, according to the form (No. 5) in the Schedule of Notices, or to the like effect; and if within one calendar month after such notice such stoppage be not effected, then it shall be lawful for such owner, either by himself or his workmen, with tools, implements, and materials, to stop up such opening, or to be stopped up,—and he is also entitled to be repaid the costs thereof; and with regard to such costs, as far as relates to the adjustment thereof, if such owner refuse to make payment, or if there be any dispute as to the amount thereof, then, on application for the purpose to the official referees, by either of the parties concerned, it shall be lawful for the person by whom they have been incurred, to refer the matter of such dispute to the official referees, and to have their determination thereon;—and it shall be the duty of such official referees to give to the applicant a certificate in relation thereto;—and if any party liable to pay any sum of money under such certificate fail to do so, then it shall be lawful for the party entitled to such costs to recover the same in the manner hereinafter provided for the recovery of the costs,

charges, and expenses of executing any works in pursuance of this Act. s. 37.

**Openings in party-walls may be made whereby two or more dwelling-houses shall be united.** And with regard to any dwelling-houses which when so united will contain more than 14 squares, if such dwelling-houses shall be and continue to be in the same occupation, then upon its being declared by the official referees that in their opinion the stability and security from fire of any or either of such dwelling-houses will not be endangered by making such openings, they may be made accordingly. Schedule D, Part IV.

**Openings in party-walls, to buildings of the 2nd class, must not be made wider than 6 ft. nor higher than 8 ft. unless in each case, and upon special evidence of necessity for convenience or otherwise, the official referee shall previously authorize larger openings.** And the floor, jambs, and head of every such opening must be composed of brick or stone, or iron-work, throughout the whole thickness of the wall; and every such opening must have a strong wrought-iron door on each side of the party-wall, fitted and hung to such opening without wood-work of any kind; and such doors must not be less than  $\frac{1}{2}$  in. thick in the panels thereof; and each of such doors must be distant from the other not less than the full thickness of the party-wall. Schedule C, Part IV. District-surveyor's fee for inspecting formation of openings in party-walls, 10*s.*; not chargeable where the ordinary fees for building, or removal, or alteration, are paid.

**ORDERS.** See Removal of into superior Courts.

**OTHER districts, surveyors of particular districts to act in when specially appointed thereto by the official referees.** s. 68.

**OVEN.** See Close fires.

**OVERSEERS.** See Parish (the word).

**Overseers of parishes and official referees to cause copies of precept made in the London Gazette to be fixed on the doors of the churches and chapels within any parish 3 weeks before the Council take into consideration the extending of the limits of the operation of the Act to any other place within 12 miles from Charing-Cross.** s. 4.

**Overseers of the poor, of every parish or place within his district,—every district-surveyor is, immediately upon his appointment, and from time to time upon every change of his residence or of his place of business, or oftener if required, to make a return to, and to the Registrar of Metropolitan Buildings, of his name and place of abode, and the place where such office shall be.** s. 72.

**Overseers, upon receiving information of any building being in a ruinous and dangerous condition, shall, with the district-surveyor respectively, apply for, and with the official referees to authorize a survey to be made thereof; and the official referees shall direct the surveyor to make such survey; and such surveyor shall act in all respects as in the case of a survey of party-walls;—and upon the receipt of the certificate of the surveyor, the official referees shall cause a copy thereof to be transmitted, if the premises be within the city of London, to the Court of Lord Mayor and Aldermen, and if they be elsewhere, to the overseers of the poor of the parish or place in which such premises shall be;—thereupon such Mayor and Court of Aldermen, and overseers, shall cause with all convenient speed such ruinous building to be securely shored, or a proper and sufficient board to be put up for the safety of all passengers,—and to cause notice in writing to be given to the owner of such building to repair or pull down the same or any part thereof, as the case may require, within 14 days then next ensuing;—and if within the said 14 days the repair or demolition be not begun, and be not completed as soon as the nature of the case will admit, then, on a declaration being made before the said Lord Mayor or a justice of the peace of such notice having been so given, the said Lord Mayor and Court of Aldermen, out of the cash in the chamber of London, and every such overseer out of the money in his hands, with all convenient speed, shall order and cause such building, or such part thereof so certified to be in a ruinous and dangerous condition as shall be necessary for the safety of the passengers, to be repaired or pulled down, or secured in such manner as shall from time to time be requisite; but if such Lord Mayor and Aldermen, or such overseers, appeal against such certificate, the official referees shall proceed to survey, to certify, and to award in all respects as in the case of an appeal from the certificate of the surveyor with reference to party-walls or intermixed buildings; and if such official referees certify that the said premises are ruinous and dangerous, it shall be the duty of the said Lord Mayor or the said overseers to repair or pull down such building.** s. 46.

**Overseers to receive and return, if claimed within 6 years, surplus arising from sale of materials of ruinous buildings without the city and liberties of London.** s. 41.

**OWNER (the word) to apply generally to every person in possession or receipt either of the whole or of any part of the rents or profits of any ground or tenement, or the occupation, or such other interest, other than as a tenant from year to year, or for any less term, or a tenant at will.** s. 2.

**Owner, adjoining.** s. 20.

**Owner, building.** s. 20.

**Owner or occupier, present or future,—two justices may levy by distress on the goods of, the amount of deficiency after sale of materials, to defray the expense of surveys, appeal, boarding, repairing, securing, and pulling down ruinous buildings.** s. 42.



Owners, who propose to build party-walls or party fence-walls between their vacant ground and other vacant ground, or ground in a different occupation, are to give one calendar month's notice to the adjoining owner, with a description of their proposed work, and without the consent in writing of the latter the work cannot be built as party-structure on two estates, but must be wholly on one, the footings excepted. s. 38.

Owners and lessees to have 14 days' notice before the applications of lessees and tenants to the official referees to award compensation for loss in complying with the Act, or in modifying any existing building lease or agreement. s. 10.

Owners of vacant buildings to secure chimney-shaft, chimney-pot, or other thing thereon, on the eaves, or parapet or coping, or slates or tiles on the roof, or any projection from the front walls of any building, if in danger of falling, under penalty, and liability to make good all damage. See *Chimneys, ruinous*.

Owners to have 14 days' notice from Lord Mayor and Court of Aldermen, or overseers within the city and liberties of London, to repair or pull down ruinous buildings. See *Ruinous buildings*.

Owners to pay deficiency, if sale of materials of ruinous buildings be insufficient to defray expenses of surveys, certificates, condemnations, shoring, boarding up, or pulling down ruinous buildings. s. 42. See *Ruinous buildings*.

Owners of adjoining premises to stop up within a calendar month openings in external walls made without consent in writing on receiving notice (in form No. 5), or the other owner may do so at the expense of the former; but either party may, in case of dispute relative to the expense, claim the determination and certificate of the official referees. s. 37.

P. PADDINGTON parish included within the operation of the Act. s. 3.

PALACES, royal, are under special supervision. Schedule B, Part I.

PANCRAS (Str.) parish included within the operation of the Act. s. 3.

PARAPETS in danger of falling. See *Chimneys, ruinous*; also *Chimneys, compensation for injury*.

Parapets, if adjoining a gutter, must be carried up 1 ft. at the least above the highest part of such gutter, and above the level of the under side of the gutter-plate must be at the least, in the extra 1st rate of the 1st class, and in the 1st rate of the 2nd class, 13 ins. thick; and in every other case, 8½ inches thick. Schedule D, Part II.

PARGETTING. See *Chimneys hereafter built*.

PARISH (the word) to include all parochial districts and extra-parochial places in which separate churchwardens, overseers, or constables are appointed; and where two parishes have been united for ecclesiastical purposes, then to include such united parishes. s. 2. By s. 3 of the Act its operation is extended to all places lying within 200 yards from the external boundaries of the external parishes over which it is to operate, except the eastern boundary by the river Lea.

Parishes and other places within districts. See *Overseer*.

PARTIES interested may require the official referees to report to the Commissioners of Works and Buildings whether modifications should be made in the strict rules of the Act. s. 11.

PARTITIONS, expense of pulling down, for performing party structures, recoverable. s. 46.

PARTY ARCHES. See *Party-walls for dividing buildings*.

Party-arches, costs of. See *Expenses of works*.

PARTY FENCE-WALLS, by which term is to be understood any boundary wall parting the grounds belonging to different owners or occupied by different persons, if the owner of any of the premises parted thereby give one calendar month's notice of his intention to the adjoining owner to repair, pull down, and rebuild the same, it shall be lawful for him so to do; and if the wall be below the height of 9 ft. from the ground on either side, then either to raise it to that height, or to pull it down and rebuild it to that height, but upon condition that he do pay all the expenses thereof;—and if a building be to be erected against such party fence-wall, and such wall be not conformable to the requisites prescribed for a proper party-wall for a building of that class and rate, then it shall be lawful for the building owner to pull down such wall, but upon condition that he pay all the expenses thereof, and make good every damage which shall accrue to such adjoining premises by such rebuilding;—but if it thereafter the adjoining owner use such party fence-wall for any purpose to which, if it had not been pulled down and rebuilt, it would not have been applicable, then to such extent as such adjoining owner shall so use such wall the building owner shall be entitled to be reimbursed the expenses of so pulling down and rebuilding such wall.—But if any party desire to raise such wall or to screen from view any offensive object or neighbourhood, then on application to the official referees they may authorize such work, but not so as to obstruct the free circulation of the air, or to injure the property adjoining to or in the neighbourhood of such wall. s. 32.

Party fence-walls or in different occupations, are not to be built as party-structures without one owner give to the other a calendar month's notice, with a description of his proposal, and obtain his consent thereto in writing. s. 38. District-surveyor's fee for condemning a party fence-wall, 10s. 6d.

PARTY timber partitions, pulling down, costs of.

See *Expenses of works*. If one building be rebuilt, or if one of the fronts of any such building be taken down to the height of one story, or for a space equal to one-fourth of such front from the level of the second floor upwards, then without the consent of the adjoining owner, but upon giving the requisite notice, according to the forms (Nos. 11, 12, 13), in the Schedule of Notices, or to the like effect, it is the duty of the building owner to pull down such timber partitions, and the walls under or over the same, and in lieu thereof to build a proper party-wall, at the expense of the owners of all the premises parted thereby. s. 33.

PARTY-STRUCTURES, costs of. See *Expenses of works*.

Party structures, property of, and of the ground whereon they stand, vest in the persons at whose expense they are performed, till due contribution of their expenses and of the fees of the official referees. s. 46.

PARTY-WALL (the term) to apply to every wall which shall be used, or be built in order to be used, as a separation of two or more buildings with a view to the occupation thereof by different families, or which shall be actually occupied by different families,—and also every wall which shall stand upon ground not wholly belonging to the same owner to a greater extent than the projection of its footing on one side. s. 2.

District-surveyor's fee for inspecting and reporting the official referees on party-walls, and intermixed buildings:—

DESCRIPTION.	Dwell- ing- House Class.	Ware- house Class.	Public Build- ing Class.
1st rate .....	£ s. d. 3 10 0	£ s. d. 3 10 0	£ s. d. 3 10 0
ditto ditto .....	6 5 0	—	5 5 0
2nd ditto .....	3 3 0	3 3 0	3 3 0
3rd ditto .....	2 10 0	2 10 0	2 10 0
4th rate, containing more than 2 stories .....	2 2 0	2 2 0	2 2 0
4th rate, not containing more than 2 stories .....	1 10 0	2 2 0	1 10 0
Insulated building built for the purposes of trade or collection of toll .....	1 10 0	1 10 0	1 10 0
Detached building built for the purposes of trade or collection of toll .....	—	—	0 10 6
For surveying party-walls not kept in repair, and consenting to notice of repair being served .....	0 10 0	0 10 0	0 10 0

Building party and party fence-walls next vacant ground.—Consent of adjoining owner, on vacant ground at the line of junction of premises belonging to different owners or in different occupations. One calendar month before the owner of any piece of vacant ground, or ground not hitherto built upon, shall build any building adjoining to another piece of vacant ground, or ground not hitherto built upon, or build a fence-wall for such piece of ground, he is to give to the owner or occupier of such adjoining vacant ground notice in writing, setting forth his desire to build a party-wall or party fence-wall, and describing the thicknesses and dimensions of such desired party-wall or party fence-wall, according to the forms (Nos. 14) in the Schedule of Notices, or to the like effect;—and if within such period of one calendar month such adjoining owner shall signify his consent in writing, then the same must be built party on the ground of one of the said owners or occupiers, and partly on the ground of the other, and such party fence-wall must be built in the manner as is herein directed by such other owner or occupier;—but if he do not signify such consent, then it shall be the duty of the building-owner to build an external wall for such building, and fence-wall for such ground, entirely upon his own ground, except as to the footings thereof. s. 35.

Sound party-walls not condemnable.—Rebuilding of. If the owner of one of the adjoining buildings desire to rebuild a sound party-wall, then, on giving to the adjoining-owner the required notice of 3 calendar months, according to the form (No. 14) in the Schedule of Notices, or to the like effect, such building-owner may pull down and rebuild such party-wall, but upon condition that he reinstate and make good all the internal finishings and decorations of the adjoining premises, and pay all the costs and charges thereof, and also all the expenses incidental to the execution of the work, including therein the fees and expenses of the survey, and the fees of the surveyors, and any fee in respect of any services performed by the official referees, and also such reasonable compensation as to the said official referees may seem proper for any loss which the adjoining-owner shall have incurred by reason of such work. s. 26.

Reference to official referees. If while a sound party-wall (against which an external wall shall have been built, and which shall have been suffered to remain) continues sound, the adjoining building be pulled down or rebuilt, and such party-wall be pulled down, then the owner of such adjoining building shall not be entitled to be reimbursed more than his just proportion of the materials of the said ground on which such party-wall was built, nor shall he build on more than his just proportion of the said ground, unless he shall have agreed with and satisfied the owner of the building so previously rebuilt for his half thereof;—and if the said owners cannot agree concerning the division of such materials, or of such ground, or

of the building thereon, or concerning the reimbursement of the party first rebuilding as aforesaid, then the price and all matters in difference, including the sale and purchase of the ground in question, shall be settled by a reference to the official referees, whose award shall be final. s. 30.

Site of party-walls. If buildings be of equal rate, a party-wall must be built on the line of junction of such buildings, one-half on the ground of the owner of one, and one-half on the ground of the owner of the other of such buildings. If such buildings be of different rates, then such wall must be built on the line of junction thereof, to the extent of only one-half of the thickness of a wall required for the building of the lower rate on the ground of such minor building. And if such building of the lower rate be thereafter enlarged or altered so as to become a building of a higher rate, then the owner of such first-mentioned building of the higher rate for the time being shall be entitled to receive from the owner of such building of the lower rate such sum of money as shall be a sufficient compensation for the ground occupied by that portion of the party-wall, which according to the rate of the building enlarged ought to have been built by its owner on his own ground, as well as the value of so much of the wall itself as may be more than the owner of such building of the lower rate had already paid for. Schedule D, Part III.

Construction and materials of party-walls. Every party wall must be built of sound bricks, or of stone, or of such bricks and stone together, laid in and with mortar and cement in such manner as to produce solid work. And the bearing-ends of wooden beams, breast-summers, girders, trussing-joists, the ends of partition heads and sills, the bearing ends of the main timbers of a roof, and wood-bricks, may be laid into the substance of a party-wall, but not within 4 in. of the centre of any party-wall; and no other wood-work of any kind must be laid into, placed upon, or be run or driven into any part of the substance of any party-wall. But if the ends of timbers be carried on iron shoes or stone corbels, then such iron shoes or stone corbels must be built into the wall at least one-half of the thickness of such wall. And the top of every such party-wall must be finished with one course of sound stock-bricks, set on edge with good cement, or by a coping of any other properly secured and sufficient waterproof and fireproof covering. Schedule D, Part III.

Height of party-walls above roof. If a party-wall adjoin to any roof, it must be carried up and remain 12 ins. at least above the part where the party-wall and roof adjoin, measured at a right angle with the back of the rafters of such roof. And if any party-wall in any building of the 1st class adjoin a gutter, it must be carried up, and remain 2 ft. at least above the highest part thereof. And if any party-wall in any building of the 2nd class adjoin a gutter, it must be carried up, and remain 3 ft. at least above the highest part thereof. If there be fixed within 5 ft. of a party-wall, upon the flat or roof of the building, any turret, dormer, lantern-light, or other erection of combustible materials, then every such party-wall must be carried up nearly to every such turret, dormer, lantern-light, or other erection, and must extend 18 ins. higher and 18 ins. wider than such erection on each side thereof. Schedule D, Part III.

Party-walls for dividing buildings. Every wall to divide any building into two or more distinct parts, must be built as a party-wall, in the manner and of the materials, and of the several heights and thicknesses for party-walls of the highest rate of building to which such party-wall shall belong or adjoin, as prescribed in reference to the thicknesses of party-walls in Schedule C. And if any building already built, or which shall be hereafter built, be converted, used, or occupied as two or more separate buildings, each having a separate entrance and staircase, then every such building shall be deemed to be two or more separate houses, and such separate houses must be divided from each other by a party-wall or party-arch or arches, in the manner and of the materials required for party-walls or for party-arches for the class and rate to which the largest of the buildings so divided shall belong. Schedule D, Part III.

Party-walls, if raised at the expense of one party, to be paid for by the adjoining party if afterwards used by him. s. 31.

Party-wall, party fence-wall not to be used as, unless of stonate dimensions. s. 32.

Party-wall, 2 days' notice to be given to the district-surveyor before begun to be built, pulled down, rebuilt, cut into, altered, or any opening be made therein. s. 13. See *Penalty*.

Party-walls, costs of, see *Expenses of work*.

PASSAGES, public, of 3rd class building, floors of, must be fire-proof, schedule C, Part VI.

PEACE-OFFICERS, district-surveyors and official referees accompanied by, may enter premises where they are refused admittance. See *Enter on premises*.

PENALTY, 5s. per day, district-surveyors liable to, for acting before making declaration of official fidelity. s. 71.

Penalty, Not exceeding 20s. for commencement (or re-commencement after 3 months' delay), or after a change of the builder, within 2 days' notice, and in the first case only treble fees to the district-surveyor, except in cases of emergency, wherein the notice is to be given to the district-surveyor within 48 hours after the commencement of the work. s. 13.



Penalty not exceeding 20l. for refusing or neglecting to admit and assist district-surveyor and official referees. See *Enter on premises*.

Penalty not exceeding 5l. per day, and expenses, to be paid by occupiers, or by owners of various buildings, if roofs, chimneys, and projections from front walls be not begun to be secured within 36 hours after notice from district-surveyors. See *Chimneys, ruinous*.

**PENALTIES** for use of 1st rate buildings of the 2nd class, and of buildings of the 3rd class. Until certificate shall have been made by the official referees of their approval, or until 14 days after survey by them shall have elapsed without their having given notice in writing that they are not satisfied, it shall not be lawful to use any such building for any purpose whatever, without the express authority of the official referees under their hands and the seal of office of the Registrar of Metropolitan Buildings;—and if before the certificate of satisfaction shall have been made, or if such further 14 days shall have elapsed without due notice being given in writing, any building subject to special supervision shall be used for any purpose without such express authority in writing, then, on conviction thereof before two justices of the peace, the occupier of such building, or other the person by whom such building shall be so used, shall forfeit for such offence a sum not exceeding 200l. for every day during which such building shall be so used without having obtained such certificate of satisfaction, or such express authority as aforesaid; and in determining the amount of any such penalty, the justices are to have regard to the size and character of building, and to the nature and extent of danger involved in the use of such building, and to the amount of profit which might be derived from such use thereof. s. 15.

**Penalties, or forfeiture.** Any party may sue or proceed for the same; and if not otherwise specifically appropriated, the person so suing or proceeding is entitled to receive one-half thereof for his own benefit, and the other half shall be applied to her Majesty's use, and shall be paid to the sheriff of the county, city, or town where the same shall have been imposed; and all convictions before justices shall be returned to the Court of Quarter Sessions, under the provisions of Act, 3 Geo. 4, c. 46, for the more speedy Return and levying of Fines, Penalties, and Forfeitures, and Recognizances estimated, and shall be paid to the sheriff of the county, city, or town, and shall be duly accounted for by him. s. 107.

Penalty not exceeding 50s. to be paid by any workman, labourer, servant, or other person employed in any building, or in the alteration, fitting up, or decoration of any building, who wilfully, without the direction, privity, or consent of the person causing such work to be done, shall do any thing in or about such building contrary to the rules and directions of this Act, upon conviction thereof before any two justices of the peace, upon the oath of one or more credible witness or witnesses; and if upon or immediately after such conviction any such forfeiture be not paid, then it shall be the duty of any two justices of the peace to whom application shall be made to commit the offenders, by warrant under the hand and seal of such justices, to the common goal for any term not exceeding one calendar month, at the discretion of such justices. s. 19.

**PIERS**, how affecting thicknesses of external walls. See *Including walls*.

**PIPES** of metal, or any other pipe or funnel for conveying smoke, heated air, or steam, must not be fixed against or in front of any face of any building in any street or alley, nor on the inside of any building nearer to any timber or other combustible material than 14 ins. Schedule F.

**PLACE**, for meaning of, see *Street*.

**PLATFORM**. See *Floor*.

**PLURALITY**. See *Singular number*.

**POLICE** magistrate. See *Awards, recovery of money under*.

**POPLAR** parish included within the operation of the Act. s. 3.

**PORCHES**. See *Projections, external*.

**PREJUDICED**, no other person to be, through disqualification of official referee, or registrar. s. 95.

**PRISONS**, and places of confinement under inspection of Inspectors of Prisons, are under special supervision. Schedule B, Part I.

**PRIVY**, if built in the yard or area of any building, or under any street or alley, must have a door, and be otherwise properly inclosed, screened, and fenced from public view. Schedule H.

**PROFITS** or rents, of ground and tenements, persons in the receipt of, taken within the meaning of the Act to be owners. s. 2.

**PROJECTED** buildings beyond the general line of buildings and from other external walls. Bow windows or other projections of any kind, from buildings already built or hereafter to be rebuilt, must neither be built with nor be added to any building on any face of an external wall thereof, so as to extend beyond the general line of the fronts of the houses (which general line may be determined by the surveyor), (except so far as is herein provided with regard to porches projected over public ways and with regard to projections from face-walls and shop-fronts), nor so as to overhang the ground belonging to any other owner, nor so as to obstruct the light and air or be otherwise injurious to the

owners or occupiers of the buildings adjoining thereto on any side thereof. Schedule E. s. 5.

**PROJECTIONS** in danger, the district-surveyor to inspect at all times when needful, and to take the measures necessary thereupon. s. 68. District surveyor's fee for the inspection and removal of projections, 10s.

**Projections, external, rules concerning.** Porticoes projected over public ways. The portico or porticoes of any church, chapel, theatre, or other public building of the 3rd class: If the building of the same shall have been previously sanctioned by the official referees, by writing under their hands, and if objection be not made by any party interested within one calendar month thereafter, and if upon such objection or appeal, her Majesty's principal Secretary of State acting for the Home Department do not decide in favour thereof, then such projections may be built over the foot pavement of any street or alley which shall be 50 ft. wide at the least. Schedule E. s. 5.

Projections from face walls of buildings hereafter to be built or rebuilt. Copings, parapets, cornices to overhang roofs, blocking courses, cornices, piers, columns, pilasters, entablatures, facias, door and widow dressings, or other architectural decorations, forming part of an external wall, may project beyond the general line of fronts in any street or alley, but must be of the same materials as are by this Act directed to be used for building the external walls to which such projections belong, or of such other proper and sufficient materials as the official referees may approve and permit. And all balconies, verandahs, porches, porticoes, shop-fronts, open inclosures of open areas and steps, and water-pipes, and all other projections from external walls not forming part thereof (except such part of shop-fronts, and the frames and sashes of the windows and doors, in reference to the necessary wood-work thereof), may stand beyond the general line of fronts in any street or alley, but they must be built of brick, tile, stone, artificial stone, slate, cement, or metal, or other proper and sufficient fire-proof materials; and they must be so built as not to overhang the ground belonging to any other owner, and so as to obstruct the light and air or be otherwise injurious to the owners or occupiers of the buildings adjoining thereto on any side thereof. Schedule E. s. 5.

Projections from front walls in danger of falling. See *Chimneys, ruinous*.

Projections from walls of buildings over public ways. The walls of all buildings hereafter to be built or rebuilt must be set back so that all projections therefrom, and also all steps, cellar-rooms, and area-inclosures, shall only overhang or occupy the ground of the owner of any such building, without overhanging or encroaching upon any public way. Schedule E. s. 5.

Projections from insulated buildings. If such projections be at least 8 ft. from any public way, and at least 20 ft. from any other building not in the same occupation, they are excepted from the rules and directions of this Act. Schedule E. s. 5.

**PROPER**, questions relative to the meaning of the term, the official referees are to decide, being thereto required in writing. s. 62.

**PROPERTY**, sole, in party-structures (with that of the soil whereon they stand), vests in persons at whose expense they are performed till due contributions be made of their expense and of the fees of the district-surveyors and official-referees. s. 46.

**PROSECUTIONS** for preventing neglect or evasion of this Act.—Notice of action. At any time within 3 calendar months after penalty or forfeiture by any default in complying with the provisions of this Act, shall have been incurred, any surveyor appointed or confirmed by virtue of this Act, and all other persons, may commence and prosecute proceedings for the recovery thereof, or for the recovery of the expenses of pulling down or altering of any building, against any owner, occupier, builder, workman, or other person, or for any default made in complying with the provisions of this Act: But if such proceedings be taken by any person except one of the surveyors, or except the official referees, then 7 days' notice of the intention to commence such proceedings must be given at the office of the surveyor of the district, and at the office of the Registrar of Metropolitan Buildings. s. 110.

**PROVISIONS** of Act, modification of, in cases of rebuilding upon old sites. See *Commissioners of Works and Buildings*.

**PUBLIC** buildings. See *Third class*.

Public way, buildings over the part thereof which extends over such way, if rebuilt, must be separated from such public way, either by a floor or arch formed of brick or stone, or of other incombustible materials, subject to the consent of the official referees, or by a floor formed of iron girders and brick arches or stone landings, or by an arch formed of brick or of stone, which arch, if the span thereof do not exceed 9 feet, must be of the thickness of 9 inches at least, and if the span exceed 9 feet, of 13 in. at least; and such floor or arch, with its abutments, must be built in such manner as shall be approved of by the surveyor; but there must not be formed over any public way a ceiling of lath and plaster, or of lath and cement. Schedule D, Part V. District-surveyor's fee for inspecting arch or stone floor over public way, 10s.; not chargeable where the ordinary fees for building, or addition or alteration, are paid.

Public way, water from roofs, flats, gutters, projections, balconies or verandahs, not to drop upon. Schedule C.

**QUARTER** Sessions, general. See *Appeal from convictions for penalties*, for proceedings before.

**QUAY-WALLS** are under special supervision. Schedule B, Part I.

**RAILWAYS**, buildings of, exempt from supervision. Schedule B, Part II.

**RAISING** of buildings, hereafter built, lawful, provided the party and external walls and chimneys thereof, when so raised, be of the prescribed materials of and the several heights and thicknesses of the rate such buildings shall be of when so raised;—and buildings already built, although the walls thereof be not of the thicknesses prescribed by this Act, if, in the opinion of the district-surveyor, such walls be sufficiently secure to allow of the raising thereof, it shall be lawful to raise any such building already built to any additional height not exceeding 10 FEET;—and if any building be raised, the owner thereof shall build up, at his own expense, the party-walls between his own and any adjoining building, and all flues and chimney-stacks belonging thereto;—and if at any time the owner of an adjoining building make use of any portion of the party raised of such party-wall by building against it, or otherwise, the owner of the premises so first raised may claim and recover the cost of a proportionate part of the portion which shall be so used, together with the cost of such parts of the chimney-stacks as belong thereto. s. 31.

**RATES** of buildings of the 1st or dwelling-house class to be ascertained by area of plan, and by altitude, and by number of stories: of 2nd or warehouse class by altitude only. See *Area of buildings, Heights of buildings, Stories, number of*; also the several rates, 1st, extra 1st, 2nd, 3rd, 4th.

**RATES** and CLASSES of buildings to be, in cases of doubt, difference, or dissatisfaction, determined by the official referees. s. 5.

**Rates** or classes, buildings not within. See *Classes or rates*.

**REBUILDING**, materials to be used in. If any external wall or inclosure be at any time hereafter taken down or otherwise demolished for the height of one story, or for a space equal to one-fourth of the whole surface of such external wall, every part thereof not built in the manner and of the several materials by this Act directed for external walls must be taken down, and rebuilt in such manner, and of such materials, and in all respects as by this Act directed for external walls hereafter to be built, according to the class and rate of the building to which such external wall or inclosure shall belong. Schedule D, Part II.

**RECEIPT**, signed with the Christian and surname of district-surveyor, fees to be paid by builder or owner upon tendering of. s. 77.

**RECEIVER** for any owner of houses within the limits of the Act, disqualified from being official referee or registrar. s. 95.

**RECESSES**, how affecting thicknesses of external walls. See *Including walls*. May be left in certain cases in walls, for which see *Chases and recesses*.

**RECOGNIZANCE**. See *Appeal from conviction for penalties*.

**RECOMMENCEMENT** of work after 3 calendar months' suspension, notice of must be given by the builder to the district-surveyor in the form Nos. 2 and 3, under penalty not exceeding 20l. s. 13. See *Builder, for definition of the term*.

**REFUSAL** to admit the district-surveyor or official referees to inspect premises renders the work liable to be abated as a nuisance. s. 13.

**REGISTER** (The registrar is to), all notices to the official referees, and all matters which come under their cognizance.

**REGISTERED**, rules prescribed by the examiners for examination of candidates for the office of district-surveyor, and granting them certificates, to be, by the Registrar of Metropolitan Buildings, after being approved of by the Commissioners of Works and Buildings. s. 66.

**REGISTRAR** OF METROPOLITAN BUILDINGS.—*Appointment—Tenure of office—Rules—Seal—Report of objections—Authority of Commissioners of Works—Interim registrar*. For the purpose of duly recording relaxations of the requisitions of this Act, made in pursuance of the provisions hereof, and of providing for the revision from time to time both of such relaxations and requisitions, and of providing against the partial exercise of the powers of this Act, and for the more effectually providing for the due recording of the Acts of the official referees, and for exercising a due control thereon,—the Commissioners of Works and Buildings shall appoint a Registrar of Metropolitan Buildings to hold his office during their pleasure;—and subject to the provisions of this Act, the said commissioners shall make rules for regulating the execution of the duties of the office of the said registrar;—and such registrar shall keep a seal, and affix such seal to all documents made by the said official referees, and required to be sealed, and shall keep all the documents and records relating to the business of their office, and register the same; but if it appear to such registrar that any such documents are contrary to law, or not complete in any of the requisite forms, or are beyond the competence of the said official referees, either with regard to the provisions of this Act, or any rules or regulations prescribed for their guidance by the said Commissioners of Works and Buildings, the said registrar is to refuse to affix the seal, and thereafter, if the



said official referees shall so require, it shall be his duty and he is hereby required to report to the said commissioners the matter, and the particular grounds and reasons for his refusal; and upon the receipt of such report it shall be lawful for the said commissioners to authorize the said registrar to affix the seal, or to confirm his refusal—if such registrar be ill, or otherwise unable to discharge the duties of his office, or if he be absent, the said Commissioners may appoint some other person to act temporarily in his behalf, and assign to such person such part of the remuneration of the said registrar, or otherwise remunerate him, as the Lords of the Treasury shall appoint in that behalf. s. 89.

**Declaration of official fidelity.** Before any registrar shall act in pursuance of his appointment, he is to make a declaration of official fidelity, to be administered by the Chief Baron, or any other of the barons of her Majesty's Court of Exchequer. For form, see s. 90.

**Custody and inspection of records—Copies of awards, certificates, &c., and fees therefor.** Awards, certificates, and other documents relating to the business of the official referees shall be kept in the office of the Registrar of Metropolitan Buildings;—and for the purpose of evidence or otherwise, any party may, on payment of the expense thereof, and of such fees as may be required in that behalf, demand from the registrar an inspection thereof, or a copy thereof or extract therefrom; and on such payment and demand such registrar shall give, under his hand and seal of office, a copy of any such award or any other document to the person so demanding the same. s. 91.

**Office of the Registrar.** The Commissioners of Works and Buildings to appoint, in some central and convenient situation within the city of London or the city of Westminster, an office for carrying on the business of the Registrar of Metropolitan Buildings, and registering all documents relating to such business; and in such office such registrar shall keep a register of all matters referred to the official referees, and of all matters which shall come under their cognizance in pursuance of this Act; and also keep and preserve all documents connected with the duties of official referees; and also receive all notices requiring any act to be done by them; and file and number them in the order in which they are received. s. 92.

**Registration of awards, &c.** All the awards and certificates, and all documents relating to the business of the official referees shall be registered, not only chronologically in the order in which they are received, but according to the subject-matter thereof, and also according to the order of and in relation to the provisions of this Act.

**Remuneration of official referees and registrar.** Her Majesty to grant to each official referee and to the registrar a salary not exceeding £1,000, by the year, in four equal quarterly payments; and if any such official referee or registrar shall be appointed, or shall die, resign, or be removed from office, in the interval between two quarterly days of payment, then he shall be entitled to a proportionate part of the salary for the period of the interval during which he shall hold such appointment. s. 94.

**Disqualification of official referees and registrar.** If any person be or become a commissioner, receiver, steward, or agent for or on behalf of any owner of houses within the limits of this Act, then such person shall not be eligible to the office either of official referee or of registrar under this Act; and if after having been appointed thereto he shall become such commissioner, receiver, steward, or agent, he shall cease to be qualified to hold such office of official referee or registrar, and thereupon such office shall be vacant, without prejudice, nevertheless, to any acts done by any such person in his capacity of official referee or registrar, so far as other persons are affected thereby. s. 95.

**Funds for defraying expenses of the official referees and registrar.** The lord mayor and aldermen of the city of London to direct the chamberlain of the said city, and the justices of the peace for the several counties of Middlesex, Surrey, and Kent, to direct their treasurers to pay, by two half-yearly payments in the months of June and December in every year, to the cashier of the Commissioners of Works and Buildings, on account of the said official referees and of the said registrar, by way of contribution to such salaries, viz.:

The city of London and the liberties and the suburbs	£ 100
The county of Middlesex	1,000
The county of Surrey	320
The county of Kent	80
	1,500

And the said justices are to levy the same by a rate upon the several parishes and places within the limits of this Act, in such amounts as to such justices may seem proper, having regard to the assessed value of the inhabited houses and the buildings in such places respectively, in addition to the county rate in respect thereof; and for the purpose of levying such sums they shall be deemed to be part of the county rate, and leviable by all the ways and means by which a county rate is leviable, and subject in all respects to the legal incidents of a county rate. s. 96.

**Payments of official referees and registrar.** The balance of the salaries to the official referees and registrar shall be paid out of the consolidated fund of the United Kingdom of Great Britain and Ireland. s. 97.

**Fees of office—List to be hung up in registrar's office.** The Commissioners of the Treasury shall appoint such fees to be paid in respect of the services to be performed by the official referees or by the registrar as shall be deemed requisite to defray the expenses of the said office, or incident to such services, and the salaries or other remuneration of any persons employed under the registrar in the execution of this Act, with the sanction of the Commissioners of the Treasury, and which are not otherwise provided for by this Act; and the balance, if any, shall be carried to the consolidated fund of the United Kingdom, and be paid accordingly into the receipt of her Majesty's Exchequer at Westminster; and it shall be lawful for the Commissioners of the Treasury to regulate the manner in which such fees are to be received, and in which they are to be kept, and in which they are to be accounted for; and the registrar shall cause a list of the fees so appointed to be fixed up in some conspicuous part of his office. s. 98.

Registrar of Metropolitan Buildings may consent to one official referee acting, except in any case in which the Act provides otherwise. s. 88.

Registrar of Metropolitan Buildings, each district-surveyor is, immediately upon his appointment, and from time to time, upon every change of his residence or of his place of business, or oftener if required, to make a return to, and to the overseers of the poor of every parish or place within his district, of his name and place of abode, and the place where his business shall be. s. 72.

Registrar of Metropolitan Buildings to register rules prescribed by the examiners for the examination of candidates, and for granting them certificates for the office of district-surveyor, after they are appointed by the Commissioners of Woods and Works. s. 66.

Registrar's office to be in some central or convenient situation within the city of London or the city of Westminster, and all awards, certificates, or other documents of the official referees are to be kept therein. ss. 91, 92.

REINSTATEMENT, parties who rebuild a sound party-wall not condemnable are to make, of all the internal finishings and decorations of the adjoining building. s. 26.

REMOVAL of orders, &c. into superior courts.—Certiorari. Any person may remove by certiorari, or any other writ or process whatsoever, into any of her Majesty's Courts of Record at Westminster, any order which shall be made by virtue of or under this Act, and any other proceeding to be had touching the conviction of any offender against this Act (except proceedings touching the conviction of any person offending for carrying on a trade or business offensive, noxious, or dangerous, contrary to this Act, otherwise than in the cases herein-before specified), and every such order and other proceeding is hereby declared not to be so removable. s. 104.

RENTS or profits of ground and tenements, persons in the receipt of, taken within the meaning of the Act to be owners. s. 2.

REPAIR, covenants to. See *Chimneys, ruinous*.

REPAIRS, materials to be in old external walls and other external inclosures of any building ready built (except the inclosure of roofs, and the flats, gutters, dormers, turrets, lantern-lights, and other erections thereon), may be at all times of the same sort as those of which such external wall or inclosure has been already built. Schedule D, Part II.

REPAIRS, external, and Schedule A.

RETAINING-WALLS are under special supervision. Schedule B, Part I.

REVEALS. See *External walls*.

ROAD, for meaning of, see *Street*.

ROADWAY must be made to admit of a scavenger's cart of the ordinary width to one of the fronts of every building of the 1st class, or to the inclosure about it. Schedule K.

ROOF-COVERINGS. The external parts of any roof, flat, or gutter of any building, or of any projection therefrom, and of any turret, dormer, lantern-light, and other erection on the roof or flat of any building hereafter built or rebuilt, stripped, ripped, or uncovered, and the door-frames, window-frames, and sashes of such turrets, dormers, lantern-lights, or other erections, must be covered with slates, tiles, metal, glass, artificial stone, or cement (and such excepted parts may be made of such wood as shall be necessary), and the same and any projection therefrom, and also the verandahs, and shop-fronts, must be arranged and constructed, and so supplied with gutters and pipes, as to prevent the water therefrom dropping on to or running over any public way. Schedule G.

Roof, one month after covered in, walls built to full height and principal timbers fixed, and 14 days after completion of addition, alteration, or repair, and 14 days after performance of special service, the district-surveyor's fees become due from builder or owner, and payable on the tender of a receipt signed with the Christian and surname of surveyor. s. 77.

Roofs, ruinous. See *Chimneys, ruinous*.

ROOMS or CELLARS not constructed according to Schedule K, not to be let separately or to be occupied as dwellings after 1st July, 1948.

Rooms in all attics and each other used or intended to be used as a separate dwelling must be

of at the least the height of 7 feet from the floor to the ceiling. Schedule K.

Row, for meaning of, see *Street*.

Royal Exchange is under special supervision.

Schedule B, Part I.

Ruinous buildings and projections in danger, the district-surveyor to inspect at all times when needful, and to take the measures necessary thereupon. s. 68.

RUINOUS BUILDINGS:—

**Application to official referees—Survey—Notice to lord mayor, &c. and to overseers—Shoring, boarding—Notice to parties—Repair—Appeal against survey—Demolition.** Upon receiving information of any building being in a ruinous and dangerous condition, the district-surveyor and the overseers for the time being of the parish or place in which the same shall be, shall apply forthwith to the official referee, and authorize a survey to be made thereof;—and thereupon the official referee shall direct the district-surveyor to make such survey;—and thereupon such surveyor shall act in all respects as in the case of a survey of party-walls;—and upon the receipt of the certificate of the surveyor, the official referees shall cause a copy thereof to be transmitted if the premises be within the city of London, then to the Court of Lord Mayor and Aldermen, and if they be elsewhere, then to the overseers of the poor of the parish or place in which such premises shall be;—and thereupon such mayor, and court of aldermen, and overseers shall cause with all convenient speed any such ruinous building to be securely shored, or a proper and sufficient hoard to be put up for the safety of all passengers, and to cause notice in writing to be given to the owner of such building to repair or pull down the same or any part thereof, as the case may require, within 14 days then ensuing;—and if within the said 14 days the repair or demolition thereof be not begun, and be not completed as soon as the nature of the case will admit, then, on a declaration being made before the said lord mayor or a justice of the peace of such notice having been so given, the said lord mayor and court of aldermen, out of the cash in the chamber of London, and every such overseer of the poor out of the money in his hands, shall, with all convenient speed, order and cause such building, or such part thereof so certified to be in a ruinous and dangerous condition as shall be necessary for the safety of the passengers, to be repaired or pulled down, or secured in such manner as shall from time to time be requisite;—but if such lord mayor and aldermen, or such overseers, appeal against such certificate, the official referees shall proceed to survey, to certify, and to award in all respects as in the case of an appeal from the certificate of the surveyor with reference to party-walls or intimated buildings; and if any official referees certify that the said premises are ruinous and dangerous, the said lord mayor or the said overseers shall repair or pull down such building. s. 40.

**Disposal of materials to pay costs—Payment of surplus on demand—If no demand—City of London or overseers to refund within six years.** Lord mayor and court of aldermen, or the overseers, may sell and dispose of such of the materials as they shall judge necessary, and out of the moneys arising from the sale thereof reimburse to themselves, the surveyors and official referees, and every person by them respectively employed for the purposes aforesaid, all the charges of the survey and appeal, and of putting up every such hoard, and of repairing, pulling down, and securing such premises, and of making good the pavement, and of selling the said materials as the matter, or so much thereof as the moneys arising by such sale will extend to;—and if there be any surplus, after payment of all expenses, then, upon demand thereof made by such owner, it shall be the duty of the lord mayor, or of the overseers, to account for and pay such surplus of the moneys arising by such sale to the owner of such building;—or if there be any question as to the person entitled to such surplus, or as to the priority of title to such sum of such persons so entitled, or as to the proportions to which such persons are so entitled, then it shall be lawful either for the lord mayor or the overseers, or for any person claiming to be so entitled, to refer the matter to the determination of the official referees, and their decision shall be final;—and if no such demand be made, then such surplus shall, as regards places within the city of London and the liberties thereof, be paid to the chamberlain of the city, and as regards all other places such surplus shall be paid to the overseers, and added to the moneys raised as rates for the relief of the poor of the parish or place, and accounted for accordingly;—but at any time within 6 years from the deposit of such surplus, any such owner, his executors or administrators, may claim and be entitled to recover such surplus;—and the said lord mayor and aldermen of the city of London, as regards the said city and liberties thereof, are hereby required to pay such surplus out of the cash in the chamber of London; and every overseer, as regards places not within the said city or the liberties thereof, is hereby required to pay such surplus out of the moneys raised to be raised by any rate for the relief of the poor. s. 41.

Deficiency to be paid by the owner; or occupier to pay and deduct from rent—Payment of money to



*Chamberlain or to the overseers.* If the moneys arising from such sale be insufficient to repay all such expenses, then from time to time such deficiency shall be paid by the owner of every such building, being the person entitled to the immediate possession thereof, if known; and if, on demand thereof, such owner fail to pay such deficiency, then it shall be lawful for the lord mayor for the time being, if such ruinous building in question be within the city of London or the liberties thereof, or if elsewhere, for two or more justices of the peace, to levy the amount thereof by warrant under their hands and seals, by distress and sale of the goods and chattels of such owner, if any such can be found; and if no such owner can be met with, or, being met with, shall not on demand pay the said deficiency, and no sufficient distress of the goods and chattels of such owner can be found, then it shall be lawful for the person who shall at any time thereafter occupy any such building, or the ground where the same stood, and he is hereby authorized and required, to pay and deduct the same out of the rent thereof; and if he neglect or refuse to pay such deficiency, then the lord mayor, or two or more such justices of the peace, shall cause the same to be levied by distress and sale of the goods and chattels of any occupier of the premises, together with the costs of every such distress and sale;—and if the premises be situate within the city of London and its liberties, it shall be the duty of the person by whom the same shall be received, and he is hereby required, to pay the amount to the chamberlain, to be by him from time to time placed to the credit of the cash of the said city of London; and if the premises in respect of which such money shall be received or recovered be not situate within the said city of London and the liberties thereof, then to pay the amount received to the overseers of the poor for the time being of the parish or place where the premises shall be situate, to be by them placed to the account of the said parish, in aid of the poor-rate of the parish or place. s. 42.

**Ruinous chimney-shafts, pots, or other things thereon, eaves, parapets, copings, slates, tiles, projections from front walls in danger of falling.** See *Chimneys, ruinous.*

**RULES of the Act may be modified by the Commissioners of Works and Buildings after being reported upon by the official referees, either at their own suggestion, or that of any interested party.** s. 11.

**RULES of the Act (except heights and thicknesses of walls) may, after the report of the official referees, in cases of rebuilding upon old sites, be modified by the Commissioners of Works and Buildings.** s. 12.

**RULES prescribed by the examiners for the examination of candidates, and granting them certificates for the office of district surveyor, to be approved of by the Commissioners of Works and Buildings, and to be registered by the Registrar of Metropolitan Buildings.** s. 66.

S.

**SALE of materials of ruinous buildings.** See *Ruinous buildings.*

**SCAVENGER's cart of the ordinary width, every building of the 1st class must have some roadway which will admit such to one of its fronts, or to the inclosure about it.** Schedule K.

**SEAL, the Registrar of Metropolitan Buildings to keep one, and to affix the same to all documents made by the official referees required to be sealed; but if it shall appear to the said registrar that any such documents are contrary to law, or are not complete in any of the requisite forms, or are beyond the competence of the said official referees either with regard to the provisions of this Act, or any rules or regulations prescribed for their guidance by the said Commissioners of Works and Buildings, then it is the duty of the said registrar to refuse to affix the seal,—and thereafter, if the said official referees shall so require, it shall be his duty to report the matter, and the particular grounds and reasons for his refusal, to the said commissioners; and upon the receipt of such report the said commissioners shall authorize the said registrar to affix the seal, or to confirm his refusal.** s. 89.

**Seal of office of Registrar of Metropolitan Buildings to be attached to official referees' certificates of sufficiency of strength of buildings.** Schedule B, Part I. s. 16.

**SECRETARIES of State, one of the principal, to appoint two architects or surveyors as official referees.** s. 80.

**Secretaries of State, one of the principal, the appointment of districts and district surveyors by magistrates must have the consent of.** ss. 64, 65.

**SECOND or WAREHOUSE Class.** Buildings built originally as warehouses, storehouses, granaries, breweries, distilleries, manufactories, workshops, or stables, or occupied or intended to be occupied as such, or for a similar purpose. Schedule C, Part I. s. 5. See *Class, alteration of.*

**CAPACITY of 2nd class buildings; Rates of, determined by altitude only.** Schedule C, Part III. Cubical contents, to be ascertained by measuring according to the rule for ascertaining area, and from the surface of the lowest floor up to the under surface of the roof-covering. Schedule C, Part I. If any building of this class hereafter built or rebuilt contain more than 200,000 cubic feet, it must be divided by party-walls, so that there be not in any one part of such building more than 200,000 cubic feet without party-walls. Schedule C, Part IV. See *Openings in party-walls.* District surveyor's fees: A further fee, equal to one-half of the ordinary fees, to be paid in respect of every ad-

ditional 200,000 cubic feet, or any portion of 200,000 cubic feet, in any such building.

**ROOFS, to buildings of the 2nd class (in order to prevent the formation of curved roofs thereto), the plane of the surface of must not incline from the external or party-walls upwards at a greater angle than 40 degrees with the horizon.** Schedule C, Part IV.

**SECOND-RATE, 1st or dwelling-house class (district-surveyor's fee, new building, 3l. 3s.; addition or alterations, 1l. 10s., Schedule L), covering more than 6 squares, and not more than 10 squares; if containing 6 stories, and in height more than 52 feet, and not more than 70 feet,**

thickness of the external walls must (subject to modification as *Inclining walls of stories*, which article see) be at least 17½ inches from the top of the footing up to the under side of the floor next but one below the topmost floor; and at the least 13 inches from thence up to the top of the wall. Thickness of the party-walls must be at least 17½ inches from the top of the footing up to the under side of the floor next but one below the topmost floor; and at the least 13 inches from thence up to the top of the wall. Schedule C, Part II.

**Second-rate, 2nd or warehouse class: more than 44 feet, and not more than 66 feet in height (district-surveyor's fee, new building, 3l. 3s.; addition or alterations, 1l. 10s., Schedule L), thickness of the external walls (subject to modification as *Inclining walls of stories*, which article see) must be at least 21½ inches from the top of the footing up to the level of 58 feet below the topmost ceiling; and at the least 17½ inches from thence up to the level of 22 feet below the topmost ceiling; and at the least 13 inches from thence up to the top of the wall. Thickness of the party-walls must be at least 21 inches from the top of the footing up to the level of 58 feet below the topmost ceiling; and at the least 17½ inches from thence up to the level of 22 feet below the topmost ceiling; and at the least 13 inches from thence up to the top of the wall. Schedule C, Part III.**

**SEPARATE dwellings, underground rooms and cellars, used as.** See *Lowest rooms.*

**Separate entrances, how affecting division of buildings by party-walls.** See *Party-walls for dividing buildings.*

**SERVANTS, workmen, and labourers may be fined, and in default be committed to gaol.** See *Penalty.*

**SEWERS: see Drains.** Commissioners of: see *Drainage of houses, also Buildings, new and old.*

**SHADWELL parish included within the operation of the Act.** s. 3.

**SHERIFF: see Penalties, recovery of, relative to his receipt thereof.**

**SHOP-FRONTS.** See *Roof-coverings.*

**Shop-fronts, with their entablatures, shutters, pilasters, and stall boards made of wood, if the street or alley in which any such front is situate be of less width than 30 ft., no part of such shop-front must be higher than 15 ft.; nor must any part, except the cornice, project from the face of a wall, whether there be an area or not, more than 5 in.; nor must the cornice project therefrom more than 13 in. If the street or alley be of greater width than 30 ft., no part of such shop-front, except the cornice, must project from the face of a wall, whether there be an area or not, more than 10 in.; nor must the cornice project therefrom more than 15 in. And the width of such street or alley must be ascertained by measuring the same, as herein directed with regard to the widths of streets and alleys. And the woodwork of any shop-front must not be fixed nearer than 4½ ins. from the centre line of a party-wall. And if such wood-work, be put up at such distance of 4½ ins., then a pier or corbel built of stone or of brick or other incombustible material, and 4½ ins. wide at the least, must be fixed in the line of the party-wall, so as to be as high as such wood-work, and to project one inch at the least in front of the face thereof. And the height of every shop-front must be ascertained by measuring from the level of the public foot pavement in front of the building. And every sign or notice-board fixed against or upon any part of any house or other building standing close to any public way must be so fixed that the top thereof shall be within 18 ft. at the most above the level of such public way. Schedule E. s. 5.**

**SHORING-UP** adjoining buildings, expenses of, recoverable. s. 46.

**Shoring or boarding, Lord Mayor and Court of Aldermen in the city and liberty of London, and overseers in other places, to cause to be done to ruinous buildings immediately upon receiving from the official referees a copy of the district-surveyor's certificate, or to appeal to the referees for confirmation or annulling thereof.** See *Ruinous buildings.*

**SIGN-BOARDS.** See *Shop-fronts.*

**SINGULAR number, when used in the Act, to be understood to apply to a plurality of persons and things.** s. 2.

**SITES, questions relative to, official referees are to decide, being thereto required in writing.** s. 82.

**Site of party-walls and party-fence or boundary-walls.** s. 32. See *Party and party-fence walls.*

**SLATES in danger of falling.** See *Chimneys, ruinous.*

**SOILS, questions relative to, official referees are to decide, being thereto required in writing.** s. 82.

**SMOKE-JACKS and SOOT-DOORS.** See *Chimney shafts.*

**SOVEREIGN, buildings in possession of, or employed for the use of, are under special supervision.** Schedule B, Part I.

**SPECIAL services, district surveyor's fees for, not exceeding 2l. as the special referees shall, by writing under their hands, order and appoint, with the consent of the Commissioners of Works and Buildings.**

**SOUND, questions relative to the meaning of the term, official referees are to decide, being thereto required in writing.** s. 82.

**SQUARE (public).** For meaning of the term, see *Street.* Square (the word) applied to any area or building, contains 100 superficial feet. s. 2.

**STABLES.** See *Second class.*

**STAIRCASES, how affecting division of buildings by party-walls.** See *Party-walls for dividing buildings.*

**STAIRS, internal, to buildings of the first class, if of stone or other incombustible substance, they must be set in, or be fixed to, and be wholly upborne by, fire-proof constructions, and must be connected internally by landings, the floors of which are fire-proof, and wholly upborne and supported by fire-proof constructions, and must be connected with the exterior entrance by passages, the floors of which are fire-proof, and wholly upborne and supported by fire-proof constructions. Schedule C, Part VI.**

**Stairs and landings of third-class buildings, floors of, must be fire-proof.** Schedule C, Part VI.

**STAMP duty.** Every certificate and every award required to be made or signed by the surveyor or the official referees, exempt from. s. 118.

**STEAM-ENGINE.** See *Chimney shafts.*

**STEWARDS for any owner of houses within the limits of the Act disqualified from being official referee or registrar.** s. 95.

**STOKE-NEWINGTON parish included within the operation of the Act.** s. 3.

**STOPPING of illegal openings in external walls. See Openings in external walls.**

**STORIES, inclosing walls to.** For modification of the Act relative to thicknesses of external walls generally, see *Inclining walls.*

**STORIES, number of, to be counted from the foundation upwards. And if the space in height between the top of the footings and the level of the lowest floor exceed 5 feet, then such space is to be considered the lowest or first story; and in that case the level of the lowest floor is to be considered 9 in. above the top of the footing. Schedule C, Part I. s. 5. Buildings of the 1st or dwelling-house class are rated by the number of stories as well as by area and altitude. Schedule C, Part II.**

**Story (the word) to include the full thickness of the floor, as well as the space between the upper surface of one floor and the under surface of the floor next above it; or if there be no floor, then the space between the surface of the ground and the under surface of the floor next above it.** s. 2.

**STOVE-PIPES.** See *Chimney shafts.*

**STRATFORD-LE-BOW parish included within the operation of the Act.** s. 3.

**STREATHAM parish included within the operation of the Act.** s. 3.

**STREET (the word) to include every square, circus, crescent, street, road, place, row, square, lane, or place along which carriages can pass, or are intended to pass, and that whether there be or be not, in addition to the carriageway, a footway, paved or otherwise.** s. 2.

**Streets, buildings, and other matters regulated according to this new Act from January 1st, 1845. s. 1. Streets and alleys made or laid out before 1st January, 1845. See *Already built (the term).***

**Streets, alleys, and other ways.** For the passing of this Act, all the conditions, regulations, and directions contained in Schedule I, shall be duly observed and performed; and if any person offend in respect thereof he shall be liable to all the penalties and forfeitures by this Act imposed in respect of any buildings, either built contrary thereto, or without due notice to the district-surveyor. s. 52. See *Widths.*

**SUFFICIENT, questions relative to the meaning of the term required, in writing.** s. 82.

**SUMMONS, official referees may issue, to any person able to give evidence.** s. 85. See *Evidence.*

**SUNDAY, district-surveyor's office not required to be attended on.** s. 72.

**SUPERIOR COURTS.** See *Removal of orders info.*

**SUPERVISION, special, and exemption.** Every building or other structure mentioned in Schedule B, Part I., shall be subject to special supervision by the official referees, according to the provisions of this Act in that behalf, and every such building or other structure mentioned in the said Schedule B, Part II., shall be exempt from supervision. s. 7.

**Supervision, special, of buildings in schedule B, Part I.—Notice of deficiencies—Amendment—Approval by official referees—Notice of completion—New survey certificate—Prohibition of use—Penalty. Buildings comprised in schedule B, Part I. Before the builder begin to build the same, it is the duty of the architect or the builder to give notice to the official referees, and also, at the same time, to transmit for their inspection the plans, elevations, and other drawings made for the same;—and forthwith the official referees are to proceed to survey the situation of the intended building to ascertain whether such building can be erected on such situation with due regard to the security of the public;—and from time to time during the progress of such building, the official referees are to inspect the same to ascertain the sufficiency thereof;—and if such building or any part thereof appear defective, insufficient, or insecure, then they are to give to such architect or builder notice in writing of such part of the building as appears to them to be defective, and such notice it shall be the duty of the architect or builder to amend and strengthen**



pulled down, or destroyed by tempest, such building may be rebuilt:—and it shall not be lawful for any person to establish or newly carry on an



such business, either in any building or vault or in the open air, at a less distance than 40 ft. from any public way, or than 50 ft. from any other such buildings of the 1st or dwelling-house class; and if any such business be now carried on in any situation within such distances, then, from the expiration of the period of 30 years from the passing of this Act, it shall cease to be lawful to continue to carry on such business in such situation, save as is hereinafter provided:—and if any person erect any building in the neighbourhood of any such business contrary to this Act, then, on conviction thereof before two justices, he shall forfeit a sum not exceeding 50*l.* for every day during which such building shall remain near to any such offensive or noxious business;—or if any person establish anew any such business, or carry on any such business contrary to this Act, then, on conviction thereof before two justices, such person is hereby made liable to forfeit for every day during which such business shall be carried on a sum not exceeding 50*l.* as the said justices shall determine; and the justices may award to the prosecutor such costs as shall be deemed reasonable:—and if the offender either fail or refuse to pay such penalty and costs immediately after such conviction, then they may be levied by distress of the goods and chattels of the person convicted; or if there be no such distress, then such person shall be committed to the common goal or house of correction for any time not exceeding 6 calendar months, at the discretion of such justices, and that by warrant under the hands and seals of two or more justices of the peace. s. 55.

**Penalty enforceable only at a Special Sessions.—Mitigation of noxiousness of businesses.** Every such penalty herebefore imposed shall be enforceable only at a special sessions of the peace summoned for that purpose, or on an appeal as hereinafter provided, or on a trial as hereinafter provided; and notwithstanding the said term of 30 years shall have expired, if any party charged with carrying on such business shew that in carrying on such business all the means then known to be available for mitigating the effect of such business in any such respect have been adopted, then such justices may receive evidence thereof, and according to such evidence mitigate the penalty, notwithstanding the said period of 30 years shall have expired, if it shall appear to the justices, whether at petty sessions as aforesaid, or on appeal, or on trial by jury, as herein provided, that the party carrying on any such business shall have made due endeavours to carry on the same with a view to mitigate, so far as possible, the effects of such business, then, although he hath not adopted all or the best means available for the purpose, yet justices may suspend the execution of their order or determination, upon condition that within a reasonable time, to be named, the party convicted do adopt such other or better means as to the said justices shall seem fit, or before making final sentence, and without consulting the prosecutor, to make such order touching the carrying on of such business as shall be by the said Court thought expedient for preventing the nuisance in future. s. 56.

**Mitigation of penalty by superior Courts.**—But if the matter in respect of which, such penalty shall be incurred come before any superior Court it shall be lawful for such Court to exercise such power of mitigating such penalty, or of suspending the execution of any judgment, order, or determination in the matter, or to make such order touching the carrying on of such business, as to the Court shall seem fit in the case. s. 56.

**Conviction and appeal as to certain trades not specified.** If any person be dissatisfied with the decision of such justices with regard to any business offensive, noxious, or dangerous, and any building erected or continued within any such distance as aforesaid therefrom, and if within 4 days after such decision, notice be given to the party appealed against, by or on behalf of such person, of his intention to appeal, and if he enter into a recognizance, with two sufficient securities, conditioned to try such appeal, and to abide the order of the Court, and to pay to the party appealed against such costs (if any) as shall be awarded against him, then it shall be lawful for such party so dissatisfied to appeal against such conviction to the justices of the peace at their general Quarter Sessions of the peace to be holden within 4 months after such conviction for the place in which such premises shall be situated:—and if the premises be situated within the city of London and liberties thereof, then the appeal must be to the Quarter Sessions thereof; or if the premises be situated in the counties of Middlesex, Kent, or Surrey, or in the city and liberties of Westminster, or in the liberties of her Majesty's Tower of London, then to the Quarter Sessions thereof respectively, as the case may be:—and if within the above-mentioned period such appellant shall have entered into such recognizance as herein required, and if within one calendar month thereafter he give notice of the grounds of such appeal, then it shall be lawful for such justices, and they are hereby empowered, to proceed to hear and examine on oath into the causes and matters of such appeal, and to determine the same, and to award such costs to be paid by the said parties as they think proper:—and the order, judgment, and determination of the said justices in their respective sessions shall be binding and conclusive upon all parties. s. 57.

**Trial by jury at Quarter Sessions.** If before conviction by two such justices the party complained against desire to have the matter tried by a jury, and enter into a recognizance to try such matter without delay, and to pay all costs of trial if a verdict be found against him, then such matter may be tried at the next practicable Court of Quarter Sessions, or whenever the court shall appoint; and thereupon, or on the application of such party, the said Court of Quarter Sessions shall issue their warrant or precept to the sheriff or other proper officer (as the case may be), requiring him to return a competent number of persons qualified to serve on juries according to the provisions of 6 Geo. 4; and the said Court of Quarter Sessions shall, by precept, from time to time as occasion may require, call before them respectively every person who shall be thought proper or necessary to be examined as a witness before them on oath concerning the premises.

**View of the premises.** And if the Court think fit, they may authorize the jury to view the place in question in such manner as they shall direct, and command the attendance of such jury, and of all such witnesses and parties as shall be necessary or proper;—and the said jury shall inquire and try, and determine by their verdict whether the business in question be offensive or noxious, and whether the party in question have done any act whereby the penalty hereby imposed in respect thereof has been incurred;—and, subject to the power hereinbefore conferred of mitigating such penalty, or suspending their judgment, order, or determination thereon, or making such order touching the carrying on of the business aforesaid, the said Court of Quarter Sessions shall give judgment according to such verdict, and shall award the costs (if any) incurred by the defendant, and shall and may (if they see fit) award to either of the parties such costs as they may deem reasonable; which verdict, and the judgment, award, order, or determination thereupon, shall be binding and conclusive. s. 58.

**Appeals to Quarter Sessions for Surrey, to Sessions at Southwark; for Kent, to Sessions at Greenwich.** If an appeal be made to the General Quarter Sessions of the peace for the county of Surrey or the county of Kent, the jury (if any) to be impanelled in pursuance of this Act, and all parties required to attend the Quarter Sessions for the said counties, pursuant to such application, shall be impanelled and required to attend at some general or special adjournment of the said Quarter Sessions to be held within 4 weeks after the original sessions:—and if the matter relate to the county of Surrey, such adjournment shall be to some convenient place in the borough of Southwark; and if the matter relate to the county of Kent, such adjournment shall be to some convenient place in the borough of Greenwich:—and such times and places shall be appointed by the justices of the said counties respectively assembled at such original sessions; and from time to time every further meeting of the said sessions, for any thing to be done upon such application, shall be appointed at or within the space of 3 weeks from the last meeting; and from time to time the justices of the peace for the said counties of Surrey and Kent respectively, shall make such adjournment and hold such sessions as there shall be occasion. s. 59.

**Common law and statutory remedies not affected.** This Act shall not be deemed to authorize any person to carry on any such business either within such limits or otherwise, or any business which it is unlawful to carry on within any limits or in any manner contrary to any public, local, or private Act of Parliament, or otherwise contrary to law; nor to affect, abridge, or restrain the right, the duty, or the power of any person, whether private person or public officer, to prosecute, either civilly or criminally, any person who shall carry on within the limits of this Act any offensive, noxious, or dangerous business. s. 60.

**Regulation or removal, by purchase, of trades deemed nuisances.** If two-thirds in number of the inhabitant householders of any parish in which any offensive, noxious, or dangerous business shall be carried on, present a memorial to her Majesty's Council, stating the existence of such offensive, noxious, or dangerous business in such parish or the neighbourhood thereof, and praying the removal of such business therefrom, and thereby engaging to provide compensation to the persons carrying on the same, either at the expense of the memorialists, or by means of a rate to be levied on the inhabitants of the said parish, or such part thereof as may be affected by such business, it shall be lawful for her Majesty to refer the matter to the Lords of the Committee of Privy Council for Trade to consider the character of such business, whether it be offensive, noxious, or dangerous; and if it appear to be so, and that there are no means of rendering it otherwise by the adoption of methods and appliances, or out unreasonable sacrifice on the part of the person by whom it is carried on, then it shall be lawful for her Majesty, by order in Council, to direct that the removal of such business may be purchased, either at the expense of the memorialists or by means of a rate as aforesaid, as to her Majesty shall seem fit, and also to direct the sheriff of the county or other proper person in the parish or liberty in which such business is carried on to summon a jury, according to the provisions of an Act, 4 Vict., intitled "An Act to enable her Majesty's Commissioners of Woods to

make a new Street from Coventry-street to Lo<sup>rd</sup> Acre, and for other Improvements in the Metropolis," to determine what compensation shall be paid to the party carrying on such business for the removal thereof, and to the owner and occupier of the premises for the restriction of the use of his buildings for such purpose; and if within 3 calendar months after the verdict of such jury shall be given, and judgment thereon, the inhabitants of such parish or neighbourhood pay or tender such compensation, then within 3 calendar months from the payment or tender of such compensation it shall cease to be lawful for the party carrying or such business to continue the same, and for any owner or occupier thereof either to carry on or to permit to be carried on such business in the same or any part of the same premises. s. 61.

**Funds for defraying compensation.** If her Majesty by such order direct the compensation to be paid by means of a rate, it shall be lawful for the overseers of the parish to raise such sum as shall be necessary, either as a separate rate in the nature of poor's rate, or as part of the poor's rate; or if in pursuance of the memorial of the inhabitants of such part of the said parish as shall be affected by the said business it be appointed by such order in Council that such last-mentioned party defray such compensation, then it shall be lawful for the said overseers to raise such sum as shall be necessary for that purpose. s. 62.

**Exemption of public gas-works.** The provisions of this Act in reference to businesses dangerous in respect of fire or explosion, or offensive or noxious, shall not be deemed to apply to any public gas works heretofore established within the limits of this Act; and if by any Act of Parliament now in force relating to gas companies to which such works belong, any extension of such works, or any additional works, or any other works, be authorized to be erected or substituted, such provisions shall not be deemed to apply to any such extension, addition, or substitution within the limits of the district now lighted from such first-mentioned works. **Distilleries.** And such provisions shall not be deemed to apply to any premises entered or used for the purpose of distillation or the rectification of spirits under the survey of the Commissioners of Excise or their officers. s. 63.

**V.**  
**VACANT districts, justices to appoint new surveyors to, within one calendar month.** s. 74. **See Justices of the peace, also Official referees, for appointment, permanent and temporary.**

**VENTILATION.** See Back-yard.  
**VERANDAHS.** See Roof coverings.  
**VERANDAHS of 3rd class buildings, floors of, must be fire-proof.** Schedule C, Part VI.  
**VINERIES.** See Attached buildings and offices.

**W.**  
**WAINSCOT,** expenses of pulling down for performing party structures recoverable. s. 46.  
**WANDSWORTH parish** included within the operation of the Act. s. 3.  
**WARRE,** damage to be made good by neighbours, parts of whose buildings may fall thereon. See Chimneys, ruins.

**WAREHOUSE.** See Second class.  
**WATER-CLOSERS.** See Drains, also Privy.  
**WHARF-walls** are under special supervision. Schedule B, Part I.

**WIDTHS** (measured at right angles to the course of the way from front to front, in every part thereof); of streets (excepting any mews) to be 40 feet at least; but if the buildings fronting any street be more than 40 feet high from the level of the street, then such street must be of a width equal at the least to the height of the buildings above such level; alleys and every mews must be of the width of 20 feet at the least, but if the buildings fronting any alley, or to any mews, be more than 20 feet high from the level of the alley or mews, then such alley or mews must be of a width equal at the least to the height of the buildings above such level. Schedule I.

**WILL, tenants at, not considered by the Act as owners.** s. 2.

**WINDOWS** of rooms more than 3 feet under ground and to cellars let as separate dwellings must be at least 9 superficial feet, and be glazed, of which 4½ feet must open for ventilation. Schedule K.

**Windows.** See Back-yard.

**WINDOW-FRAMES** and sashes of turrets, dormers, lantern-lights, and other projections on roofs, may be of wood. See Roof-coverings.

**WOOLWICH parish** included within the operation of the Act. s. 3.

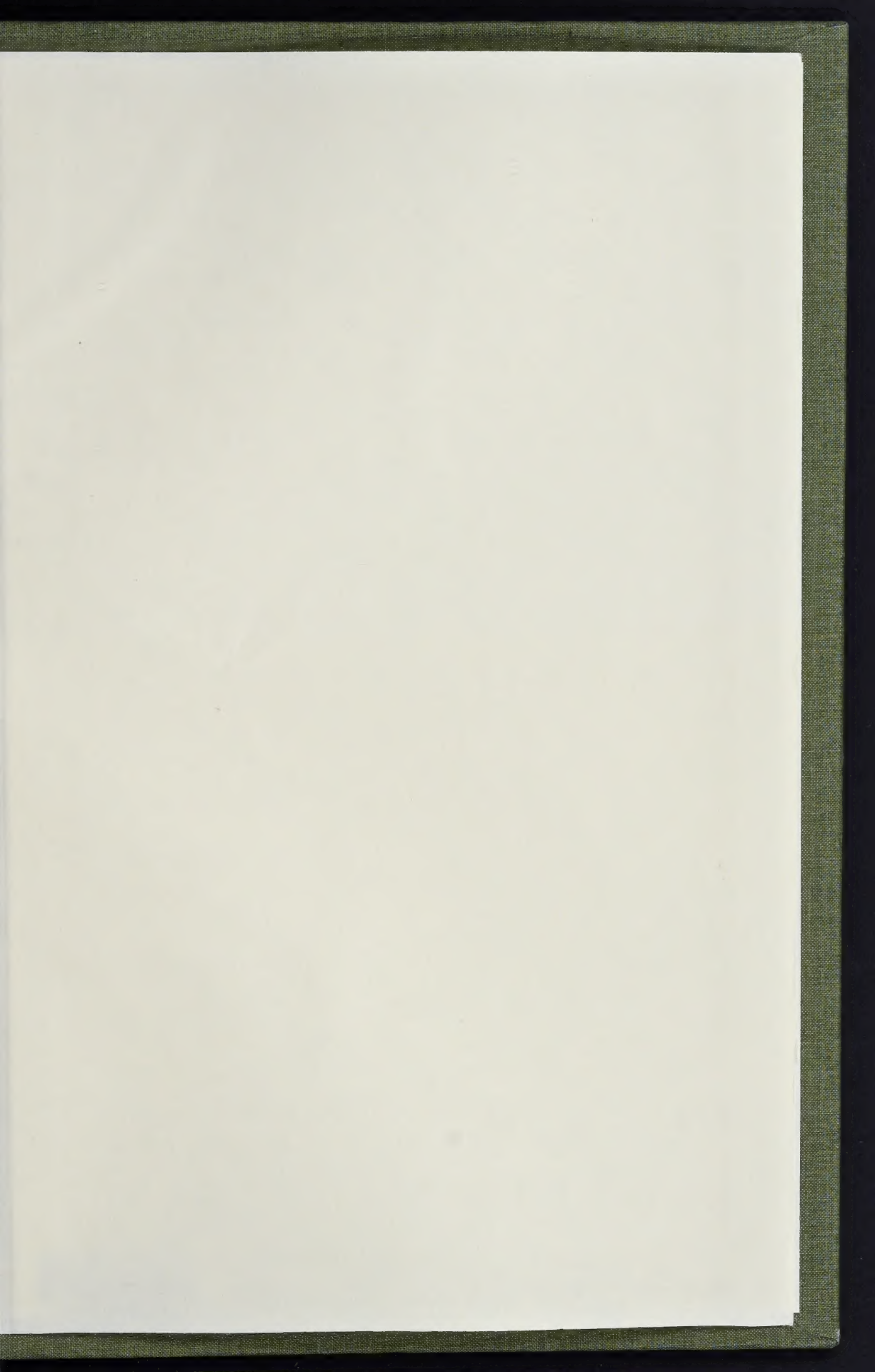
**WORKMANSHIP,** questions relative to, official referees are to decide, being thereto required in writing. s. 82.

**WORKMEN** may be fined, and, in default, sent to gaol. See Penalty.

**Y.**  
**YARDS,** open. See Back-yard.  
**YEARLY tenants,** and tenants for less terms, not considered under the Act as owners. s. 2.

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